Marileena Koskela & Markus Vinnari (editors)

FUTURE OF THE CONSUMER SOCIETY

Proceedings of the Conference “Future of the Consumer Society”
28–29 May 2009, Tampere, Finland

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Editors

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EDITORIAL – THE FUTURE OF THE CONSUMER SOCIETY

The 11th Annual Conference of the Finland Futures Research Centre was held between May 28th to May 29th 2009 at the University of Tampere, Finland. The theme of the conference was The Future of the Consumer Society and it covered two subjects: consumption and futures research methods.

The reason to target especially consumption in this eleventh annual conference was that consumption is becoming a key issue in the debate on creating a sustainable future. In particular, the world-wide spread of extremely resource-intensive lifestyles and economic practices has become one of the most important challenges we face.

As one of the largest organization in the world performing future oriented research Finland Futures Research Centre's goal is to promote future oriented thinking. Futures studies is ideally placed to help face the current global challenges as it includes tools for describing possible, probable, and desirable variations of the future that are both social and "natural". Furthermore, by examining a variety of possibilities we can come closer to choosing and shaping the future, rather than merely predicting it. Thus, futures studies offer valuable tools for understanding and guiding consumer society.

The conference brought together experts of futures studies to interact with corporate representatives. More than 140 people attended the conference. The conference programme included six keynote lectures, 46 parallel presentations, two poster presentations and one workshop. In the discussions, wide perspectives of plausible and preferable futures were outlined. One key message from the conference was that we should now use this financial recession as a means to build a more sustainable future for the consumer society. Also, we learned during the conference that the choices that each one of us makes, e.g. as a consumers, makes a different as shaping the future.

Good selection of papers was received to the conference and sessions were held in the following topics: Delphi and scenarios, Environmentally significant consumption, Future of the social media, Sustainable consumption, Communicating corporate social responsibility, Consumers and changing values, Sustainable food consumption, Innovative education for a sustainable future: Southern perspective, Globalization of consumption, Futures research methods, Empowering tomorrow's consumers and Consumers in the future. From these session, our scientific committee selected the best papers to be presented in this conference proceeding and as journal articles. We have altogether 30 papers in this proceeding.

The papers from the Delphi and scenarios session present the problems in combining qualitative and quantitative information and scenarios of future of reading in Germany. The papers from the environmentally significant consumption session try to find solutions to the environmental problems, such as the climate change. Future of the social media is discussed in the papers from the view point of future of paper, changes in media demand and virtual consumer communities. The papers of the sustainable consumption session try to find policy recommendations for sustainable future. Communicating corporate social responsibility is addressed in the papers from the point of view of media and eco-efficiency in environmental reporting. The topic of consumers and changing values is dealt from the point of view of eating, ethical consumption and consumer data. Future of the Sustainable food consumption is covered widely in the papers. The papers address the environmental impacts of food consumption, the role of the consumers and the responsibilities in food consumption. The papers of the innovative education for sustainable future session discuss the possibilities to use the African Catchment Game to practise sustainable development. The globalisation of consumption session reviews the global environmental effects of the consumption. Case studies are provided from developing and developed countries. Futures research methods session discusses the use of trickle down theory and decomposition analysis in modelling the future. Empowering tomorrow's consumers session address the active role of the consumers in the fu-

ture. The session Consumers in the future focuses on consumer mega trends and changing consumer behaviour.

Future of the Consumer Society conference cooperated with two journals, namely Progress in Industrial Ecology, an International Journal, and Futura. A special issue titled "Consumer society and future of sustainability "in Progress of Industrial Ecology, an International Journal, will include the very best of the conference articles. In Futura, the articles of Linda Fraenkel and Professor Roddy C. Fox titled "Learning about sustainability through experiencing complex, adverse conditions typical of the South: Reflections from the African catchment games played in Finland 2008 ", of Petteri Repo and Anu Raijas titled "Consumer megatrends as drivers for technology and innovation policies in Finland "will be published shortly.

As making the future is a continuing process we hope that you will join us next year in the 12th International Conference of Finland Futures Research Centre and Finland Futures Academy: Security in Futures – Security in Change to be held 3 – 4 June 2010 in Turku, Finland.

As the conference organizers, we would like to thank the following supporters that made the conference possible: The Dr.h.c Marcus Wallenberg Foundation for Promoting Research in Business Administration, Federation of Finnish Learned Societies, Foundation for Economic Education and Turku School of Economics, Support Foundation. Also, several people and organisations helped us to make this conference a successful event. The review of the conference full papers was carried by the scientific committee of the conference and the employees of Finland Futures Research Centre and National Consumer Research Centre. Also, we wish to thank the session chairs in directing the discussion in the plenary and the parallel sessions. We will also use this opportunity to thank the conference assistants who voluntarily helped the conference organizers and the conference participants with their requests. The expertise of the TAVI Congress Bureau is highly valued by the conference organizers.

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DELPHI & SCENARIOS

FINDING A BALANCE FOR QUALITATIVE AND QUANTITATIVE INFORMATION IN DELPHI PROCESSES

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ABSTRACT – This paper analyses the strengths, weaknesses and pitfalls encountered when combining qualitative and quantitative information in different rounds in a Delphi process and when reporting the results as scenarios or images of the future. The paper draws material from seven different Delphi processes conducted in Finland 1999–2008, in which the authors have been involved as researchers or advisors. The seven case studies are analysed and the ways that the difficulties were overcome in these processes are presented. Solutions tend to lead to over domination of one material type over another. Finally, the paper gives recommendations for tackling the problems of combining qualitative and quantitative materials during a Delphi process.

EPILOGUE

In the early 19th century, three Christian kingdoms, Russia, Austria and Prussia formed the *holy alliance* against the democratic movement of the French Revolution. The concept *unholy alliance* in turn was used for the alliance against Russian expansion, made by Western European Christian countries with the Ottoman Empire (or the Turkish Empire), the Muslim monarchy in the mid-nineteenth century. Thereafter the concept has become a cliché, or even a myth of any coalition including apparently incompatible parts. David Holbrook's famous poem *Unholy marriage* with reflections of Shakespeare's *Romeo and Juliet* powerfully fuelled the expansion of the idea in the 1960's. The methodological debate in social sciences on the difference between qualitative and quantitative research seems to have connoted the same idea of divine incompatibility. Either the methodological debate has dealt with the superiority of one approach over the other, or the unholy marriage has been denied by being 'just friends.'

FROM 'EITHER... OR' TO 'BOTH... AND'

The traditional methodological debate over the superiority of either qualitative or quantitative research seems to have ceased recently. Rather, both approaches have been acknowledged to have their merits. Now that the debate has begun to generate less heat and more light, we would like to contribute to the debate with this paper by examining how the two material types might be combined when making scenarios for the future.

In futures studies literature, qualitative methods have repeatedly been mixed up with heuristic reasoning whereas quantitative methods are understood as formal methods, typically mathematical modelling[1,2]. However, there are also quantitative methods that require heuristic reasoning and on the other hand, formal qualitative studies[3,4]. A few examples of this idea are given in Figure 1.

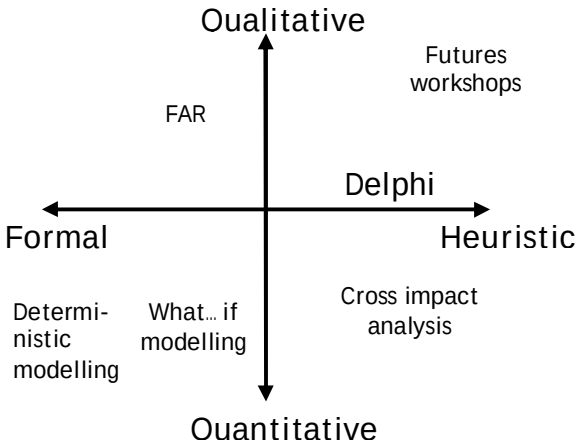

Figure 1. Methodological approaches in futures studies with exemplary methods (derived from [3,4])

Furthermore, there has been a tendency to mix up, on one hand, qualitative research with subjectivity or even societal radicalism and, on the other hand, quantitative research with objectivity or societal conservatism.[5] Only few references make the distinction between generating research material and the analysis of the research material. However, the majority of the literature on Delphi method addresses only data gathering whereas less emphasis has been placed on analysing the material. These aspects are summarised in Table 1.

Table 1. Methodological approaches in futures studies (derived from references [6, 7]).

Research material	Qualitative		Quantitative	
	Data gen-eration	Data analysis	Data gen-eration	Data analysis
Analysis	Heuristic		Formal	
	Data gen-eration	Data analysis	Data gen-eration	Data analysis
Societal view	Radical		Conservative	
	Data gen-eration	Data analysis	Data gen-eration	Data analysis
Knowledge	Subjective		Objective	
	Data gen-eration	Data analysis	Data gen-eration	Data analysis

We argue that there is a common misunderstanding to sum up the columns of Table 1 as two alternative and opposite paradigms, hermeneutics vs. positivism, or critical vs. technical, or humanist vs. technocratic futures studies. Much fruitful research can be generated when this blocking is abolished and the dichotomy is replaced with experiments combining approaches in both columns.

Following the idea in Table 1, we define qualitative methods as methods that analyse qualitative research material. Quantitative methods in turn analyse quantitative research material. No other paradigmatic features are attached to these concepts here. We analyse and discuss seven Delphi or Delphi-like studies made in Finland 1999 –2008, that used the combination of qualitative and quantitative material. The authors have participated in all cases either as researchers or advisors. What lessons of material combination can be learned from these experiments? What were the strengths, weaknesses and practical pitfalls? How to balance between formal and heuristic approaches?

TRADITIONAL AND DISAGGREGATIVE DELPHI

The purpose of Delphi studies may be outlined based on Amara´s classic breakdown to probable, preferable and possible futures[8]. Traditionally Delphi studies have aimed at reaching expert consensus on the most probable future[9, 10]. Policy Delphi studies have acknowledged also preferable futures[11, 12]. Disaggregative Delphi[13] in turn aims at exploring the alternative futures – scenarios or future images (Fig. 2).[14] According to Kuusi, the Delphi method seems to be at its best when looking at the variety of possible futures.[15] Our experience supports this view.

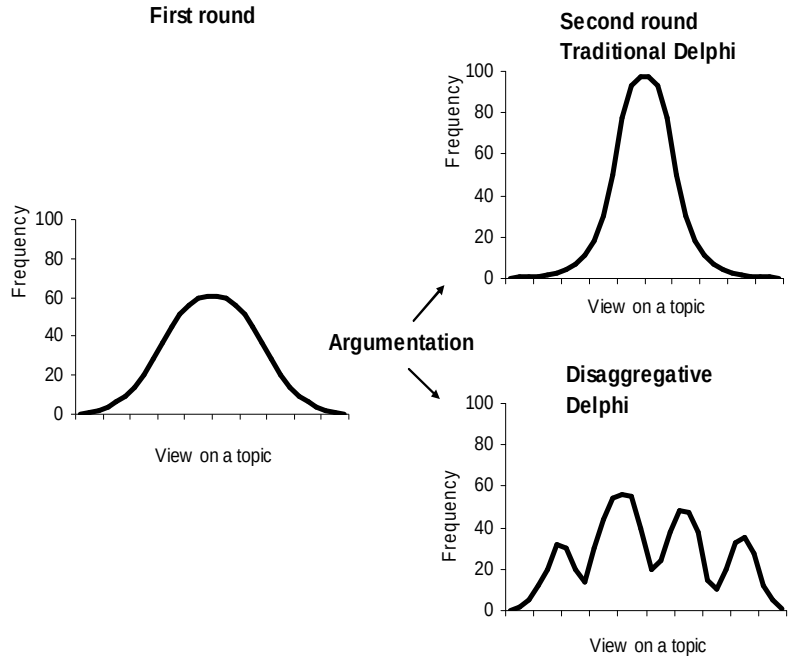

Figure 2. The effect of argumentation in the traditional and disaggregative Delphi points of view using exemplary frequencies[14].

When making alternative future images or scenarios, we have used various applications of the Disaggregative Policy Delphi variant. It includes the grouping of quantitative material with cluster analysis and qualitative content analysis of the qualitative material. Qualitative material can be text in open questions in a questionnaire, written arguments for the quantitative statements, or interview talk.

SCENARIOS VS. FUTURE IMAGES

A scenario can be described as a systematic description of events that would lead to a future outcome. Scenarios are future and action oriented and they often combine qualitative and quantitative information describing actions over time. Building of scenarios combines also *'intuition, logic, reflection and action, rhetoric, and science'*[16].

Images of the future differ from scenarios since they can be described as outlining the final outcomes in a continuum of social change[17]. As such, images of future are more stable pictures and they do not have the dynamic aspect that scenarios have. If images of the future are then seen as tools for making such images become part of reality, they can be used to direct actions and decision-making,[18] but as such they do not describe the actions needed to achieve the described future. In fact, some authors think that forming future images is a preliminary phase of scenario making[19].

SEVEN CASES OF DELPHI SCENARIOS/FUTURE IMAGES

We analyse seven cases where Delphi or Delphi-like methods have been used in order to generate various scenarios for the future. Finland Futures Research Centre has been involved in all cases either alone or as a partner.

Case 1, Traffic Scenarios 2025, was performed as a preliminary work for the strategic planning in Ministry of Transport and Communications Finland, partly funded by Academy of Finland. The work evolved in two lines, first towards a more strictly academic application of six scenarios[20] and then towards more policy-oriented set of eight scenarios[21]. Other partners included Institute for Advanced Management Systems Research (IAMSR) from Åbo Akademi University and the Technical University of Tampere.

Case 2 dealt with regional scenarios in Finnish South-Western coast, Åboland, performed together with Skärgårdsinstitutet of Åbo Akademi University and having funding from several authorities. Four scenarios were constructed mainly using the qualitative material or open questions and arguments supporting the quantitative statements.[22]

Case 3 addressed the future of Finnish wind power in a project at Environmental Sciences at the Helsinki University. The project was funded by the Academy of Finland and Maj and Tor Nessling Foundation. Quantitative material was used as the basis of grouping the experts 'answers, and the qualitative answers were then combined with the quantitative material to form five scenarios.[23]

Case 4 was a bioenergy study carried out with MTT Agrifood Research Finland and funded by Ministry of Agriculture and Forestry[15]. The bioenergy study was a part of a wider Delphi addressing also agricultural production technology and genetically modified organisms (GMO)[24]. Five scenarios of the future of bioenergy were constructed in the context of renewable energy policy, based on the quantitative material. Qualitative material was used as illustration of the quantitative.

Case 5 dealt with the future of food production and was funded by the Academy of Finland, other partners being School of Business and Economy at University of Jyväskylä and National Consumer Research Centre (NCRC). Five images of the future of meat consumption were constructed, based on the quantitative material. Qualitative material was used as illustration of the quantitative[25].

Case 6 was also a food study, partly made together with Case 5. Other partners were MTT, NCRC and Finpro and the funding came from Ministry of Agriculture and Forestry. Four scenarios of the Finnish food consumption in 2030 were constructed with the qualitative material. Some quantitative responses were used as reference material.[26]

Case 7 focused on the future of sustainability education and was made within FFRC with funding from European Social Fund and Ministry of Education Finland. Four scenarios were constructed. The quantitative and qualitative materials played a more equal role, since they were connected by using a Field Anomaly Relaxation (FAR) type of futures table[27]. Here again, the Delphi study was a part of a larger project[28].

The basic qualities of the cases are summarized in Table 2.

Table 2. Some details of the analysed Delphi scenario cases.

Case: Topic	Name of the whole project	Analysed sub-project or document	Durance	Target year	Basis of scenario formation	References
Case 1: Transport	Traffic Scenarios 2025	Governmental scenario report & research article	1999–2000	2025	Quantitative	20, 21
Case 2: Region	Future Scenarios for Åboland	Scenario report	2001–2002	2020… 2030	Qualitative	22
Case 3: Wind power	Ecological Modernisation of Finnish Energy Sector	Wind power in Finland up to the year 2025	2002–2003	2025	Quantitative	23, 29
Case 4: Bioenergy	Agri-Environmental Technology Foresight in the Employ of Sustainable Agriculture	Bioenergy study	2005–2006	2025	Quantitative	14,24
Case 5: Food	Bridging the Value-Action Gap: Combining Producers, Consumers and Expert Perspectives for Sustainable Food Consumption (BRIGADE)	Future images of meat consumption in 2030; Future images of food consumption	2006–2009	2030	Quantitative	25, 30
Case 6: Food	What's for Dinner Tomorrow? - The Future of the Finnish Food Consumption Structure and the Change Agents Guiding It	Final report	2006–2008	2030	Qualitative	26
Case 7: Sustainability education	Agora 2020 – Qualitative and Quantitative Needs for Future Environmental Education	Scenario report	2005–2007	2020	Both	27, 28

THE QUANTITATIVE AND QUALITATIVE IN DELPHI STUDIES

The way qualitative and quantitative material was used in the Cases is presented in Table 3. Each material type can be used either as the core of forming the scenarios, systematically included material within the scenarios, hand-picked illustrative material, or as an attachment. These alternatives form an analytical continuum of the depth of integration. We are not arguing that any is better than the others. Rather, it seems that different approaches fit different situations.

In the seven cases, quantitative material was grouped with cluster analysis, which fits well Delphi studies, since it does not require random sampling unless if one is trying to proof a theoretical classification valid. Qualitative material was analysed with qualitative content analysis. Other methods could be used as well, such as discourse analysis, but when making scenarios and images of the future the content is more interesting than the semantics.

Qualitative material is flexible and can be used in different systematic and non-systematic ways. Partly this may reflect the common (mis)understanding that qualitative research is somehow an excuse to non-systematic work.

It is also often thought that quantitative material always requires the adoption of statistical analyses. This is absurd since the very nature of Delphi studies is not to reach a random sample but to search for substantial expertise and a good coverage of views on the theme. Thus, also quantitative material can be used as illustration.

Table 3. The role of the qualitative and quantitative in the seven Delphi scenario cases.

Case	Use of quantitative material				Use of qualitative material			
	Core	Inclusion of each response	Illustration by picked responses	Attachment	Core	Inclusion of each response	Illustration by picked responses	Attachment
1	x					x		
2				x	x			
3	x					x		
4	x						x	
5	x						x	
6			(x)	x	x			
7	x				x			

STRENGTHS AND WEAKNESSES

The combination of quantitative and qualitative material in scenario construction provides certain strengths to the research. Some of these are rather obvious. For example, it is possible to create scenarios that give concrete numbers which makes the comparison of scenarios easier, and at the same time the scenarios have plenty of flesh or qualitative content, making them more illustrative. It also allows us to consider what kind of qualitative changes could lead to various quantitatively measurable future states.

Some of the benefits may be a little less clear to researchers who have not used this kind of approach. The use of quantitative questions also reveals, for example, that one expert may use a qualitative term "significant growth" to describe a growth of 20 percent, whereas another would use the term for a growth of 200 percent. Numbers and qualitative information bring these types of differences in thinking clearly to light.

There are naturally also weaknesses in this approach. For example, the experts themselves may be reluctant to provide both types of material for the researchers. Most importantly, however, there is often a tendency of one material to dominate over the other. As the scenario construction from raw material has to start from somewhere, often the researcher starts with one type of material and uses the other as illustration or addition only. This can lead to under-use of one kind of material, or to inconsistencies within the scenarios.

AVOIDING PITFALLS

The following list has been put together based on the experiences the authors have had in these various cases.

Domination by one material type. All the cases, except Case 7, included the domination of one material type over the other. In cases 1 and 3–6, it was the quantitative material that was grouped using cluster analysis. The bare boned quantitative clusters were given flesh with the qualitative material. In Case 2 the quantitative material did give ideas of eight future scenarios embedded in the whole material, but this was considered too many and instead four scenarios were formed more heuristically using mainly the qualitative material. In Case 7, the cluster analysis was performed thematically thus giving room for combination of qualitative and quantitative material.

Framing questions. In order to construct future scenarios or images the material should contain different future states, not views on a single state. This is important to keep in mind since completely understandable and valid questions might not be useful in scenario making, as we learned in Case 2. A Del-

phi questionnaire might ask, for example: 'How probable is it that traffic volume will grow by 50% by the year 2030? "If the respondent ticks a box 'Not very probable ", we will not know whether her/his probable future image would include only 20% growth, as much as 100% growth or even 50% decrease. Instead one should ask questions like 'How much and in which direction will traffic volume change by the year 2030 in the probable future? "The same goes with qualitative material. Different future states need to be distilled out of the text submitted in open questions or interviews.

Lack of data for comprehensive cluster analysis. Although it is not a great philosophical problem we should keep in mind the practical nuisance that most often some respondents will not answer all the questions. It may reflect poor commitment, uneven distribution of expertise, unwillingness to provide quantitative quasi exact responses of the future, or simply a poorly formed un-motivating questionnaire. For example, in Case 7, only two respondents answered all the questions.

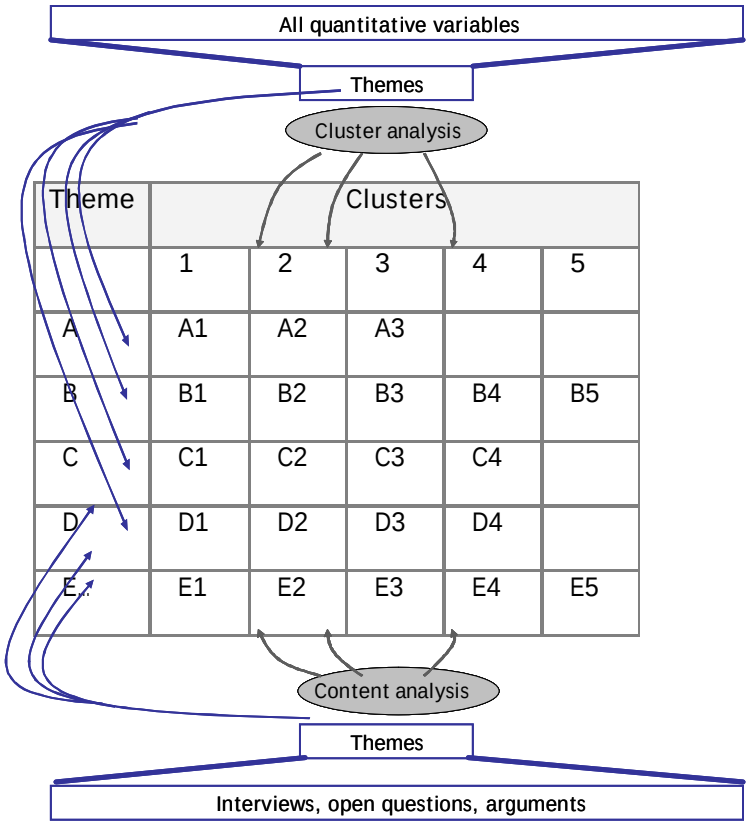

Figure 3. The principle of the Delphi study in Case 7.

A clear solution to this problem is making several cluster analyses – one in each theme of the study. The scenarios can thereafter be constructed heuristically using e.g. a FAR type of futures table, where each theme is represented by a row and each cell represents a specific future state. When cluster analysis is used, one cluster is placed in each cell. Similarly qualitative material can be expressed as different future states of an issue (Fig. 3). Then the cells may be reorganized so that each column contains a holistic image of the future. Writing the paths from present to the images transfers the static images to dynamic scenarios. This, of course, requires heuristic writing or additional material of the intermediate years.

Methods do not think. The responsibility of the researcher cannot be externalised to formal methods. If a thematic analysis is applied, it is the researchers 'responsibility to combine the clusters with qualitative statements and construct the scenarios. On the other hand, this applies to all phases of the

research project – choice of topics, framing of questions, decision to leave something out of the analysis, deciding the number of clusters, decisions regarding the qualitative material used, etc.

Variable bias vs. questions born in the process. If the research design is very clear and theoretically driven, there is usually a well-grounded set of variables on the research area. However, this happens very seldom in Delphi studies, here only in Case 1. On the other hand, the Delphi process should be open to questions that have emerged in the process that can lead to new knowledge. This principle can lead to a set of more well-grounded questions in the last Delphi round. But it may also lead to an arbitrary set of questions, where one aspect is measured in great detail whereas other important areas are mentioned only in passing. This could severely bias the cluster analysis, or rather, require weighing of variables.

Scenario consistency. When respondents give similar numerical responses and similar qualitative arguments supporting the numerical statements, constructing a consistent scenario is rather easy. The same is the case when respondents give different numerical responses and different qualitative responses. But what will happen if the respondents who have given similar numerical statements have different arguments? And in turn, what will happen if the respondents having similar arguments provide different numerical statements? This dilemma is outlined in Table 4. When there are similar quantitative responses and qualitative arguments of *different matters*, the qualitative arguments complement each other, for example, if one respondent assumes a high car acquisition tax and another assumes changes in people's values. But when there is similarity of one response type and a *contradiction* to another, there is a real problem of inconsistency. For example, Case 1 included a cluster, where a respondent saw the road traffic volume estimate being compatible with urban sprawl whereas another respondent assumed urban infill. This type of inconsistency can be ameliorated in at least four ways:

- Researcher contemplation – what seems to fit the overall scenario best?
- Reducing anomalies – is there a single response that could be dropped off?
- Reducing consistency – could the variation be explained without changing the overall scenario?
- Increasing the number of scenarios – can contradictory scenarios be split into several ones that would each be internally consistent?

Table 4. The consequences of similarities and dissimilarities in combining quantitative and qualitative responses to scenarios or future images.

Qualitative arguments	Quantitative statements	
	Similar	Contradictory
Similar	Consistent	Inconsistent
Contradictory	Inconsistent	Consistent
Different	Complementary	Non-systematic

Panellists' style. Depending on the focus of the study, the majority of panellists are likely to be either qualitatively or quantitatively oriented. Many have difficulties in numbers, whereas others feel awkward without numbers. This effect might be ameliorated by giving background data as a graph and to let the respondent continue the graph by drawing manually to describe the future.

It seems that people are not good at providing (quasi) exact statements of the future, but they can be better in stating whether the past trend will change and in which direction. That is, current situation must be anchored in the response, be it a qualitative question "how does this view relate to the current situation? "or a quantitative scale, where current situation is, say, given an index of 100. If the study involves participants from many disciplines, it might be good to have many types of questions and answering options – numbers, text, talk, and drawing. Not all answers need to be treated equally but some may provide more specific ideas and some more holistic images.

The more clear the focus of the study and the theoretical framework are, the more likely there will be consistent scenarios. But there is a risk of finding exactly what one is expected to find. The scenarios might be useless if no new ideas be explored. One way to ameliorate this effect might be to use several interviewers as was made in Cases 5 and 6.

CONCLUSIONS

Combination of quantitative and qualitative material in data collection and analysis allows us to construct images of future or scenarios that may be more illustrative and exciting than the use of one type of material only. However, the collection of such data can be time-consuming for both the participating Delphi panelists and for the researchers. There are also numerous pitfalls that can hinder the project. We have discussed these issues in detail and continue to believe that the unholy marriage is worth the trouble.

ACKNOWLEDGEMENTS

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COFFEE STAINS ON YELLOWED TOUCH SCREENS? - THE FUTURE OF NEWSPAPER READING IN GERMANY

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ABSTRACT – In this paper we aim at describing the slowly occurring changes in reading habits that could be observed in Germany in recent years. We assume that there is a shift from the traditional way of newspaper reading to the consumption of smaller "digital news snacks". We tried to test this hypothesis based on empirical findings from different research projects such as a Delphi survey, focus groups and individual user interviews with representatives of mobile network operators, publishing houses and regular newspaper readers.

INTRODUCTION AND BACKGROUND

In recent times, a strong and steady decline in the demand for printed news could be noted. In an interview with the CEO of the Axel Springer Group, one of Germany's leading publishing houses, the statement was made that the print run for different daily newspapers published by the Springer group have declined between 16 and 31% since 2000.[1] Moreover, a lot of studies in Germany speak of a decline in reading and some of them impressively show that traditional forms of reading (e.g. books, magazines, etc.) are becoming increasingly unpopular among the German population. A recent representative study commissioned by the German Ministry for Education and Research (BMBF) highlights that 25% of all Germans stated that they have never read a printed book.[2]

An increasing amount of (globally relevant) news can be consumed on the Internet, provided by an ever growing amount of publishing houses, blogs, expert foras, etc. In addition, the consumers of news can easily retrieve information and editorial content from other countries and news providers as well. By now, most of the German publishing houses have launched web sites and web domains where they mostly provide the same articles which they also sell in printed form, either in HTML format or as PDF downloads. In addition, they offer a variety of interactive media and multimedia content. From the consumer perspective, this development implies a movement towards digitalization of knowledge and news content. It provides the consumer with more flexibility, different levels of accessibility and more updated information. Breaking news such as catastrophes, accidents or political decisions of high impact can be obtained a lot faster on the Internet than in printed issues of paper.[a]

For the publishing houses this means that especially the reading culture of newspaper readers changes in the sense that the demand for smaller doses of easily digestible news, consumable on the go, rises. The U.S. Internet magazine Wired.com describes this trend as "snack culture"[3], which, amongst others, refers to an increased curiosity in different news sources (because they are all accessible for free) and different styles in writing (left wing versus more conservative articles). However, the main characteristic about the "snack culture" is that goods are consumed in a fast moving and more superficial manner. Less time is dedicated to more traditional rituals such as reading the newspaper while peacefully having a cup of coffee on a Sunday morning. An increasing amount of people can be observed reading newspapers on their Blackberry devices, iPhones or Amazon Kindles. The number of people that still read paper based news while using public transport appears to decrease constantly.

Based on these observations, the question arises of why reading habits are actually changing at all. The media landscape has transformed remarkably in recent years, especially through the emergence of the Internet. Books can be downloaded and can be read on so called E-Readers which theoretically makes

[a] This is mainly due to the production logistics of news and information business. Issues are printed mostly during nights and are sold the next day.

buying and reading a printed book obsolete. Consequently, these changes will have to be taken into account to gain a holistic view when studying reading habits. Instead of speaking of a decline in reading one might rather speak of a shift in reading from one medium to the next, from paper to the Internet and to the mobile Internet. Especially younger people spend more time on the Internet[4], which leaves less room for pursuing interests outside digital realms (see Figure 1).

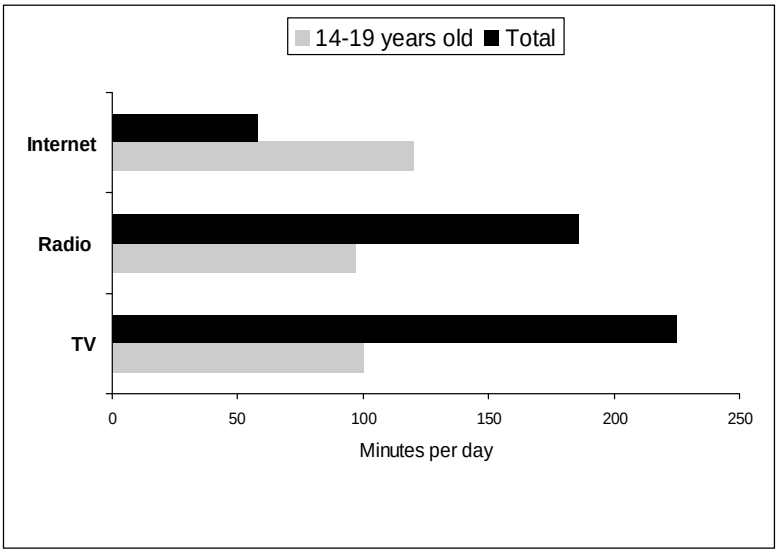

Figure 1. *Time spent with different media in Germany 2008. Source: ARD/ZDF Onlinestudie 2008, own illustration.*

Especially the consumption of news nowadays is more complex than some decades ago and we literally face a flood of different information which needs to be mastered on individual levels. As a consequence, news are rather consumed in bits and pieces or, as mentioned before, as a type of "information snack": a short article about the latest riots in Gaza is followed by a short sum up of Hollywood gossip provided by web sites of glamour magazines such as people.com. Personalization of content might offer a solution for this flood of very different information and interests. One of the most prominent examples of personalized news filtering is iGoogle through which the user can shape his browser's starting page accordingly to his interests. Hence, the flood of information can be directly managed alongside information satisfying other interests. Based on these observations we derived the following hypotheses:

- There is no actual decline in reading but merely a shift towards more digital media consumption.
- The increasing amount of news available gives way to the consumption of "news snacks".
- Intelligent personalization engines help to filter only subjectively relevant news out of the global information overload.

We tested these hypotheses using different qualitative approaches which will be described in the following section.

MATERIAL AND METHODS

In order to gain reliable insights on our research questions, we decided to apply a combined approach, not only in terms of the methods used, but also with regards to the recruiting of the respondents. In this context, we decided on conducting a Delphi survey as a first step, followed by focus groups and eventually a field trial, involving individual user interviews and the testing of a prototype for an innovative mobile news service. This three-part research approach also offers the benefit that the credibility and robustness of the underlying idea will be enhanced by converging the findings from these approaches.[5]

The topics of the different research approaches combined general questions on reading behaviour, user acceptance, discussions of potential pricing models for digital newspaper services and technical as-

pects regarding personalization. The goal was to gain useful and practical insights for our engineers and developers. This section will describe in detail the different methods used.

The Delphi survey

Applied for the first time by the RAND Corporation in the 1950s, the Delphi method is still used in different research fields to gain insights on very different topics, ranging from nursing to tourism or ecology, amongst others. In general, the Delphi technique is used for measuring and aiding forecasting as well as decision making.[6]

We decided to make use of the Delphi technique as a first step to gain insights on what experts think about the future of reading in Germany. Due to the fact that newspapers are affected most by the ongoing digitalization of content, we concentrated on the reading of newspapers. In this context, the Delphi method was applied to predict a trend concerning digital reading and its meaning in terms of digitalization.

Usually, a Delphi panel starts with an unstructured questionnaire which is followed by subsequent rounds with the aim to gain the most reliable consensus of an opinion of a group of experts.[7] All participating experts of our Delphi survey dispose of experiences in terms of digitalization in one way or the other and were recruited from the field of media/ new media, automotive, information & telecommunication technologies (ICT), universities and research agencies (see Figure 2). The aim was to address a pool of experts with well-founded knowledge on the topic, thereby, increasing the quality and predictive power of the results. In total, sixteen experts participated. They received a semi-structured questionnaire via e-mail which focused on the future of newspapers. The experts were chosen according to their experiences and were contacted by telephone and asked whether they were willing to participate. This way we wanted to ensure a higher response rate. They were then asked to anonymously fill in the questionnaire, unaware of the other Delphi experts.

Due to time restraints, we conducted only one round of questioning. However, the findings served as the main input for the next research step which was dedicated at addressing the average consumers and their opinion on newspaper reading.

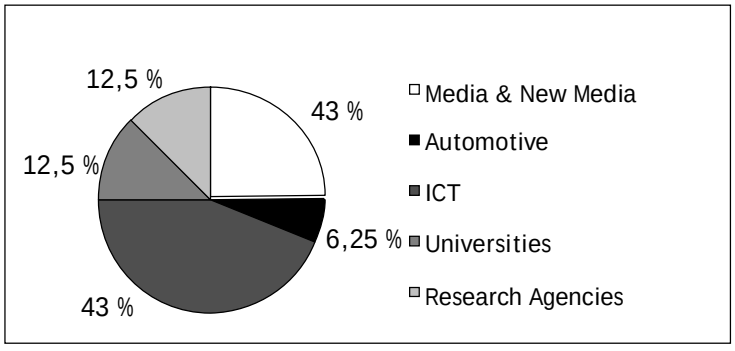

Figure 2. Overview of the Delphi participants (Industries).

The focus group discussions

The results obtained from the Delphi survey were then used to develop a semi-structured discussion guideline for our focus groups. Whereas the Delphi method was mainly used to gain expert information of the future potential of digital news, the focus groups aimed at discussing possible pricing models of digital news in comparison to the classic newspaper. We wanted to unveil the price users were willing to pay for (a personalized) digital news services. In total, we conducted four focus groups with a total num-

ber of 35 respondents.[b] For the recruitment of the respondents we decided to concentrate on the part of the German population which, on the one hand, reads newspaper on a regular basis and, on the other hand, is also accustomed to online news reading. In this context we made use of a segmentation approach that is widely used in Germany: The Sinus-Milieus®, a segmentation which is based on demographic variables (age, income, education, social status, etc.) as well as psychographic variables (such as political orientation, religious values, norms, etc.)[c].

Based on the Sinus-Milieus®, we recruited respondents from five milieus we identified as most likely to be interested in digital news technologies: the so-called *Well-Established*, the *Post-Materialists*, the *Modern Mainstream*, *Modern Performers* and *Experimentalists*. The following figure gives an exemplary overview of the constellation of the focus group participants recruited from the different milieus.

TN-Nr	Name*	Age	Marital status	Job	Sex	Usage of newspaper
1	Ulrich	39	married	Fund Manager	M	yes
2	Sylvia	42	married	Gourmet guide	F	yes
3	Anette	41	Single	Department Secretary	F	yes
4	Martina	43	Single	Self-employed Event Manager	F	yes
5	Volker	33	single	Sports Teacher	M	yes
6	Klaus	32	single	Off-the-Job Training	M	yes
7	Anne	38	Married	Part time in medical practice	F	yes
8	Carolin	45	Single	Customer Service Pharmaceutical article	F	yes
9	Volker	42	married	Sales and Distribution in medical science	M	yes
10	Mariella	45	Single	Cultural travelling	F	yes
*Names changed (Anonymisation through recruiting agency)						

Figure 3. Example of recruitment profiles for focus groups.

The focus group discussions had a total length of around 120 –130 minutes. To better visualize the concept of digital news in our focus groups we worked together with a design and user research agency that developed various paper based usage scenarios. The scenarios described specific usage contexts of digital news but also focused on the benefits and shortcomings of different end devices. We confronted the participants with a total of twelve scenarios, describing business contexts as well as private and leisure time contexts and tried to incorporate different end devices in these scenarios. Figures 4 and 5 are examples of the visualizations used by the moderator during the focus groups. Each scenario was discussed for about 15 –20 minutes. Three baseline concepts describing general ideas and features were discussed within all four groups. In addition we used segment specific usage contexts for ICT to account for a more fruitful discussion based on the varying likes and dislikes within each of the milieus.

[b] For the realization of the focus groups, we hired an external moderator. The evaluation itself was conducted by us behind the mirror wall. The focus groups were conducted in Frankfurt and Cologne, Germany in November 2007.

[c] More detailed information on the Sinus-Milieu Segmentation approach can be found on the official website of Sinus Sociovision, the company that developed the approach. An English description of each milieu is also available.

Figure 4. Example of scenario visualizations: The "always-on" business traveller.

For the visualization of the different end devices, more detailed drawings were used.

Figure 5. Example of functionality visualizations used in focus groups.

All focus groups were recorded on DVD for the analysis; in addition, the discussion protocols taken down by us were used for the internal research results report.

The field trial

From October to December 2008 we conducted the third part of our research activities. 28 in-depth interviews with three different consumer segments: representatives of the German telecommunications industry, especially Mobile Network Operators (MNOs), representatives of German newspaper publishing houses as well as regular newspaper readers. This research project was divided in three phases: [1] initiating interviews regarding expectations of personalized digital news paper services on mobile devices, [2] a three week field trial including user tests of the news service developed by our engineers combined with individual online diaries describing the usage frequency and experiences made. [3] Concluding interviews with the respondents regarding experiences made, expectations fulfilled and the require-

ments regarding the ideal mobile end device for the digital news service.[d] The recruiting was conducted by us, the interviews were held with the support of an external research agency due to time constraints.

The last part complemented the former research approaches which were rather abstract and concentrated on opinions on the future of reading in general and on digital reading in particular. The field trial emphasized the actual reading behaviour of our respondents and aimed at gaining valuable insights on how, when and especially why consumers make use of digital news. Diaries proved to be an adequate way of retrieving exactly this information. The main research questions concentrated on the context in which people read different kind of news. We assumed that people read printed newspapers in a different context than online news or mobile news. We also wanted to explore how people get along with online news and especially mobile news. How they assessed the idea of getting personalized news and the concept of reading news on mobile devices, such as their mobile phone or special reading devices like e-books, was also of interest to us.

The three different research approaches produced a vast and multifaceted amount of qualitative findings and gave detailed information on the potential future of newspaper reading. We will discuss these findings in the following section.

RESULTS

The experts' view – results from the Delphi survey

Even though E-Readers are slowly emerging on the market, so far the newspaper industry is hit the hardest by digitalization. Hence the Delphi concentrated on the future of newspaper reading in particular. The starting point of the questionnaire was the idea that digital mobile and personalized news could be received on certain end devices, e.g. on smartphones. In this context, the experts concentrated on three main aspects which they associated with a mobile newspaper: the end device on which to read the news, personalization, and payment. Generally, the thought of a mobile and personalized newspaper was evaluated ambivalently. On the one hand digitalization can represent the future of the newspaper and publishing houses will have to take this step in a way the music industry already did. Especially bigger music companies like Sony offer songs in digital file format online, e.g. as mp3s, for downloading instead of selling only CDs.

Personalization could account for individualization and, at the same time, imply an alleviation in managing the information overload. Furthermore, personalization itself is not new to the experts and consequently they supposed that personalized news offers an extension of already existing services like *iGoogle*. Respectively, the matter of personalization was discussed most controversially: On the one hand, it is an ease of work, on the other hand experts assumed that interests are far too versatile for any personalization engine to cover all interests in a satisfying way, or, as one of the experts put it: *"You can't personalize something you don't know."* On the contrary, personalization of news could be just the next logical step: *"The user reads different web sites on the Internet anyways"* and getting custom-tailored news without having to scan different web sites and different newspapers seems to be just what *"some people might be waiting for."* In this context personalized mobile news would also allow for much more independence, autonomy, flexibility and a better availability compared to any other printed newspaper or online news which is bound to a (stationary) computer.

Regarding the end device the question arose whether customers would rather use an already existing device, such as their mobile phone, or a special device designed exclusively for the purpose of reading news. In this case, there was no notable consensus amongst the experts and views strongly dispersed: On the one hand, reading on a mobile phone appears to be rather uncomfortable; the display size plays a big role when it comes to reading and a mobile phone's display is perceived as too small. On the other hand, the experts argued that most people already have a certain amount of digital devices, e.g. mobile phones,

[d] We tested a prototype for a personalized mobile news application on the *iPhone* which was developed at Deutsche Telekom Laboratories. For this purpose we equipped the respondents each with an *iPhone* and the news application which they evaluated in the course of the Field trial.

PDAs, mp3 players, laptops etc. They assumed that people might not be willing to buy yet another device and carry it around with them. Nevertheless, the experts stated that they see great potential in special end devices as soon as electronic paper will enter the market which will also be able to combine the advantages of web 2.0, emphasizing community aspects in an intuitive way. Also, flexible electronic paper would give users a similar haptic impression, comparable to that of a printed newspaper.

In sum, the experts took a shift in reading behaviour from printed newspapers to digital media for granted and presumed that people are most likely to prefer obtaining their news from the Internet. Recent developments in the USA seem to confirm this trend and according to a study conducted by the PewResearchCenter in Washington DC in 2009 more Americans than ever retrieve their latest information from the Internet and not from printed newspapers.[8] Our focus groups critically contrasted these expert opinions, as the following section shows.

Focus groups – the results

The sample used for the focus groups was chosen according to two different major characteristics: When conducting research in the field of technological innovations it is important to consider target groups which dispose of higher affinity towards technology than the average population. In this case it was also important to involve target groups with a general inclination towards reading. Hence, the sample represented a combination of respondents who, on the one hand, dispose of a positive attitude towards modern technology and, on the other hand, are interested in journalistic information, especially newspapers.

It has to be taken into account that the focus groups took place in October 2007 and mobile news was not as popular at the time. The discussion therefore represented a rather vague topic to some of the respondents. Highly digital affine users already used mobile news offers but not to a great extend. The *iPhone* with its bigger screen, which represents a milestone in reading on mobile devices, had just entered the German market and consequently, reading news on the go appeared to be uncomfortable and restrictions in terms of the display size were anticipated by the respondents. Also, mobile news offers were not as versatile as they are today. Most newspapers were already present on the Internet but only a few also provided mobile news services optimized for smaller displays. Reading news on the Internet on the other hand was quite common especially amongst the affine ICT users but also with the well-educated Mainstream. Most participants already made extensive use of online news. The desire of being well informed was fairly high, especially in a working context. The actuality of the Internet therefore directly satisfies the need to always be up-to-date. In contrast, the actuality of a printed newspaper is limited to a certain period of time, whereas information on the Internet is always the latest information. Or, in the words of one of the participants: *"You can't beat the actuality of the Internet!"* However, respondents also stated that printed newspapers appear to be more authentic: *"My newspaper still has the appeal of character or better quality. The Internet is elusive."* Nonetheless, information search seems to be more convenient on the Internet, an issue that is especially supported by the fact that most of the respondents already used services like RRS-Feeds, clippings, press reviews etc. Whereas the Internet increasingly evolves to a medium of everyday life in terms of reading, the newspaper is slowly pushed towards a medium of leisure time. However, newspaper reading is a well established habit and ritual which is associated with cosiness. One respondent even stated that he loves *"to lie on the floor with the Sunday newspaper spread around me. That is a kind of luxury."* In this context, none of the respondents imagined that printed newspaper would vanish in the future. A newspaper is enjoyable but it also demands conscious reading and time. In contrast to a printed newspaper the Internet is an open information space in which news are not limited to a specific amount of printed pages but are continuously updated. Reading could go on forever, which might lead to a loss of orientation. Taking this aspect into account, personalized news presumably represents an effective way of managing the unlimited information and elusive character of the Internet. Instead, personalization is perceived as a paradox: On the one hand, a personalized news service was rated as fascinating and time saving. On the other hand, respondents commented on personalization in a very critical way and expressed objections which are quite similar to the experts' comments. Some respondents feared a loss of control and did not feel comfortable when it comes to

trusting a "machine" with the selection of relevant news. Flexibility and diversity of information was extraordinary important. At the same time the diversity of the Internet can easily overstrain the user when it comes to selecting individually important and relevant information.

The digitalization and mobilization of news led to a discussion on possible end devices. The end device was seen as one crucial aspect because it represents the medium of news. Discussing mobile news without paying attention to a possible device appeared to be abundant. Without the device such a service is a rather theoretical and abstract "concept".

Field trial – the results

The field trial was conducted in November and December 2008 and by this time the *iPhone* was well accepted in Germany and the first E-Readers had already entered the market. Due to these technologies the future developments of reading were a lot more tangible and not as abstract as in 2007. By now E-Readers can be bought in bookstores and these developments support the trend towards digital reading. Remarkably, the respondents differentiated more precisely between the three different types of media, print, online and mobile news and perceived mobile news as an independent category. Furthermore, all three media types were characterized in a very distinct manner.

The image of printed news as a more authentic and trustworthy source still prevailed. Newspaper articles were associated with high quality journalism due to the belief that they are a lot better researched and based on solid facts. Newspapers were also seen as a way of distinction, for example reading a certain newspaper in the subway can be a clear statement for ones' political opinion. Additionally, printed newspapers have the clear benefit of also providing the reader with local content which is rather hard to find on the Internet. In this context, online news gives a quick overview on what is happening in the world but to get the latest local news users have to know where to look for those. This finding reaffirmed the rather elusive and volatile character of the Internet, as already mentioned in the focus groups. Yet, the Internet allows reading different sources, a possibility which is not given by the "traditional" newspaper: the information comes from just one source and might be single-edged. In addition, the access to information is limited to the newspaper at hand and comparisons with other sources are only possible if different newspapers are bought. Moreover, the actuality expires very fast: what was written in the newspaper in the morning can already be outdated by noon. Unlike newspapers, online news is always up-to-date and offers a wider range of information in terms of different opinions and illustrations of one topic.

However, respondents differentiated in terms of mobility and stated that online news are usually bound to a (stationary) computer and in this instance mobile news appeared to be more convenient and efficient with regards to optimizing idle time, e.g. while waiting for the bus or at the waiting room. In this context, a printed newspaper appeared to be as flexible as mobile news but did not combine the advantage of offering different opinions. Consequently, mobility was not only defined as "portability" by the respondents but also as the possibility of reading different sources at once. Mobile news as well as online news is considered to be a lot less profound than printed news from the consumer's point of view. Moreover, mobile news is always bound to a rather small device, e.g. a mobile phone, which causes reading to be less comfortable.

The question of costs also arose and from the respondents' point of view pricing models for mobile news were intransparent. Ways of payment were not intelligible for the respondents. People are used to a certain way of payment, either through subscription to a newspaper or through buying it at a news kiosk. In any case the costs are transparent and standardized. In terms of mobile news, it is unclear whether users also have to pay for some kind of subscription besides the fees for the data transmission.

With regards to personalization, the respondents had a much clearer understanding of what was meant by this term. Consequently, expectations were quite high and a good personalization engine should at least offer the news which is based on individual interests. Transparency was one of the most important aspects requested by the respondents. If personalization fulfils these demands it is seen as alleviation. In this context, fears of loss of control as well as the feeling of missing certain information were still dominant. However, respondents verbalized these topics more explicitly, leading to the assumption

that services like personalization were more tangible than just a year ago. Services like iGoogle and other custom-tailored web sites make personalization more tangible and the respondents had a clear understanding and opinion on this topic.

During the field trial respondents were asked to document when and where they make use of mobile news. Interestingly, most of the respondents stated to use mobile news at home. Only few of them were reading while travelling or at public places. The online diaries also illustrated that reading mobile news seemed to be more superficial and timeframes of usage of up to ten minutes were prevalent. Mobile news serves as a quick overview but more detailed information can be retrieved from either the Internet or the printed newspaper. Mobile news closes a time gap and can be characterized as a welcomed additional offer to the other two media types.

Regarding our hypotheses, the shift from analogue reading towards digital reading can be diagnosed but this does not imply that analogue reading looses its importance. Using the Internet as information source has become an inherent part of everyday life for a large percentage of the German population. However, the results also show that there are certain resentments in terms of new media: The Internet presents a huge variety of information and many of the respondents found it difficult to choose relevant and especially trustworthy sources of information. Consequently, at this time it can be estimated that printed newspapers will not vanish in the near future. It rather seems that people consume digital news during the week in order to save the scarcely available time but resume reading traditional paper news during the weekend as a type of leisure time activity.

However, especially developments in the USA plead for a shift towards a general digitalization of newspapers: In 2008 the number of the Americans retrieving their news from the Internet increased by 24%. At the same time the circulation of US newspapers decreased by 46% in 2008. News reading remained important to the American citizens participating in this survey but most of them were just not willing to pay for this news any longer due to the wide and free availability of news on the Internet.[9] The same trend is notable in Germany: The number of people using the Internet as their main source of information increases, the circulation of newspapers decreases. However, the shift towards mobile news consumption can only be diagnosed for a rather small number of participants.

Reading a newspaper transformed into an almost cherished and groomed ritual during leisure time and serves as a way of recreation. But when it comes to getting the latest news and a quick overview, the Internet seems to be more convenient.

With regards to personalization the results were rather ambivalent: On the one hand, personalization is a welcome alleviation when it comes to choosing between subjectively relevant and irrelevant information. On the other hand, many of the respondents expressed some sort of "big brother feeling" of being observed and of having the news chosen for them. In this way, respondents were quite aware of the fact that personalization could help them in managing the flood of information but the fear of loss of control still outweighed the advantages of personalization.

Although the Internet is more versatile in terms of opinions and illustration of facts, the general attitude towards online news is that they are not of the same high quality as print journalism. Especially mobile news tends to be rather brief and condensed. As a result, the major part of the respondents stated that printed articles were of higher value to them with regards to research quality and depth. At the same time online news and mobile news were as untrustworthy and apparently this is only due to the fact that articles have the tendency to be shorter. These observations illustrate a rather paradox situation: On the one hand, the respondents appreciated online news for giving them an overview at a glance as well as for the amount of digestible news – "news snacks" enable them to easily stay up-to-date. On the other hand, the tendency towards a general "snack culture" is anticipated as less profound and in-depth. The advantage is a disadvantage at the same time and the alleviation goes hand in hand with a feeling of not being "entirely" up to date.

DISCUSSION AND CONCLUSIONS

In order to assess the shift in reading behaviour in Germany, we applied a methodological mix of qualitative user research methods between November 2007 and December 2008. The topics we addressed were the acceptance of digital news as such, new reading devices like smart phones and E-Readers, the acceptance of intelligent personalization engines and possible pricing models for digital news services. The results presented herein indicated that a shift as such can not yet be noted regarding mobile news consumption. More Germans tend to consume news on their PCs through the broad portfolio of online news services, such as *Spiegel Online*, *Financial Times Deutschland (FTD)* or the *Frankfurter Allgemeine Zeitung (FAZ)*. In recent times *Blackberry* and *iPhone* user can occasionally be spotted, reading digital news on their smartphones. However, the media in these cases mostly represents the exact same offer regarding content that the respective websites do. No personalization functionality is integrated in the service and consumption is free of charge. Merely fees for data transmission have to be paid but they are usually part of the mobile phone tariffs used.

Through this study valuable insights could be gained regarding the consumption behaviour of German newspaper readers. However, we are also confronted with major shortcomings. As always the case with qualitative work, generalisable assumptions regarding the German society were not possible due to the lack of representative data. In addition, the Delphi survey consisted of a relatively small sample (n=16) and was not designed to be a panel as such, since our experts were only questioned once. This was also due to time and budget constraints. By applying a methodological mix, we tried to reduce the shortcomings of each individual approach.

Another important issue is the fact that the developments in the field of digital news have progressed at an enormous speed in the mentioned time frame. Within one and a half years (November 2007 – March 2009) an entirely new player entered the field, revolutionising the market for digital news and eBooks. The e-reading device called *Kindl* which also came to be known as *"Amazon's iPod."* In February 2009 Amazon introduced the second generation of the *Kindle*, lighter, more intuitive and with more functionalities. Other providers now aim at entering the market, amongst them the German Company *Wizpao* with its reading device called *txtr.* The *txtr* comes with a community function enabling its users to rate and share articles on the company web page, taking the digital news and book consumption one step further. In addition, *Amazon* as well as *Wizpao* has opened up their technical distribution platforms enabling *Apple's iPhone* to also participate in the new distribution channel.

These rapid developments show that measuring the experiences made with digital news services and end devices is difficult and insights obtained can hardly be considered up to date. By the time we conducted our expert and user interviews, the perception of these devices was rather negative because most users did not want to have an additional end device to carry around merely for the purpose of more comfortable reading. In addition, most users were not able to fully imagine the potential of eReading devices or devices such as the *iPhone* or the recently introduced *Blackberry Storm*. Our interviews conducted in 2008 already showed a different trend and more people were willing to consider these devices as an option for future reading activities.

The mere fact that more of these devices are constantly introduced to the market and the ways in which they are advertised show that yet again a different perception of the future reading habits seems to develop and that those dreadful mentioned coffee stains on touchscreens or at least eInk screens will not be as unlikely as first studies have suggested at the end of 2007.

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ENVIRONMENTALLY SIGNIFICANT CONSUMPTION

A MODEL FOR 'WISHFUL THINKING' IN ENVIRONMENTAL PROBLEM SOLVING

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ABSTRACT – This paper describes preliminary outcomes from an ongoing research into a potential futuring model for 'wishful thinking' in environmental problem solving contexts. Provisionally titled 'eco-future design', this practice works by enlisting preferred ecological future narratives and myths as a means to generate and implement solutions to environmental problems. By building on theoretical precedents from existing preferred futuring models and using examples from contemporary case studies, this paper will explicate this tentative model and discuss a range of issues that emerge from its implementation. The aim is not to draw conclusive findings, nor outline a fixed methodological framework. Rather, it explores emerging futuring practices and offers a speculative narrative that describes the potential they present.

THE PREFERRED FUTURES DEFICIT

There is an increased awareness of human impact on the environment, however, the rate of environmental degradation is still on the rise. Over a hundred species are still becoming extinct everyday[1], one and a half acres of rainforest is still disappearing every second[2] and in the UK, we are still generating over 100 million tons of waste each year[3]. De Geus[4] links these problems to a lack of ideas concerning how to deal with environmental problems and the future of our society[4]. Although one could disagree that we lack ideas, his connection between environmental problem solving and the way that futures are imagined is an important one. This connection is taken one step further by Pronin et. al.[5] who posits that the temporal distance in decision-making creates potential strategies for addressing human impact on the environment.

There is also mounting research which suggests that the way in which we perceive the future has a significant influence on the choices we make. It affects our values, attitudes, coping mechanisms, expectations[5] feelings, motivations and behaviours[6]. The very act of articulating a future presents a tendency and inclination[6,7] which increases its likeliness of occurrence[8,7]. Unfortunately, most of our ecological future narratives are ambiguous or inherently pessimistic. For instance, one of the most popularised means of living within nature are 'sustainable futures' but this vision lacks clarity or a consensus over what it means to live 'sustainably.' Moreover, a proliferation of 'sustainability' definitions[9] leave some to regard it as a landfill dump for everyone's environmental and social wish list[10]. Its proponents will often have to re-define what it means before embarking on its application, resulting in a movement that lacks a unified or cohesive effort.

Other prominent ecological future narratives come in the form of environmental disaster models such as global warming[11,12], population explosion (Thomas Malthus (1766–1834); Paul R. Ehrlich (1932)) and nuclear catastrophes[13]. Although, the messages of environmental risk could be effective in relaying seriousness and immediacy, arguably, they are also in danger of breeding hopelessness and fatalism.

Beck[14] characterises our way of coping with ecological issues as one that is enmeshed in apocalyptic visions, which ultimately results in a sense of powerlessness. While, a UK public perception research study on the public engagement with 'The Environment'[a] conducted at Lancaster University indicated that people perceive the environment to be a single totalising entity that is 'out there,' enabling them to remain emotionally distant, despondent and in a state of resignation. High levels of non-engagement are further exacerbated by the lack of faith in the institutions tasked with combating the problems[15]. The

[a] 'The Environment' as a way to describe a broad range of environmental problems (Macnaghten, 2006).

Lancaster University research also revealed that people are choosing not to dwell on ecological problems by using reflexive strategies of non-engagement with global issues including the future[15].

Another issue is the apparent lack of desirable alternatives. Tokar[16] considers that issue-oriented politics without an alternative vision can be politically limiting and personally frustrating, and although many people are uncomfortable with the way things are, they are not motivated to act on their beliefs because they see no other way. One could argue that a combination of risk, uncertainty and pessimism presented in some prominent ecological futures[b] have, in part, encroached on our readiness to imagine new possibilities. Could it therefore be possible to produce a set of different outcomes by providing engaging, lucid and optimistic alternative ecological future narratives?

The following sections of this paper will detail an exploratory first step in outlining how a process of imagining and implementing alternative ecological future narratives have been put into practice.

The subsequent accounts are situated within the context of design. 'Design' in its most democratic sense; design as the ability to imagine and achieve desired outcomes. This is with particular reference to how it enables us to express, shape and construct the world around us through the articulation of future possibilities.

THE RESEARCH DEFICIT

Although authors have noted the importance of futures to behaviours and actions in the present[5,6,8], the use and importance of preferred futuring[17] and it's potential application in design practice (Buckminster Fuller (1895–1983), research has not yet explicitly combined or explored design, temporality and preferred futuring in an ecological problem solving context. It can therefore be argued that there is a need for research to identify and build upon the potential presented in the combination of these topics.

THE TEMPORALITY DEFICIT

> *"The whole notion of change relies heavily upon a conception of temporality"*[18]

Tony Fry[19] is one of the few authors who are critical of our inability to project actions in time. Particularly in design and architectural professions, which he asserts, have a poor sense of time as most of their preoccupation is with matter, form, function and space[19]. One might add that this problem is not unique to designers as other professions also have restrictive and potentially counter-productive temporalities. In other words, if governments continue to think in four-year election cycles, businesses work from one financial year to the next and stock markets re-start everyday, what type of change is possible?

This brings us to consider the next question; which timescales are appropriate when thinking about environmental problems? Authors such as Michael Hanlon[20] suggest that it is always useful to conceive futures in a generational paradigm, because we find it easier to think of futures in terms of our children and grandchildren's lifetimes. Others call for more immediate time frames for change. For instance, in his book, *The Meaning of the 21st Century*, James Martin[21] postulates that the decisions we make in the next 20 years will determine the fate of the earth and human civilization for centuries to come.

More specific time frames for thinking about ecological futures are proposed in other contexts such as the Melbourne 2032 project. Founder of the initiative, Chris Ryan[22] argues that 25 years is an optimal time frame that has several advantages when considering preferred ecological futures. He posits that a 25 year horizon is useful because it encompasses the critical period for climate action, as projected by the IPCC; it is far enough beyond the usual planning cycle for business and government that it allows engagement without too much concern about existing policy commitments or intellectual property; it is long enough that real transformation of infrastructure is conceivable and it avoids the problem of 'science fiction' that can make future projections meaningless[22].

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[b] *Ecological Futures* is an attempt to encapsulate different constructions of the future that imagine how we will live, interact and survive in nature.

While co-founder of the Long Now Foundation, Stewart Brand[23] is critical of what he describes as a culture that is configured to short-sightedness. He further posits that this level of short-sightedness is the source of most modern environmental and economic problems. In order to encourage long term thinking, the Long Now Foundation is in the process of developing a clock that will count down the next ten thousand years. However, one might ask how ten thousand years reconciles itself to a planet that is 4.6 billion years old? The last time climate change happened was approximately 55 million years ago and it took 1000 years to recover from the level of elevated carbon after the extinction of dinosaurs. Hence, one could even question if notions of manageable anthropocentric temporalities are appropriate in the context of some ecological problems.

Perhaps the ultimate paradox of any discussion about new temporalities is that we can never really know which timescales are the best until after the critical period is over and we have the benefit of hindsight. Nevertheless, facilitating new ecological temporalities will require more progressive notions of time, particularly if we are going to counteract issues of shortermism and restrictive linear views of time.

PREFERRED FUTURING IN THEORY

The following sections will consider existing models for 'wishful thinking' that provide frameworks for imagining and using idealised future states as a means to steer problem solving (or solution finding) processes. These models set an important theoretical precedent and a reference point for the practice that will later be described in this paper.

Developed by Buckminster Fuller, *'comprehensive anticipatory design science'* or *'design science'* is a broad field that attempts to reframe the process of problem solving into a holistic, systematic and comprehensive procedure[24]. This concept has been continuously developed throughout Fuller's career and encapsulates his scattered yet distinctive philosophies. It also highlights some of Fuller's speculative thinking about humanity's ability to shape its own evolution by using notions of 'best possible futures.'

Based on Fuller's work, Gabel et. al.[25] comprised a list of what they call *'10 Principles For Comprehensive Anticipatory Design Leadership'*: (1) Think comprehensively; (2) Anticipate the future; (3) Respect gestation rates; (4) Envision the best possible future; (5) Be a "trim tab"--an individual who can initiate big changes; (6) Take individual initiative; (7) Ask the obvious and naïve questions; (8) Do more with less; (9) Seek to reform the environment, not people; (10) Solve problems through action.

It is not in the scope of this paper analyse all of the points presented in the list above, however, the most interesting and relevant point to pull out is principle (4) Envision the best possible future. In the context of Fuller's work and philosophies, Gabel et al.[25] suggest that rather than simply predicting the future, Buckminster Fuller always tried to envision a preferred future state. Ben-Eli[24] also suggests that the concept of 'preferred states' is key to Fuller's comprehensive anticipatory design science approach because it takes the process of problem solving into the creative realm of imagining entirely new possibilities. He also points out that the 'ideal state' may be defined as a general condition rather than as a precise end point and this would lead to an adaptive, self-organising 'becoming-as-you-go' process.

Lawrence Lippitt's[17] *'preferred futuring'* theory describes a similar process that is geared towards business contexts. His simple self-explanatory model is based on three stages. (i) *Define the now state*; (ii) *define the preferred state*; (iii) *create an action plan of how to get there*. Lippitt[17] purports that preferred futuring is a different paradigm to traditional problem solving processes because it provides a destination rather than a solution, a sense of context rather than a list of problems and engages with whole systems rather than trouble spots.

This strategy of 'shaping futures' has become commonplace in business problem solving activities with the work of practitioners such as John Hoyle[26], Edward Cornish[27] and Liam Fahely[28]. There have also been community-based versions of preferred futuring in the form of *'community visioning'*[29] and *'future search'*[30].

One advantage of using a *'preferred state'* is that the focus shifts from existing constraints to optimising a future condition[24]. Also, by starting with a desired future state, it becomes possible to bypass

shortcomings that stem from traditionally accepted models of targeted problem solving procedures, because it begins from the broadest possible perspective.

ECO-FUTURE DESIGN IN PRACTICE

Eco-future design is a potential practice that builds on existing preferred futuring models and based on an ongoing research analysis into representative cases. The model itself describes a process that seeks to exploit our capacity to imagine and articulate preferred outcomes, which in turn mobilises action and creates an opportunity for the visions to embed themselves as possibilities in reality.

Environmental issues are uniquely "wicked problems" i.e. they are difficult to solve because of complex interdependencies, incomplete and contradictory information, and based on unrecognisable yet continuously changing requirements[31]. Thus, we need a method that enables us to think beyond existing societal models. As opposed to the current approach of *"endlessly treating symptoms of a much deeper problem that is both out of sight and out of control"*[32].

While the use of *'practice'* is to reflect the focus on the actual application of an idea rather than theories about how it could be applied. For this reason, three case studies will be used to provide examples and explicate eco-future design. The first case study is 'Cradle to Cradle', a design philosophy that proposes a future in which we no longer produce waste[c]. The second case, Transition Towns, is a community initiative that tries to imagine and execute a form of post-oil existence that deals with the twin challenges of peak oil and climate change. The final case study is the Melbourne 2032 project, which invites professionals and academics to envision "glimpses" of what an ecologically sensitive Melbourne could look like in the future. All three case studies are united by their explicit use of preferred future states as a way to help them think beyond existing systems and societal frameworks. As such, they provide the basis for the 'wishful thinking' narrative that will be presented in the succeeding sections. For conceptual simplicity, this narrative has also been broken down into a manageable step-by-step account, which forms a loose theoretical framework that depicts the major stages, which are: wishful thinking, opportunity finding, effectuating, evaluating and celebrating.

Wishful thinking

This stage is about imagining preferred versions of the future. It is a platform for experimenting with mental models and a transcendence of the present.

A noticeable consistency in almost all existing preferred futuring models is the requirement to review history and identify trends before exploring the future. In the future search model[30], it is necessary to recall the past and appreciate the present before visioning the future, similarly, Lippitt[17] asks us to define the present state before the preferred one. However, eco-future design starts with the dream before having to deal with restrictions laid on by historical and present socio-economic conditions.

An illustration of this is the Cradle to Cradle practice which starts its design process by evoking vision statements. "Imagine a world without pollution and waste: products are made from materials that are beneficial for humans and their surroundings. Imagine a world where humans can be glad that their actions benefit those around them and the constraints to reduce, minimize, and decrease according to the current "Cradle to Grave" paradigm are a distant memory." (The EPEA Vision Statement[d])

Further detailing of this vision begins to point towards achievability by suggesting that it would be possible for "waste to equal food" within closed loop design and economic processes, hence, in a cyclical 'cradle to cradle' motion that is in opposition to the present 'cradle to grave' model.

This initial outlining of a specific ecological future state is also present in the Transition Towns case study. Founder of the movement, Rob Hopkins[33] considers visioning to be a critical component of their relative success and argues that an effective transition can only be achieved once they have a clear

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[c] This type of thinking is also well acknowledged in other disciplines such as Industrial Ecology. However, the particular interest with Cradle to Cradle is their explicit use of future states to make this dream a reality.

[d] The EPEA (Environmental Protection and Encouragement Agency) is a consultancy founded on the principles of Cradle to Cradle.

idea of what the outcome will look like. Accordingly, Transition communities create alternative myths and narratives that are articulated through a variety of different mediums. For instance, Figure 1 is an imaginary newspaper article from the year 2011. It is one of many unattributed 'future' newspaper articles featured in the Transition Handbook (Hopkins 2008, p. 105-121)[33].

Oxford Times 15th March 2011

TAKING THE P★★★!

"We stopped being squeamish and started being practical." By Paul Haig

VISITORS TO OXFORD this year may notice that things have changed a bit since their last visit . . . at least they will when they go to the loo! The city's public toilets and several of the hotels have installed urine-separating toilets. The loos themselves don't look very different from what was there before, indeed the urinals are almost identical. It is what happens after use that they may be wondering about.

The new set-up is the initiative of N • Pee • K, a new Oxford-based initiative. Why would anyone want to collect the liquid doings of the town? N • Pee • K director Imelda Platt explains: "With North Sea natural gas almost entirely depleted, nitrogen fertiliser production is being hit hard. Nitrogen is essential for our farming community, and is becoming unaffordable. The average human produces roughly the same amount of nitrogen in their urine as agriculture requires to grow their food. We decided to stop being squeamish and start being practical."

Each participatory institution has a large sealed tank, reminiscent of the home heating oil tanks some of you may remember from a few years ago, tucked discretely behind the building. The tank is emptied every two weeks, diluted and sold on to local farmers. Platt calls her product 'liquid gold'. "When I approached all these places five years ago and asked to buy the rights to their urine, they thought I was mad," she said. "We paid to install the loos, it was an investment that had paid back within six months. This is a business with a future," she concluded. "We aim to continue expanding. Unlike natural gas, there is no danger of our raw material drying up!" [26]

Imelda Platt proudly displays her company's 'Liquid Gold', harvested from Oxford's pubs and hotels, which has led to N • Pee • K becoming the city's fastest growing business in 2010.

Figure 1. Newspaper Article from the Future

It is interesting how these expressions present 'pockets of futures' that embed themselves as possibilities in the present. Figure 2 is a real newspaper article about the Transition Town in Lewes, UK. What is particularly striking is how the article (below) could have been something that emerged from one of the 'transition-myth-creation-processes'.

28 METRO Wednesday, September 10, 2008 www.metro.co.uk

Town that's printing its own money

BY FRED ATTEWILL

IT'S one way of beating the credit crunch – print your own money.

Which is exactly what one historic market town has done to try to protect its economy and encourage people to shop locally.

Traders and residents in Lewes, East Sussex, yesterday saw the launch of their own pound note. Up to 10,000 Lewes Pounds have been printed, each with a face value of one pound sterling.

The notes can be purchased from four outlets in the town and are redeemable in most of its shops.

'The idea is to encourage as many local people as possible to shop locally,' said town mayor Michael Chartier.

'Lewes has a tradition of small shops and hasn't got a large number of major chain stores that other towns have. It has traditionally been the small shops that have given Lewes its unique appeal.'

The scheme is a step back into the past for Lewes, which had its own currency between 1789 and 1895. It will operate for a year before being reviewed.

Oliver Dudok van Heel, of the Lewes Pound group, said: 'You'll always need a national currency, but it's a question of promoting what can be done locally.'

Complementary currencies are already operating elsewhere.

In Totnes, south-west Devon, local money has been running for a year. The US town of Berkshire, Massachusetts, has 1million Berkshares in circulation.

Figure 2. Newspaper Article from the Present

An alternative means of wishfully thinking about future possibilities is scenario planning. One of the groups within Transition Towns Totnes[e] called the EDAP (Energy Descent Action Plan) group, used scenario planning to come up with a vision of what they call the "Enlightened Transition": *Resilient Communities. Strong community response sustains an even economy. Investment from all sectors enables development of broad range of renewable energy supplies. Local suppliers overtake supermarket chains in sales. Massive decline in imports and exports. Cycle lanes replace car lanes. Electric buses and trains run on renewable energy. Smart homes with zero energy, emissions or wastes. Community gardens, allotments, orchards and woodlands are part of everyone's life. 4 day working week. Higher employment levels. Happier, fitter and more skilled society* [34].

Similarly, the Melbourne 2032 project also envisions possible ecological future states. Figures[f] 3 and 4 are examples of the ideas and questions that are coming out of their practice.

[e] The very first Transition Town initiative that started in a small rural town called Totnes in Devon, United Kingdom.

[f] Images available from www.ecoinnovationlab.com

Figure 3. Knotting In Ceres: What if houses grew the energy they needed?

Figure 4. A 100 Year Tent (3007): Is the most enduring solution the least permanent one?

Opportunity finding

This stage is not necessarily about feasibility or practicality but looking for opportunities in present systems that can make the original visions possible. The amount of detail in the initial wishful thoughts can begin to suggest possible pathways.

The Melbourne 2032 project has an interesting approach to this. They use their initial visions to take a retrospective look from 2032 as a way to explore which points to intervene in the system. The following excerpt is from a retrospective future essay by Chris Ryan, supposedly from the year 2032. *'Hindsight shows that there were other more significant, more diffuse, dynamics at work that influenced change. Following a well understood pattern in technological and social development, it is clear that the shape of Melbourne over these past 25 years was affected by a 'disruptive paradigm' that was to fundamentally change ideas about the organisation of systems of production and consumption, and the infrastructure needed to support sustainable economic activity* [35].

Transition Towns also use a retrospective sense making method. This is done with a series of theme related public workshops that help them consider ways to make visions attainable. In each workshop, participants are put into small groups, and asked to imagine ideal situations in the year 2030. They are then asked to backcast their way to the present in order to see what milestones need to have been

achieved at points between now and 2030. People are encouraged to discuss how visions could be achieved in specific terms of who, how, where and when (year). These public workshops then become the basis of the creation of the communities 'broader aims and strategies.

Effectuate

The visions that have been created and pathways identified need to be acted upon. The Transition Town in Totnes have manifested their visions in several different ways. Some of their most infamous and unconventional solutions include the Totnes Rickshaw Company, which is a community-led initiative that provides transportation through a motorised rickshaw powered by locally used cooking oil. Another actualisation is the Community Health and Wellbeing Gardens, which are used for therapeutic gardening and educating people in horticulture as well as teaching them how to grow food. Perhaps the most well known materialisation of their visions is the production and distributed their own local currency; the Totnes pound. Brangwyn and Hopkins[36] suggest that a self-sufficient community is one way to counteract globalised debt based systems as it helps to create a resilient local economy. This fiscal experiment has also proven to be relatively successful. At the time of writing this, over fifty local businesses have signed up to accept the Totnes pound.

Cradle to Cradle is also another interesting case. Their vision of a world without pollution and waste has been put into practice through a design partnership with the Herman Miller Company. This partnership lead to the creation of Herman Miller's first Cradle to Cradle product; the Mirra Chair. The chair was built on the principal that all of its materials must be safe for human and ecological consumption, produced from recycled materials, easy to disassemble and easy to reuse for another product of similar or better quality[37]. This chair was developed in 2003 and went on to become one of Herman Miller's best selling products.

Evaluate

Evaluation is area worthy of considerable theoretical exploration but has received relatively scant attention within the green movement. The question of how we measure the 'effectiveness' of green ideas is often regarded as non-problematic. However, appropriate measurements are a critical part of producing efficacious outcomes.

The illustrative cases that have so far helped typify a possible eco-future practice, will be used again to narrate possible approaches to evaluating outcomes.

Transition Towns enlists its original visions to set and establish some 'success indicators'. For instance, the proposal for a 'resilience indicator'[g]. This model is still under development, however, the following list is an indication of the type of things that it will measure:

- Percentage of food grown locally.
- Amount of local currency in circulation as a percentage of total money in circulation.
- Number of businesses owned locally.
- Average commuting distance for workers.
- Average commuting distance for people living in the town but working outside it.
- Percentage of energy produced locally.
- Quantity of renewable building materials.
- Proportion of essential goods being manufactured within the community.
- Proportion of 'compostable' waste that is composted.

Another potential means of evaluation can be through external recognition. As an example, the Mirra Chair was designed to meet a Cradle to Cradle ideal but it also went on to win a plethora of awards such as the Good Design Award[h] and Silver Award[i]. In addition to this, the *Environmental Building*

g Proposed by (Hopkins, 2008, p. 174-5).
h Award received from the Chicago Athenaeum Museum of Architecture and Design 2002/2003.
i Award received from the Industrial Design Excellence Awards (IDEA).

News magazine named the Mirra chair one of its top 10 best new "green" products. Hence, this product has been judged on a range of issues including form, function, aesthetics, profitability as well as its environmental impact.

However, one can't but help wonder whether these forms of evaluation are enough. If we are going to imagine new possibilities and new paradigms, traditionally accepted measurements such as biodegradability, recycleability and efficiency may not be enough. Perhaps we need to consider new categories. This list could range from ecological purpose, replicablility, self-efficacy, 'eco-replication'[i], self-sustainment to auspiciousness and flow.

The challenge for better measurement tools is perhaps not something that should be discussed in abstract terms but as something that is both a continuous and emergent part of the practice under exploration.

Celebrate

The final yet essential part of this process is celebration. In Totnes, each milestone is celebrated because it provides them with the opportunity to re-energise, reflect, strengthen partnerships, publicise the work they have done and prepare for the next stage of the journey.

CONCLUSION

Primarily, eco-future design is about using futures to transcend present boundaries by exploring ideas from a 'safe distance.' The objective is to facilitate cognitive, creative and emotional freedom in a way that opens up opportunities for change. Social transformation occurs when a critical mass of people embody and enact a vision. Desired future states enables this process by creating a dynamic that attracts energy for change that, seemingly, comes from nowhere, spontaneous actions, unexplainable synchronicities and unexpected creativity. An illustration of this is the Totnes Pound, which started off as a joke and was implemented in 3 weeks.

This brings us to reflect on the next factor. When imagining futures, we also need to invent time for change because this process is incredibly time consuming and requires an enormous amount of dedication. Herman Miller needed to interview and re-educate over 200 members of their supply chain in order to ensure that the Mirra chair meet the standards set out by the original vision. While in Totnes, transition activists had to persistently lobby the local council and persuade uninterested residents to support their proposals. This is perhaps why their *'enlightened transition'* scenario suggests that we need to consider 4-day working weeks.

A wider implication that this eco-future design approach might have is to present a challenge to the current environmental debate. The environmental discourse is still confined to a relatively small minority of elites and 'experts,' and it remains incredibly top-down. However, there are no experts, 'right' solutions or single institutions that can produce the type of change that is necessary. Each and every individual needs to be actively (and creatively) involved by, possibly, visualising, spreading and implementing ideas of alternative societal models. Eco-future design is, hopefully, one of many emerging narratives that will enable the 'democratisation' of modern environmentalism.

The tentative model presented in this paper is by no means perfect or conclusive and there are several issues that still need to be addressed. However, by 'ecologising the future' we invite a response. Even if the visions are never completely achieved they help to shift the dialogue from one that is fixated on finding solutions to one that imagines entirely new possibilities – and makes them happen.

[i] A term that I am using to describe an absolutist approach to replicating nature's principles rather than cherry picking particular aspects in order to support the present form of human industry.

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GATEKEEPERS CHANGING CONSUMERS' BEHAVIOUR IN ENERGY CONSUMPTION

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ABSTRACT – Changing people's behaviour and reducing energy consumption has proved to be more difficult than attitudes or technical possibilities would imply. In this paper we discuss how to intervene the individual decisions that significantly determine energy consumption. When analysing energy-relevant decisions, we have noticed that the scale of energy-relevant decisions varies greatly in accordance with the situation in life. There are once-in-a-lifetime decisions (e.g. choosing the family home) that set the energy consumption, at a relatively fixed level, for years to come. When examining energy decisions further, the prime importance of gatekeepers emerges: they are professional and peer opinion leaders as well as retail organisations that influence consumers' energy choices. However, many potential gatekeepers do not see themselves as actors playing a major role in the energy question. Yet these specialists define the choice environments in which consumers make important energy decisions. This study identifies groups at stake in influencing significant energy decisions of the consumers. Our purpose is to broaden the scope of persons and organisations that are actors in the field of energy saving and thus improve the hability of consumers to lower their energy needs.

CHALLENGE: ATTITUDES DO NOT TURN INTO ACTIONS

Year by year, poll by poll the consciousness, concern and knowledge on climate change amongst Finns has grown stronger and stronger[21]. Today practically every Finn (90%) thinks that climate change is an established fact and almost as many (85%) consider it a serious threat and is ready to take personal action (80%).[1] There are no remarkable differences amongst population groups. It is hard to find any other issue in society in which such unanimity would be reached as in attitudes towards climate change.

However, the household energy consumption has increased as part of the increase of total energy consumption in Finland.[2] Changing people's behaviour and reducing energy consumption has proved to be more difficult than the surveys on attitudes or technical possibilities would imply.

This paper aims to offer one answer to the question of how consumers' energy decisions could be turned into wider low-energy lifestyles. Part of the ideas presented in this paper have been developed in the background study by Demos Helsinki think tank commissioned by Sitra's Energy Programme to ground a project targeted at changing consumers' energy behaviour.[3]

Behavioural change is often interpreted as a matter of changing social practices: new information acquired by people or new material objects present in behaviour reshape the practice. Understanding practices opens perspectives to several alternative paths through which an intervention can be carried out.[4, 5, 6] Direct shaping of practices is not an easy task. Practices (or their components such as physical objects, visible activities or social understanding) are always mediated by people and their relationship with others. We have previously studied the long history of public intervention in different social issues.[7] A popular way of remoulding practices has been to educate actors from above. This approach has been criticised for underestimating the complexity of modern society and citizens' active and critical attitude towards commands in highly educated nations.[4, 8] Therefore the focus of policies targeting behavioural change has shifted towards deliberative and participatory measures.[4] These measures are interventions that target a number of different stakeholders (both professionals and laymen) and offer mitigation tools to grasp the challenge from the viewpoint of their own everyday practices.

A well-known Finnish intervention success story has been the improvement of the national health with the implementation of *The North Karelia Project* as its prime case. This project, aimed at reducing cardiovascular diseases, had also to do with broad lifestyle choices and is consequently a relevant lesson

to apply when one strives for change in energy behaviour. It is one of the few interventions that have applied a wide theoretical framework. It is a remarkable example of addressing multiple stakeholders and combining various intervention types. In The North Karelia Project it was understood that lifestyle choices could not be changed simply by expert decisions or institutional structures, or by information and education. It required creating new practices and cultural change at the community level. Besides improving health care services and exercising public education and campaigning, professionals in various fields, such as nurses and cooks, were trained and new services and products developed. A central role was also given to peer support by training influential individuals in the community.[9] Together these actions initiated different forms of new practices that were not rules or tools handed down from the top to the bottom. This approach of combining several intervention types working in conjunction in behaviour change programmes has been proved to be effective in many intervention studies in general, and in those reviewing energy-related behaviour in particular.[10, 11, 12]

In the project afore mentioned, we aim to frame an effective intervention for changing energy behaviour of citizens, i.e. for advancing significant energy saving and thus lowering the demand for energy. For the purpose, this paper describes how we can identify the decisions in life that are significant in terms of energy consumption, as well as who are the relevant actors that affect the decision-making processes. Our objective is to enlarge the scope of persons and organisations that are considered actors in the field of energy saving.

UNDERSTANDING ENERGY DECISIONS

Relevant energy decisions

Traditional energy saving campaigning has portrayed small practical acts, such as changing light bulbs or lowering room temperature, and has rarely addressed the issue from a more comprehensive lifestyle point of view. Here we seek to identify the most important fields of everyday life as regards to energy consumption.

Many energy decisions also have cross impacts on other fields of consumption. The place of home relates directly to energy consumption by limiting the heating options. At the same time the indirect effect on transportation might be as relevant if a private vehicle is needed to get about.

Behaviours related to household energy saving can be divided into efficiency (one-shot decisions, e.g. purchasing energy-efficient equipment) and curtailment behaviours (repetitive efforts to reduce energy-use, e.g. by lowering the room temperature.[11,13] Energy-saving potential of efficiency is considered greater than that of curtailment behaviour but still reviews have revealed that most of the interventions target curtailment behaviours.[11]

To find the most significant energy decisions in each of the six fields of life, we have analysed different stages of life and their energy-related (either implicit or explicit) decisions. In the Figure 1, the vertical axis depicts the impact of a decision on personal energy consumption. The horizontal axis depicts how often a decision is made.

We have cross-tabled decisions by impact and frequency to get a picture of the most relevant energy decisions. This gives us four different types of decisions (Figure 2).

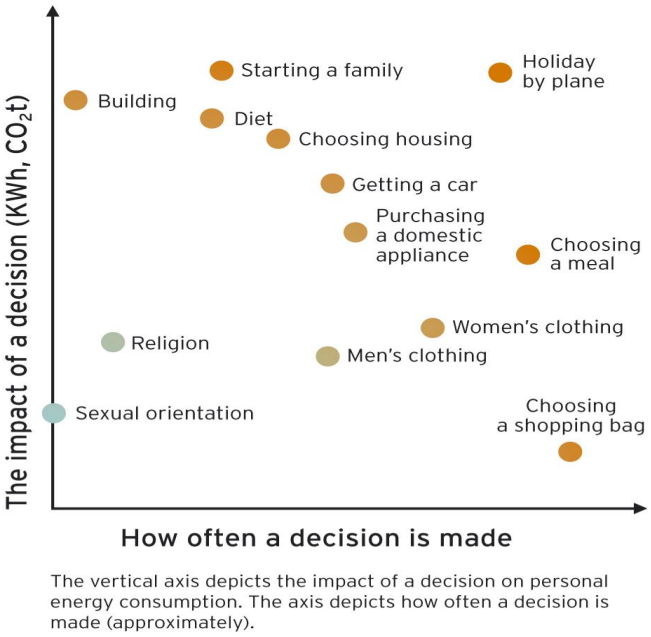

Figure 1. *Examples of different energy-related decisions divided by the impact and frequency of the decisions. The impacts of decisions are suggestive.*

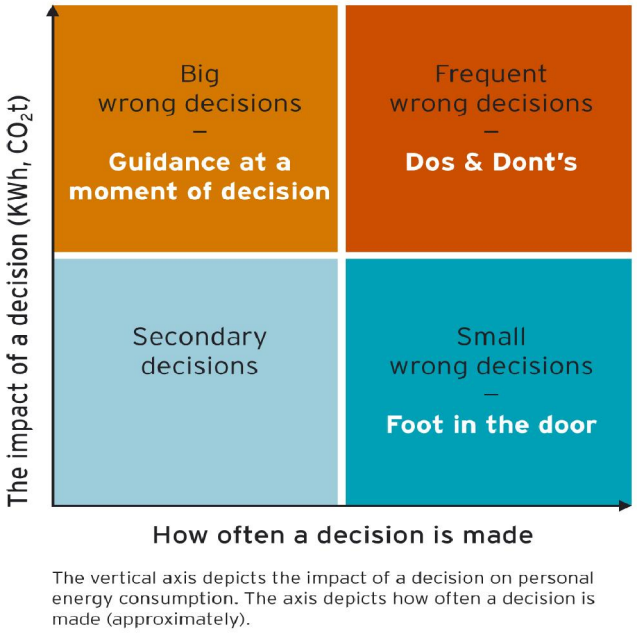

Figure 2. *Fourfold table of energy-related decisions divided by the impact and frequency of the decisions.*

We call the first group secondary decisions, the choices that are made rarely and have very little significance in energy use.

The second group, small wrong decisions are formed by decisions that are made frequently and usually affect our energy use only a little. They are important only if people feel that the decisions are central to the issue they are aware of. Quite often these small decisions are named as important in energy saving: turning off the light or avoiding plastic bags. Enforcing the positive aspects of these little choices is important in creating subjectivity in the energy issue. People need to feel that they have already taken the first step and are "with it".

The third group, frequent wrong decisions, such as buying a holiday flight yearly, are important for individual energy intensity, but also relatively easy to opt out from, at least in principle, and people can understand that they should not make these choices. They can be targeted with traditional educational campaigns, such as dos and don'ts ads. However, it seems that if there are no alternatives in the market, choices are not significantly influenced by informational campaigns alone.

The fourth group, big wrong decisions, is the foundation of our lifestyle in terms of energy use. This is a group of choices that, once they are made, lock people into a certain level of energy consumption. From the individual's point of view, the biggest energy users in our everyday life (housing, transportation and food as diet) are neither often changeable, nor can they be intervened by simple informational campaigns once the initial decision has taken place. This gives us two reasons as to why this group requires special attention. Firstly, these decisions form our energy-lifestyle. Secondly, we need to look at the practices that surround these decisions.

Our approach is to target energy related decisions that are "once-or-twice-in-a-lifetime" decisions, which determine a substantial share of the everyday energy consumption of an individual.

Big energy-related decisions take place in varying conditions, are preceded by varying period of pondering and affected by numerous external, formal or informal authorities. Several studies argue that positive attitudes towards energy saving turn into action once suitable external conditions are present and these conditions include a combination of both information and incentives.[4, 12] PRECEDE-PROCEED model by Green and Kreuter suggests that behavioural determinants belong to three categories: (1) predisposing factors, (2) enabling factors, and (3) reinforcing factors.[14]

Considering what we know from the surveys on climate and energy attitudes in Finland people seem to be aware and concerned about energy-related societal problems.[7] That means that predisposing factors (knowledge, attitudes, and norms) are – at least partially – conducive to a change towards low-energy lifestyle. Therefore it can be assumed that to further the change in behaviour – especially decisions that lock energy use for years to come – requires more attention to external or enabling. In other words, people need better practical tools (both information and incentives) for making successful low-energy decisions during the process of decision making.

Thus, the second stage of our study consists of outlining these conditions or factors: who are the authorities – communities, institutions, businesses, professionals, peers, individuals, experts – that people pay attention to and rely on in the process of making crucial personal energy-related decisions?

Relevant fields of life

Statistics Finland and other official instances do not publish statistics of final energy consumption from the consumption perspective. Mäenpää has measured primary energy consumption of households.[15] The four biggest energy users besides electricity, gas and heating fuels are housing, private vehicles (transportation) and food. When assessing carbon emissions instead of mere energy consumption the significance of food increases further. In addition to these three energy using categories, consumer goods and especially consumer electronics play an important role as their impact on immediate increase of electricity consumption has been notable.[16]

Energy consumption and energy-related decisions are also dependent on time consumption. An average employed Finn consumes 4–5 hours per day both at workplace and for free time.[17] Based on these facts we have decided to analyse energy relevant decisions in six fields of everyday life: housing, transportation, food, consumer goods, workplace and free time (Figure 3).

GATEKEEPERS ARE PRESENT IN THE PROCESS OF DECISION

We call the authorities standing on the gates of the energy decisions *gatekeepers*. In many situations it is up to the knowledge, skills, motivation and activity of these gatekeepers whether individuals (and subsequently, their family members) can enter low-energy lifestyle.

We have looked for the gatekeepers by going by following the decision tree of energy consumption and by examining the big wrong decisions identified in the fourfold table (Figure 2). For example, the decisions of where to live, having a car or not and choosing a diet emerge (Figure 3).

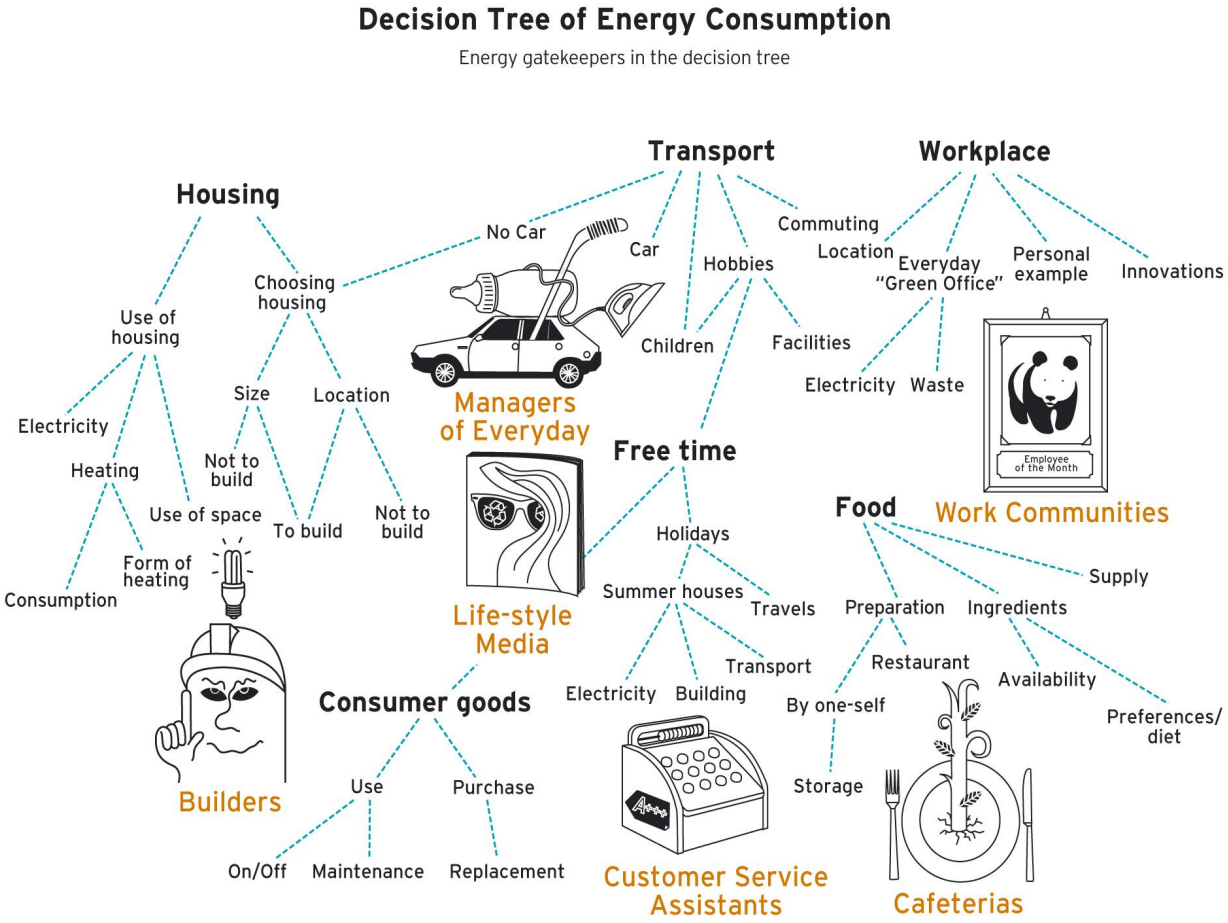

Figure 3. *Some energy gatekeepers in the decision tree: builders, managers of everyday, lifestyle media, work communities, customer service assistants and cafeterias.*

The previous research has mainly considered legislators and green businesses as gatekeepers for energy consumption. [18] Usually this view is restricted: it only considers whether low-energy options have been developed, whether they are available or not and what is their cost relative to other, less energy-efficient ones. This approach tends to underestimate the complexity of the selling/purchasing process with its subtle factors leading to a decision. Starting from the consumer's point of view, the most evident gatekeepers are the people she meets face-to-face in a store while preparing for and on the verge of making a purchase. These people working in the "consumer interface" are the ones that often give the decisive impetus for "the final choice", they guide customers to consider certain alternatives or leave others out of consideration. It is clear that their active behaviour can increase the adoption of low-energy alternatives.

However, because both the interventions and research on consumers' energy-related behaviour have traditionally concentrated on direct energy use (heating, electricity, transport), many potential energy gatekeeper groups have been neglected.[19] If we understand energy consumption consisting also of indirect sources related to production of consumer goods and services, we find several new actors who can be labelled as energy gatekeepers. Within this new frame we can see as gatekeepers people and organisations close to consumers that review, supply and affect the lifecycle of these goods and services.

By zooming into the big decisions in the decision tree, we have picked up six actors from the six significant fields of life: *customer service assistants* and *cafeteria staff* as relevant professionals, *build-*

ers, managers of everyday and lifestyle media as mediators of public and peer opinion, and *work communities* as both.

When taking also the indirect energy consumption into consideration, many companies and their staff producing and selling ordinary (not eco labelled) goods and services become gatekeepers in addition to green businesses recognised in previous research. Their stock, its development and the way they promote the sales of different alternatives either guide to or block a customer from a low-energy solution. [18] Thus, for example, people planning the daily lunch menus in cafeterias or sales assistants in hardware stores become crucial actors in shaping consumers' energy consumption.

In the contemporary consumer society characterised by the richness of alternatives individuals are constantly in need of expert advice. If we approach the process of making a decision from the perspective of a consumer, it seems fairly obvious that "public opinion" mediated by magazines and views by peer consumers stimulate the process and eventually shape the practice. Media are often responsible for offering narratives and symbolism to new forms of behaviour, especially consumption.[20] In recent years, different forms of "peer-help" and "peer-production" have been widely discussed and claims have been that their power over individual behaviour, especially over purchasing decisions has grown.[21, 22] One explanation to this change has been the "democratisation" of the production of media content enabled by social media tools. Individuals and thus their peers have almost infinite number of roles and needs. On the Internet forum of a family magazine, managers of everyday, that is those in charge of running everyday life of the family, discuss the vegetarian diet of small children. On home builders website information on the pros and cons of different heating systems is exchanged. Nowadays the information in these peer networks is often more developed than the professionals in stores and offices can offer. But also professionals close to the consumer can be taken as peers and their view is valued as peer advice. Also traditional journalist media offer sense of "peerness" in form of personification of issues (profiles, reviews by amateurs etc.).

The role of gatekeepers is essentially to either enable or deny access to low-energy behaviour. This is what peers and professionals close to the consumer do as regards to energy-related practices: they refocus the scope of alternatives the consumer has available and takes into consideration, they attract attention to certain options and give testimonials either for or against. In this process examples and arguments are created that are pivotal for the replication and spreading of a new practice and establishing a more sustainable behaviour.

CONCLUSIONS AND DISCUSSION

This paper aimed to offer an answer to the question of how people's strong positive attitudes towards climate change and energy saving can be turned into wider low-energy lifestyles. We have identified big wrong decisions that lead individuals into a particular energy consuming lifestyle for years ahead. We have further examined the most energy-relevant choices and discovered that these decisions are surrounded by groups of people and organisations who define the possible choices in the first place.

This paper is merely an exercise of the idea that large reductions in energy consumption can be realised by targeting new, multiple gatekeeper groups. These groups are reliable yet peer level experts: customer service assistants, lifestyle media and fellow customers. For wider understanding of gatekeeper groups, there is a need for further study and data collection.

Firstly, there are shortcomings in statistical data regarding energy end use from the point of view of the individual consumer. These gaps exist especially in measuring the indirect consumption of energy.

Secondly, there is need for further mapping of who the gatekeepers are for different groups of people. The gatekeepers are likely to be different according to various factors such as location of the groups, their social status and other cultural definers.

Thirdly, there is a need for deepening the understanding of how the most energy relevant decisions are embedded into the everyday practices. This includes questions such as what triggers our decision process, what kind of factors (information, examples, arguments, visible objects) stimulate the consideration of different alternatives and what we take into consideration when making the decision.

Fourthly, the question of how to best activate the gatekeepers requires special attention since at the moment many of the gatekeeper groups do not consider themselves energy actors at all and the background of the groups is diverse. The gatekeepers are essentially not a clearly defined group as they are qualified by something that is largely varied: the energy-intensity of their work from a consumer perspective. When wanting to enable consumers to execute truly effective energy saving, it is central to empower gatekeepers to understand their role as important actors in the field of energy consumption and thereby to guide consumers to make the best choices.

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FUTURE OF THE SOCIAL MEDIA

FUTURE WITH SOCIAL MEDIA: A CHALLENGE FOR PAPER

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ABSTRACT – Social media as a phenomenon is strongly associated with online communities and Web 2.0 technologies, which generates a challenge for paper as a communication platform. This paper presents results of a scenario study and discusses the role of print media in the changing media environment.

INTRODUCTION

The diffusion of information and communication technologies (ICT) has worried the pulp and paper industries since the 1990s[1]. It has been recognized as a potential threat to the demand of printing papers, because digital distribution of media content is cheaper for the publishers compared to printing. Another cause of anxiety is that people, especially the younger generations, learn to use different digital device for reading and do not grow into magazine or newspaper readership. Also, the online world has evolved since the 1990s. Internet changed in the beginning of the new Millennium and new concepts, such as Web2.0 or social media, emerged in the discussions to highlight that there is a new era, some kind of revolution taking place[2]. The topic of this paper is to discuss the role of paper in the future communication environment. How significant phenomenon the presence of social media will be in the future? Will the print media or paper products have any role in the world of social media? And what kind of a role could this be? The paper is based on a futures study that was carried out at KCL in 2008.

The concept of social media is usually connected to applications that have been introduced mainly in the World Wide Web or as mobile applications (e.g. MySpace, Facebook, Twitter, Jaiku, Wikipedia). As there is not an unambiguous definition of the concept of *social media*, it is necessary to briefly discuss the term. Erkkola[3] made a concept analysis on the concept of social media. He found out that many of the sources using the concept did not define it, but listed different characteristics describing social media. Some of these are that social media are fundamentally different from the traditional mass media, by being for example interactive and user-driven. Social media are also closely connected to web technologies and social communities. These aspects are included in a triangle model by Kangas et al. (see Figure 1).[4]

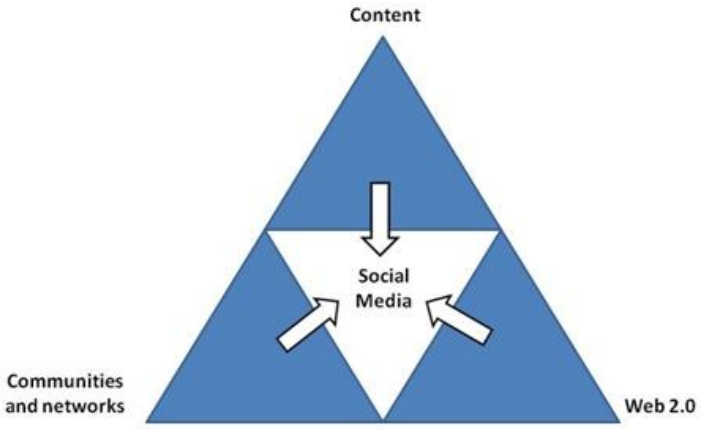

Figure 1. Social media triangle[4].

Based on the Figure 1, social media could be defined as follows: *Social media refer to the tools and services of Web 2.0 enabling generation and sharing of content in communities and networks*. However, this definition is rather limited. It excludes the social, economic and cultural consequences that are also often discussed in the context of social media[3]. Therefore, social media should be understood as *a wider phenomenon, which cause changes in production and delivery processes of media content*, and this way they have *profound societal and economic consequences*.

If we take the triangle of social media in Figure 1 as a starting point, it is necessary to briefly discuss the concept of Web 2.0. This concept was born as a result of the bursting of the dot-com bubble in 2001. The companies that had survived the collapse seemed to have some things in common, and the concept of Web 2.0 was initiated based on these similarities. In other words, the dot-com collapse was seen as a turning point for the web, after which the operational principles of profit making were completely different from the earlier. Tim O'Reilly, one of the initiators of the concept, lists guidelines for Web 2.0 companies[5]:

- The software products should be seen as services, not as packaged software artefacts.
- The company should have a control over unique, hard-to-generate data sources which get richer as more people use them.
- The users should be seen as co-producers of the application, and therefore "architecture of participation" is the ultimate goal in software development.
- The company should reach out to the entire web, especially to the *long tail*, meaning the collective power of the small sites –or single users –that make up the bulk of web's content.
- The company should support lightweight development models that allow loosely-coupled systems and constant development instead of monolithic releases.

The question about paper's future in the world of social media also concerns the future of paper industry. Pulp and paper companies need insights on the changes in media environment to direct their operations. Previous future studies in the field of pulp and paper industry in Finland have been technology-oriented[6] or the participants have been industry insiders[7]. In our study, we wanted to collect the future insights and expert views outside the pulp and paper industry. The goal of the study was to construct future narratives that describe possible futures. These narratives could be used as inspirational material when the future of the print media and the operational environment of the pulp and paper industry are considered. It is important to note that the intention was not to predict future, but formulate a variety of possible futures and this way widen the scope of thought to see different future alternatives for the print. The time frame of the study was approximately 15 years. The following section discusses the material and methods that were used to compose the future narratives. After that the resulting five scenarios and their implications for the future of paper industry are presented and discussed.

MATERIAL AND METHODS

The main method used in the study was scenario methodology. Scenarios are narratives of the future, which describe a potential course of events and consider various factors, such as technological or cultural changes and their interactions. Scenarios are used in companies for strategic planning, as they outline the future operational environment as a whole. From the strategic planning perspective, important aspects are that scenarios consider uncertainties, and the futures described in them are possible, but not necessarily probable. In other words, a central purpose of scenarios is to provoke thinking of decision makers and this way they also provide a base for strategic planning[8].

Data for composing the scenarios in our study consisted of 13 interviews with mainly academic researchers in Finland and in University of California, Berkeley. The expertise areas of the interviewed people are listed in Table 1. The interviews were carried out by three different interviewers during summer 2008. To structure the future-oriented interviews, we used the Futures Wheel method. Futures Wheel (FW) is a structured way of organizing thinking about the future. FW has a layered structure, where a trend or event is in the middle and its primary impacts or consequences formulate the first layer of the figure. New layers are added as long as new consequences are figured out[9].

Table 1. Expertise used in the project. Numbers refer to Finnish interviewees and letters to Californian.

Expert	Position	Expertise
1.	Technology Manager	Intelligent and hybrid media
2.	Research Manager	Publishing business
3.	Professor	Media culture
4.	Senior Researcher	Research on cultural and leisure activities
5.	Professor	Digital culture and research on digital games
6.	Researcher	Personal digital media
7.	Professor	Media business
8.	Professor	Network Society, Media technology
9.	Professor, Docent	Consumer sociology
A.	Researcher	Social Psychology of Online Collective Action
B.	Assistant Professor	Social networks and information exchange
C.	Researcher	Human computer interaction
D.	Interaction designer	Mobile media

FW is commonly used for aiding group brainstorming, but we wanted to test its potential in individual interviews. We introduced the method to the interviewees in the beginning of the interview by showing some examples of FWs. After that we asked the interviewees first to list drivers affecting people's media use in the future and then to select three most important ones of them. The second task was to draw Futures Wheels of these three drivers. Due to limited time available for the interviews, the interviewees drew usually only one or two wheels. The interviewees were asked to speak aloud when they listed the drivers and drew the wheels so that the thinking behind the drawings could be recorded.

Based on the experiences gained in this project, it seems that the full potential of the method can be used only in workshop situations, where the wheel visualizes the discussion and common view of the group. The facilitator of the discussion can also emphasize the consequential connections between the wheel nodes, which were missing in many of the wheels drawn by the interviewees. However, some of the interviewees considered the FW as a mind-stimulating and inspirational tool in the interview occasion. Eventually, the most valuable material for the scenario creation was produced in the listings of drivers, but the FWs could be utilized in a formulation of more specific postulates on the future developments of various media technologies.

The scenarios, which are presented in the next section, were composed in workshop sessions by the three interviewers using Futures Table as an analysis framework. Futures Table (FT) consists of relevant variables (on rows) and their alternative values in the considered future (on columns). Scenarios can be formulated by selecting logical combinations of the variable values from the table[10]. In our study, we recognized the common themes that appeared in the interviews. These constituted the variables of the FT. Variable values consisted of the different opinions and views on the themes presented by the interviewees. Futures Table proved to be a useful and flexible method for processing the interview data and composing the scenarios in a working group, as it summarizes the variety of alternatives and visualizes them.

The following section presents the outcomes of the scenario creation process.

RESULTS

As a result of the analysis of the interview data, five alternative scenarios were formulated. The scenarios were given the following names: *"A world of fear", "Climate catastrophe", "Global networking", "Crisis in the West"* and *"Global solidarity"*. Storylines of the scenarios are presented in the following.

"A world of fear"

Societal atmosphere: The world is sharply divided between the dominant West (Europe and North America) and the rest of the world. The nations of the West seek to maintain their dominance through their war against terror. Individual countries retain their central role because the war against terror takes on different forms in different countries. The overall picture is dominated by a climate of fear fueled by perceived threats. Huge sums of money are being pumped into military operations and the development of security systems. Combating the threat of terror also means subjecting people to scrutiny, which in turn is undermining the prevailing concept of individual privacy.

Media landscape: The technology developed for various surveillance purposes has also opened the way for commercial applications. As a result, targeted advertising based on positioning data and personalized customer profiles is becoming increasingly common. This is reducing the need for traditional media advertising, thus posing economic problems for media companies. However, the media play a central role in informing the public about perceived threats and in seeking to justify the war against terror. Consumers are more willing to pay for entertaining and enjoyable non-commercial content as they seek to avoid unpalatable public debate and overly focused marketing messages. This trend is leading to greater use of various kinds of "on demand" sources of media content.

Consumer behaviour: Two opposing trends in consumer behaviour are emerging. On the one hand, people want to retreat from the public debate dominated by threats. This is making society at large more passive and promoting comfort consumerism, leading to a widening gap between political decision-makers and ordinary people. On the other hand, there is an increasing level of awareness on the part of other people, who are becoming increasingly suspicious and cautious. Such people take a negative view of advertising, particularly of that based on personalized information, and may even isolate themselves from the world of media.

"Climate catastrophe"

Societal atmosphere: The debate over climate change and whether it is being influenced by man's activity has ceased. The prevailing view is that climate change is real and that it is influenced by human activity. The changes caused by global warming are being increasingly felt in ecosystems and strict measures have been introduced to address this. The impact on the earth's climate is now considered in all major construction projects and changes in society. Financial constraints such as taxation are being used to control private consumption.

Consumer behaviour: Climate change is affecting the lives of individual citizens. Concern for the environment is making consumers more aware of the environment when making purchasing decisions. Consumers are also feeling the effects of financial constraints because less environment-friendly products are becoming a more expensive option. The link between rising consumption and climate change is becoming clear and opposition to consumerism is growing. This is encouraging people to turn more to handicrafts and to try to recycle used products.

Media landscape: As active citizenship and consumerism gather pace, more media content is being produced specifically by citizens themselves and there is a greater trend towards social networking via the media. The media system is beginning to shift towards social media. For example, systems involving remote communication are becoming more common as air travel gets more expensive and business travel declines. Traditional forms of media continue but vastly reduced in terms of volume.

"Global networking"

Societal atmosphere: Social and economic activity is based on networks, which can be either material or completely virtual. Development of information networks has made them highly effective. In all activities the over-riding aims are transparency and sharing. This applies to the development of both information networks and administration.

Media landscape: The use of networks has led to changes in business models in all fields of activity. In the media business, this is reflected by the fact that the different forms of social media occupy prime position. The traditional media business has had to survive a crisis period before learning to adapt to the new world of networks. Businesses in other fields have started to operate on the traditional media scene patch, putting further pressure on the media business. For example, customer magazines published by retail chains operating on consumer markets have taken market shares from magazines and information network operators have taken over as providers of social media.

Consumer behaviour: Consumers have embraced the world of networks. They are at ease with both material and virtual reality, and more people are earning a living using the opportunities afforded by the virtual world. Consumers are also active in producing and circulating media content.

"Crisis in the West"

Societal atmosphere: The nations of the West (EU and North America) have failed to recover from the financial crisis. Emerging economies such as China, South Korea, Russia and India are recovering better. Their economies are consequently still in growth and industry is beginning to serve domestic markets. Capital is starting to flow from East to West in the form of numerous corporate acquisitions. Along with the flow of capital some features of Eastern culture are creeping into the West. Examples are: the interests of the individual are subordinate to those of society; society is structured hierarchically; and persons in positions of authority are respected.

Consumer behaviour: As the economy weakens in the West, private consumption also declines. People have to work longer, one of the reasons being the ageing population. However, at this time of shortages, consumer products become highly desirable and consumer habits shift towards comfort and convenience.

Media landscape: In this consumer-oriented society particular emphasis is put on new targeted forms of advertising, putting pressure on traditional media companies. However, there is demand for both national and local media content because of the prominence of foreign cultural influences in society. This underscores the need for the traditional media.

"Global solidarity"

Societal atmosphere: Companies see that developing countries have their entire populations as potential markets. They therefore direct their efforts increasingly at markets in poor areas and develop new business models to serve them. The boost to economic activity brings more people above the poverty line.

Media landscape: A presence on new markets gives rise to models for new ways of operating. New models also appear in the world of media, notably the social media. The developing countries act as R&D laboratories for products, which gradually start to appear on Western markets, too. As a result, the development of the entire media business is steered by applications of social media. Models for the use of media and for the development of media products are also being acquired from Japan, where mobile technology is one step ahead of that in the West.

Consumer behaviour: In consumerism more importance is attached to global solidarity and awareness of matters such as the environment, because equitable worldwide growth demands a sense of responsibility. On the other hand, people see themselves as part of a global network, which could also be virtual. Examples of how to use the virtual world as a means of livelihood are supplied by Asia.

In the next section the scenarios are discussed in the frame of the research question, i.e. how the future looks like for paper as a communication medium.

DISCUSSION AND CONCLUSIONS

The goal of this study was to formulate scenarios to consider the paper's role as a communication medium in the future. The social media phenomenon was recognized as a challenge for paper platform, because the concept is strongly connected to the virtual online world. Therefore crucial questions for paper

are how significant phenomenon social media will be in the future, and how influential are the new forms of interaction in people's lives. To unfold these questions we generated five scenarios based on expert interviews. In three of the scenarios social media have a central role in the changes of media environment. *"Global networking"* scenario could be described as a business-as-usual scenario, because it describes developmental patterns that started along the introduction of ICT-technologies and internet. In the *"Climate catastrophe"* scenario, the driver for the boost of social media primarily comes from the changing consumer behaviour, as more active and aware consumerism is thought to become general due to the changing environmental conditions. Awareness is an important factor also in the *"Global solidarity"* scenario, but it includes an additional aspect of changing focus in the market areas. The growing importance of the developing countries is probably a threat for paper, as they do not necessarily have an existing infrastructure for the print media and therefore social media applications in these areas are more likely to be based on mobile communication.

The "*World of fear*" and "*Crisis in the west*" scenarios are the most favourable ones for the traditional print media because of the local and national character of the print and easiness to produce alternative or small scale print publications if digital information networks are overly controlled. On the other hand, general distrust on the media probably decreases also the trustworthiness of the print media and therefore weakens its position. However, the traditional print media meets economic difficulties in both of the scenarios due to new advertising models. Another factor supporting the use of traditional print media may be the possible counter reaction to social media caused by the growing cognitive load. Ahlqvist et al.[11] recognized such counter reaction as a possible bottleneck to the development of social media applications in their roadmap study.

Also other future studies have considered the future of the print media. The market for printed magazines has been estimated to decline due to advertising migration to e-media and publishers 'drive to reduce costs and invest in e-media instead of printed product[12]. This development may end up in a situation where paper has drifted apart from the communication field. To prevent this, paper industry should take a proactive position on the future[6]. What may hinder this is the attitude prevailing in the industry. Illustrative of this attitude is how a future study carried out in the turn of the 1990s and 2000[7] evaluates the possible shifts in the dominant field of science that directs development. A shift of the focus to socio-economic examinations as a directing force was seen as a threat scenario for the pulp and paper industry, while biosciences were seen as a dream scenario. Would there, however, be some lessons that could be learned from socioeconomic examinations of future phenomena, such as social media and their influence on media use and business? The rest of the paper discusses this question.

Print in the world of social media

The question that rises from the scenarios is: Is the game over for paper in the world of social media, or would there be some place for paper, too?

The concept of social media was discussed in the introduction. Characteristic to the social media is that there is a community or network of people, which produces and circulates some content, such as text, photos or videos. For this purpose they need some technological tools or platforms. Depending on the breath of the examination, social media can be understood as Web2.0-technologies (a limited view), or as a new form of interaction or communication, in other words rather as a practice than technology (a wider view). If we adopt the wider understanding, print medium is not predefined out of the scope of social media. However, it is clear that *socially produced print medium* should be fundamentally different from a traditional print medium. The following examples illustrate the possible differences.

Example 1: Virtual community producing magazine content

JPG Magazine (www.jpgmag.com) is a photo magazine, which publishes photographs submitted by the members of the JPG community. Anyone can join the online community and share his/her photos and stories with others. The best ones are published in the printed magazine, which appears six times a year. The magazine is published by a company named 8020 Media (www.8020media.com). The following

quote is from the company web site describing the operational principles of the company: *"We are a revolutionary new hybrid media company, bringing together the best of the web and print. We harness the diversity and depth of online communities to create printed magazines that are uniquely relevant and insightful with an incredibly engaged audience. -- 8020 Media empowers its communities to participate in all aspects of the magazine's content creation, thereby dramatically increasing reach, lowering costs, and engaging a knowledgeable, global community. By opening the field, we're blurring the lines between professional and amateur, inspiring photographers and writers of all types to engage in the process. What was once "the audience" has been invited to participate in and lend its expertise to the editorial process by contributing content and critique online."*

This example shows how a print magazine can operate according to the principles of social media. The photo sharing community creates content for the magazine, the users are co-creators of the product. The professional editorial-staff has still a role in the production, but their role is fundamentally different from traditional.

Example 2: A real-life community newsletter

Another example is about a project, which generated a newsletter for volunteer workers of a Finnish football club[13]. The concept of the newsletter was designed together with the volunteer community. The purpose of the newsletter was to strengthen the community, and therefore the goal was to create a publication where the volunteers are 'creating content by themselves for themselves'. Another purpose of the newsletter was to strengthen the relationship between the organization and its volunteer workers. However, due to limited resources of the organization, the volunteers were encouraged to take the responsibility of the content creation as much as possible. To enable the community based content creation, a publication system is needed. Requirements for such a system would be that it is easy to use for non-professional users and it automates the layout and printing preparation processes as much as possible.

This example shows again how print media could operate according to principles of social media. The community has some communication-related needs for interaction and these needs could be fulfilled by producing a magazine-like printed publication. Once again, the users are co-producers of the magazine, but the technological systems should support the content creation activities and bridge the gap between online and printed format. In other words, a system with *architecture of participation* is needed.

The creation of architectures of participation was included in one of the guidelines for Web2.0 companies that were presented in the introduction. Also, the rest of the guidelines can be adapted to the world of print. Considering the above examples, the guidelines could be as follows:

- The print products should be seen as services, which combine electronic and print media to become an entity that meets the users' needs the best.
- Paper or print medium has unique properties that are valued by (some) users, and the new product services should be grounded on these properties.
- The users should be seen as co-producers of the products, and therefore new "architectures of participation" should be sought for print products.
- The companies should also reach out to the *long tail* of print production, meaning various real-life communities that may have interests for producing small-scale publications.
- The companies should support lightweight development models that allow loosely-coupled systems and constant development instead of monolithic releases. In the world of print this would mean that publications are not produced in predefined volumes, but various on-demand processes are developed. Also, the roles and competences of professional editors and editorial practices should change.

In conclusion, let us briefly evaluate the scenario methodology in the frame of this study. The focus of the scenarios was on the changes in society and consumption, and for example, technological development was more in the background. It can be that stronger emphasis on the technological development might have changed the outcome of the study. The other aspect is the time frame. A guideline for the interviews was to consider future conditions after 15 years. It is difficult to evaluate how strongly the interviewed experts thought about the situation after 15 years or are the storylines rather descriptions of some conditions that might realize earlier than that. On the other hand, this is not necessarily a crucial ques-

tion. The primary goal of this study was to broaden thinking and collect views on the future media environment so that print media's role in it could be forecasted. In this sense, it is more important to understand that there are different possible future paths, and some proactive actions can be taken to promote the position of paper in the future communication environment.

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CHANGING DEMAND FOR MEDIA PRODUCTS

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ABSTRACT – Demand for media products is changing due to changes in the media using situations, motives, prices and opportunity sets regarding media use. This paper gathers all these elements and analyzes their impact on media demand. The study is based on empirical data and interviews of media companies' research managers.

INTRODUCTION AND BACKGROUND

The media world is going through significant changes. There are several new media products and old media has taken up new forms. Competition between media products is rough as such, but also the demand for media is changing. Media companies face tremendous challenges (and possibilities) as the media world is transforming. The companies compete for audience and money (advertisers and consumers money). But since money follows the audience, we can say that ultimately they compete for the audience. The key question is what kinds of media choices the audience makes?

The purpose of the study is to bring together all the changing elements that are influencing media demand, and evaluate their impact on different media products. There are three research questions:

- RQ1: What are the main trends in society and consumption that are affecting media demand?
- RQ2: How do these trends influence media in general?
- RQ3: Are the changes more beneficial to new media or the old media?[a]

Structure of this paper

The theory of media demand is introduced first, because it provides the frame for the trends. There are four main things affecting demand: the motives for media use, the situations in which media is used, the prices for media products and the opportunity sets from which the products are chosen. The methods and the data are explained in chapter two. The results chapter (ch.III) consists of two parts. The fourteen main trends (RQ1) that are causing changes in media demand are discussed in the first part. The second part evaluates the trends 'impact on media (RQ2). This is done by using a futures table. Chapter IV discusses the future of the prevailing trends, their impact on media products, and whether it is the old or the new media that will benefit from the changes (RQ3).

Theory of media demand

The demand for media products depends on motives, situations, prices and opportunity sets. *Motives for media use* (or reasons to use media) are the most important factors that are affecting media demand. Information seeking and the entertainment are the main reasons to use media. There are also social reasons to use media; we may want to use media together with someone or we could use media in order to gain social respect. James Lull (1980)[1] made an important contribution introducing the social reasons for television use. Lull has found out that families can use the television for several purposes: watching television together helps to strengthen the family, and family members feel closer to each other. Parents can reward or punish their children by allowing or denying certain media use. Some television watching is educational: parents pass their life experience on children while discussing about a show or a book. Juha Kytömäki (1991)[2] has found out that sometimes parents watch television with their children, because the

[a] New media is referring here mainly to internet and, old media means media platforms that existed before internet. The "old media" has transformed and developed new products, but it is still categorized as old here. Internet is not really a media but a bundle of media products.

content is too scary to be watched alone. Parents also like to watch television with their kids, because they get pleasure from their kids 'joy and excitement. Morley (1986)[3] has shown that television viewing depends heavily on family members and watching is usually a compromise decision.

Personal reasons to use media are mainly maintaining or gaining a preferable state of mind. We might want to strengthen our social identity as Anu Mustonen (1991)[4] writes. Local media helps us to feel that we belong to the area. Women's magazines strengthen female identity etc. See more about motives for media use in general in Kortti (2007)[5], McQuail (1994)[6] and about social reasons McQuail (1997)[7].

Even though the motives are very important, in media demand, they can be restricted or driven by *the media usage situations* we are in. Sometimes the situation can be the main reason for choosing a certain media. For example, when driving a car, we could quite simply turn on the radio because other media products are not as easily available at that moment. The media usage situations depend mainly on the people around us and the place we are in.

According to Philip Kotler (2002)[8], needs (here motives) turn into demand by buying power. Buying power is affected by the prices we pay. *The price of a media* product consists of money, time and effort required. Many media products are free of monetary charge, but the available time at the moment can limit our choice effectively. Our energy level might affect our demand also. Sometimes our media use is intentional, but other times it merely happens while we are doing something else. For example we may eat while watching television or do the dishes while listening to the radio. Sometimes we feel extremely energetic and want to be challenged by the media.

The opportunity set is formed by different available media products, for example radio programs, television programs, newspapers, magazines and net pages. Opportunity set represents the supply of media. Media companies decide, which products they will offer. Companies launch and market their products and try to get as big target audiences as possible.

Some media products can be complements or substitutes to each other. Sometimes while we are watching the news, we might think that, it will be interesting to read related background stories and editorial comments in the next day's paper. In this sense, television and newspapers can be complementary. A part of internet's success is the fact that it complements outstandingly all other media. Whatever extra information you might need, you will find it in the net. Media products can be substitutes. This means that instead of complementing each other, they will displace each other. This substitution process is not very distinctive, and the phenomenon is easier to understand if we consider products as substitutes by genre, or from a certain point of view. For example, afternoon papers can be nearly perfect substitutes: they have quite similar news and other content (and appearances). But then again, there are people who do read papers regardless their similarity in content; they may want to compare information, or are just so interested in certain stories that they want to read everything written on them. Television channels can be substitutes – we can watch only one channel at the time. See Picard (2002)[9] for more discussion on substitutes in media.

Timely properties of media products limit the choices. Some media products can be used only at certain times. For example, radio and television programs can be listened/watched at the exact moment they are broadcasted. It is quite certain that in the near future timing can be stretched further with the help of easy-to-use digital devices and databanks in net.

To wrap up the discussion above, we could say that the demand for media is based on motives or situations, or both, and is affected by prices, and the selection is done from the opportunity set. The Figure 1 represents the elements in the theory of media demand.

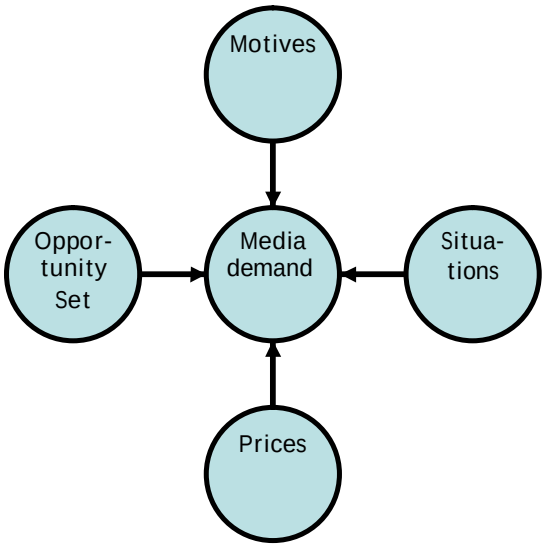

Figure 1. Elements of media demand.

MATERIAL AND METHODS

This paper combines empirical data, findings from scientific and other articles, and interview data from four media experts. This material is used to outline the main trends that are changing media demand (RQ1).

Empirical studies are done by Statistics Finland, Finnish Newspapers Association and the newspaper Turun Sanomat. The interviews were conducted between April 15th and 30th, 2009. The four media experts, all of them research managers in Finnish media companies, were chosen to the study due to their wide perspectives over several media products and up-to-date databanks. The companies chosen represent different media products. The people interviewed, their companies and their respective products they represent are described in the Table 1 below.

Table 1. The Interviewed people and the media products they represent

Name	Company	Media product
Taina Mecklin	MTV Media	Television channels
Salla Lehto	Turun Sanomat	Newspaper, local radio and television channel, free delivery paper
Tanja Herranen	Keskisuomalainen	Newspapers, local papers and free delivery papers
Erja Ruohomaa	Yleisradio Oy	Public broadcasting television channels and radio channels

The role of the interviews was to complete the picture of the changing elements of media demand and to make sure that no relevant factor is left out from this study. The interview questions were: What are the main changes in society that affect media demand? What are the main changes in consumption that are affecting media demand? What are the main changes in media supply that affect media demand?

The trends are evaluated by a futures table. Each trend is examined according to three basic options: the trend is fading (means turning back or the antitrend is prevailing), the trend will keep on going steady, or the trend will get stronger. The futures table answers to RQ2. Futures table is a method that gathers the variables affecting the phenomenon (here changes in media demand) and analyses their possible outcomes in the future. Due to the systematic nature of the table, all the potential outcomes are presented. The table can be a result itself or the findings in the table can be used further in developing scenarios etc. See more about the method for instance Seppälä (1983)[10]. The method is widely used; one example is presented in Keskinen & Ståhle (2006)[11] study.

The findings in futures tables are examined by SWOT-analysis with following media groups: newspapers, magazines, radio channels, television channels, internet facts -*net 1.0* (meaning one sided communication, mainly information) and internet as social media -*net 2.0* (meaning, that consumers are participating in producing the product). The results of SWOTs (and RQ3) are briefly introduced in chapter IV.

RESULTS

First part of this chapter introduces the trends that are significant in media demand. The second part discusses the impacts the trends have on media. The trends are chosen so that main changes in all elements of media demand (introduced on page 2–4) are covered. Trends 1–3 reflect changes in motives, 4–7 in situations, 8–9 in prices and 10–14 in opportunity sets.

Trends affecting media demand (RQ1)

Reforming new social groups (1) is one of the main changes in society affecting media demand. Philosopher Maija-Riitta Ollila (2008)[12] has written a book about new social groups. She argues that in earlier times we were born to certain groups (social class, family and neighbourhood), but nowadays we can choose the groups to which we want to belong. The prevailing trend towards individualism is not contradictionary to the success of social groups. By the choosing which groups we want to join, we distinguish ourselves from others and build our unique brand. Since we usually belong to many different groups, the groups might have conflicting values. Consumer's values and behaviour seem to be vary according to the context. People adopt easily different roles according to the situation and company they have at the moment. The main implication in media demand is the increasing demand for social media. It is a totally a new type of a motive for media use. For other media this means that the demand for the net grows overall, and some special magazines can benefit from the phenomena. Research manager Taina Mecklin from MTV Media says that television wants to be the initiator of public discussions. Newspapers have not found the answer for this type of demand yet. Even though demand and use of social media is booming, the profits from the phenomena are not easily collected.

Due to the new social groups, one might conclude that the *need for general knowledge is weakening (2)*. If we all belong to our own specialized groups, we need to gain knowledge on the specific topics that go with those groups. We gain expertise over many rather narrow fields and thus we are not even expected to know about all current events or have an opinion about them. In Wired[13], there was an interesting article about the American's knowledge about current events having dropped. Ten years ago they knew more answers to such questions like who the vice president of the United States is or who the president of Russia is. Sirkka Heinonen (2009)[14] states that there is an antitrend to this phenomenon; namely a need for a holistic view is arising. Taina Mecklin says as well that, according to their researches, the reason to watch television news in order to gain general knowledge is growing. Erja Ruohomaa[15], Head of Research in Yleisradio Oy, says that audiences themselves have changed significantly. They are older, wealthier and more educated. Division between generations could explain the ambivalence in this trend.

Entertainment is conquering all fields (3). The concept of entertainment has ballooned; there have been discussions about infotainment and edutainment. Mecklin says that the demand for entertainment seems to be growing according to MTV Media's research. The entertainment aspect is getting more and more important in politics also. Like Mecklin[16] says, the Ilkka Kanerva case[b] started a whole new era of publicity for politicians. This same case made it evident, according to Mecklin, that the division between news media and other media is not clear anymore. Ollila (2008) has as well been analysing the changes in media, and she states that Helsingin Sanomat[c] crossed the line to the gossip side for the first time dur-

[b] The Foreign Minister of Finland was forced to resign after a gossip magazine had published several text messages he had sent to an erotic dancer. Everybody was satisfied with his work as the minister.

[c] The biggest and most eminent newspaper in Finland

ing the Kanerva case. Erkki Karvonen (2007)[17] states that high quality newspapers have shifted towards afternoon papers. In Karvonen (2008)[18] he writes more about politics, media and entertainment triangle.

According to Salla Lehto[19], the research manager for Turun Sanomat, the demand for printed gossip magazines is declining. Does this mean that other media products have lowered their standard and crossed into the gossip side? Lehto thinks that the reduction is due the fact that the content is available for free in the net. One obvious possibility is that the demand for gossip is fading, but this doesn't seem plausible in light of the recent scandals (Kanerva etc).

Migration is growing (4). According to Statistics Finland, intertown migration has been clearly growing in Finland (see Figure 2). It takes a long time to adjust to new town and neighbourhood. Movers might feel quite homesick for the town they left. Migration is mainly affecting newspapers, because they face diminishing demand challenges. The movers quit subscribing to the newspaper from the town they left. One might expect that subscribing to the newspaper from the new hometown would help settling down in the area. But unfortunately this happens quite seldom according to an empirical study[20] done by the Finnish Newspaper Association. Because newspapers are losing this "migrating audience", at least in the short run, this audience will most likely follow other media products and maybe fill the emptiness and rootlessness by escaping to entertainment media.

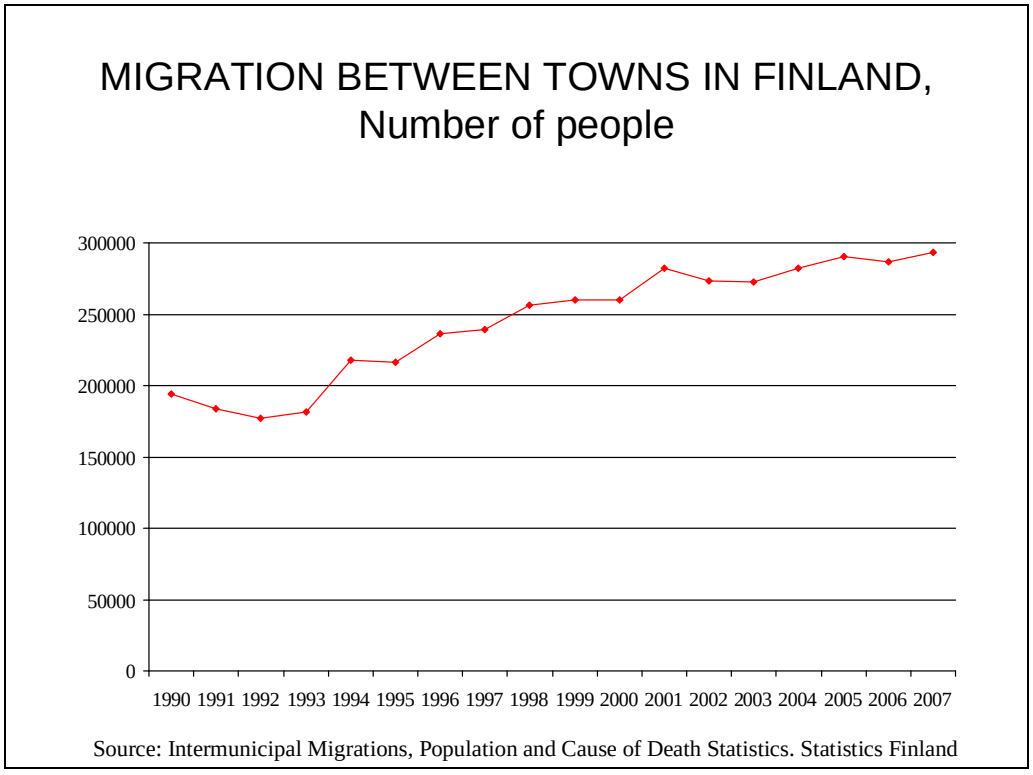

Figure 2. Migration between towns in Finland 1990 –2007.

More and more people are living alone (5). According to Statistics Finland, living alone is growing significantly in Finland, see Figure 3. The implication for media use is that the demand for newspapers seems to decrease, since empirical studies show that one person households order significantly less newspapers than other households[21]. This is probably due to both economical reasons and social reasons. In the other households, there are usually two or more readers per one copy of a newspaper. If there is only one person, the price might seem quite high. Some singles seem to think that newspapers belong to family breakfast tables rather than their own tables. It is quite common that when people retire, or get unemployed, they also quit ordering newspapers. They say that they do not need to keep up-to-date anymore[22]. For other media companies, the growing number of single households might be a good thing. Some people seem to keep their radios or televisions on all the time in order to avoid feeling alone[23]. The

implications for television watching are quite ambivalent because some people do not want to watch television alone, while others might keep television open for company. Many magazines are not shared by family members, so magazines are not as much affected by the growing number of singles is society as newspapers. Selling new television channels for single households may prove to be difficult, because the costs cannot be divided among family members.

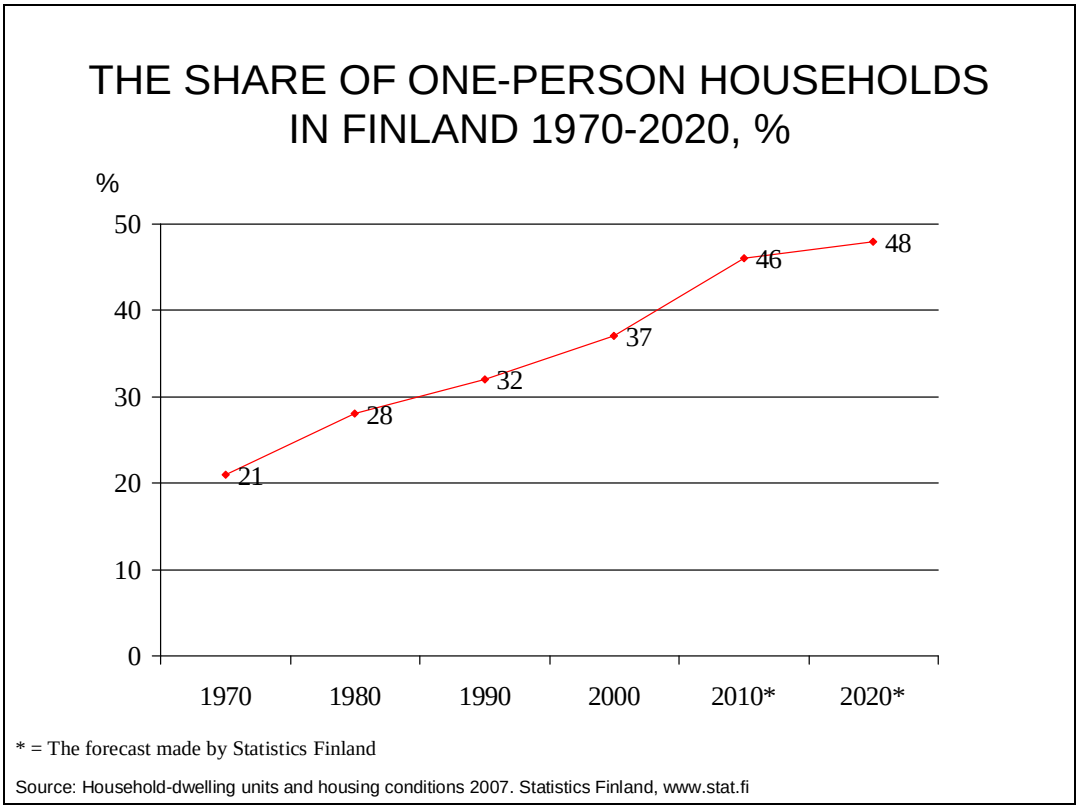

Figure 3. The share of one-person households in Finland 1970 –2020.

The mornings are vanishing (6). This is mainly due to the changes in sleeping routines. According to Statistics Finland's Time Use Survey[24], Finns sleep quite the same amount as in 1979. But they go to bed later in the evening and wake up later in the morning. See the Figure 4. The morning routines are vanishing slowly since more and more people wake up late and hurry away without eating breakfast at home. This has impacted media usage. According to Lehto, the newspapers are read a little bit less during morning routines than before. Furthermore, according to Mecklin, television morning shows have a little bit less audience than before.

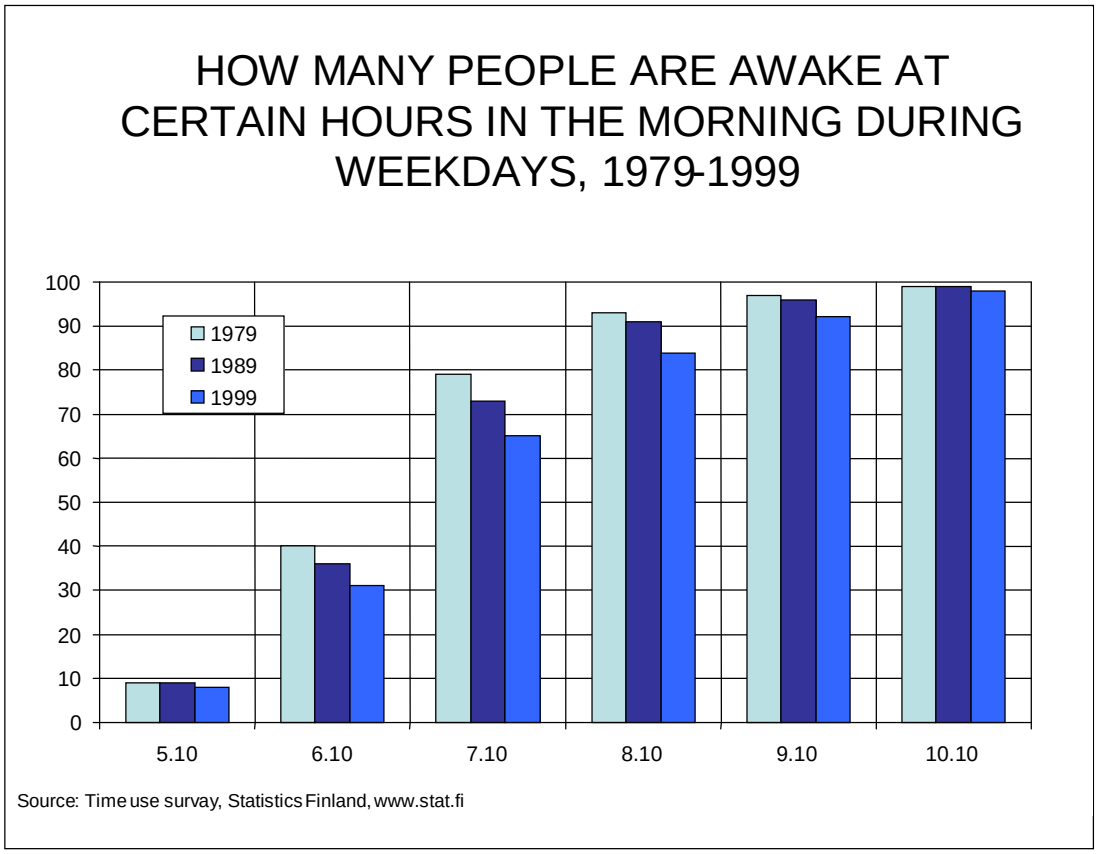

Figure 4. How many people are awake during certain hours in the mornings during weekdays 1979 –1999. (The results of 2009 are not available yet)

Multitasking is growing (7). All the researchers interviewed said that, according to empirical studies, people ś following of media is not as concentrated as before. Mecklin said that people ś concentration seems to wonder while watching television; sometimes audience concentrates on that, sometimes they concentrate onto something else. For the younger generation, it is quite typical to watch television and use the lap-top simultaneously. They can chat about the television show (that they are watching) or find out related information, or net usage might not have anything to do with the television show. According to Mecklin, it has been quite typical for the Big Brother viewers to chat about the events at the same time they are watching them happen on TV. The older generation feels that it is easier to talk to a person sitting next to you in the sofa…

Amount of free content is vast and growing (8). Most content in the net is free of charge. We have some free delivery newspapers and many people feel that television content is free. Moreover, due to digitalization Finns received many new ‘free ”channels. Finns do pay a tax on television (television fee), and people do not realize that even though there is no monetary charge on the content, there can be commercials or ads disturbing our media usage and consuming our precious time. Some people do enjoy commercials, but many consider them as a price they have to pay in order to use the media.

Impatience is growing and people are busier than ever (9). Audiences ’wants and needs are harder to fulfil than before. In everyday conversations, people keep complaining how busy they are. Even though we have more free time than ever before (according to Statistics Finland), we feel busier than ever. It seems like many people try to accomplish as much as possible in order to prove their importance in work, family and society. Being busy and accomplishing a lot could also give meaning to life. It seems like being busy is considered as a trendy thing for some people. All interviewed researchers said that audiences are more critical than they used to be. They want to have tomorrow ś media today. Media companies are trying to respond to audiences ’needs, but very few companies can say that they are ahead of their customers in this matter.

Amount of media products is expanding and they are available all the time (10). The internet is the main accelerator of this process, but the variation in traditional media is growing as well. The other striking element is the continuous growth of the availability of media products. Via mobile media, the internet and the time-shifting features of digital media, the media products are pretty much available all the everywhere. This obviously makes the opportunity set larger since time and place do not limit the choices as much as they used to do. The amount of available free information is incredible, and this information overload causes stress to many people. According to Martin Lindström (2003)[25], this is not true for young people. They are born into the information overload and do not see any problems with it.

Convergence grows (11). Due to digitalization, the media houses are able to use the same content in many different platforms. They have established multimedia houses and they use the same content, maybe in slightly modified form, in newspaper, web pages, radio, television, sms etc. This development means that media content is becoming more uniform across different media products i.e. convergence grows. This leads to situations that –at least in the news genre –many media products are substitutes to each other. Convergence is rather puzzling word, because it could mean many different things; content, technology, ownership, production etc. In this paper it means similarity in content.

Karvonen (2007)[17] and Herkman (2005)[26] write about intermediality which means that a medium cites another medium and they get content by commenting each other. This also leads to similarity in the content (convergence). This practice is closely related to next trend:

Companies are building complements on purpose (12). Multimedia houses try to cross market their media products by all media products they own. A television show might have extra content in the internet, and afternoon papers could discuss and puff television programs. Media houses are trying to develop their products to complement each other. If this is successful, it means that if demand for one media in the bundle goes up, the demand for all other media in the bundle goes up as well. Herkman (2005)[26] has written his dissertation on connection between afternoon papers and TV channels owned by same media company. Robert G. Picard (2005)[27] has edited a book on media product portfolios where convergence and purposefully built complements are discussed further.

Authority of traditional media is vanishing (13). According to Tanja Herranen[28], research manager for the newspaper Keskisuomalainen, the availability of free news and other information has lead to a situation where traditional media companies have lost their authority. Everything they write about or tell in the news, can be easily cross checked via internet. We can easily see what other papers or bloggers have written. Herranen states that the concept of consumption has changed. Consumers are aware of their influence on society and companies, and they use their power by boycotting or buying certain products. They make the world a better place by buying fair trade coffee and eggs from happy chicken. Herranen argues that companies are not able to manipulate consumers anymore, so they just try to adjust to consumers 'needs.

Fast media is here (14). The last, but certainly not the least, is the fast media phenomenon (notice the analogy to fast food!). The increasing competition between news media has lead to a situation in which every media is in a rush to publish news in order to stay in business. Since the real-time broadcasting is possible due to new technology, it has become a value in itself. The media companies do not have time to process the news before they have to send them. For example, a six years old news story turned up somehow and got mistaken in the editorial board to be news of today. It was published and United Airlines stock prices decreased considerable[29]. When news is broadcasted more and more in real time, the role of the reporter has changed. Before journalists tried to explain what has happened and why, but now, according to Ignacio Ramonet (2001)[30], it seems to be more important to experience the events and follow them as they happen than understand what they mean. Ramonet's critique concerns mainly the television and the internet, but he argues that other media are changing to the same direction. The stories are getting shorter and more entertaining, and at the same time the world is getting more complex. Readers are more educated than ever, so they would have the capacity to understand long analytical stories.

Puohiniemi (2006)[31] writes as well about the same phenomenon, and he says that the media push the news and stories out so fast that they cannot analyze them anymore. This means that the judgement

task – which information is relevant and reliable – has been moved from the journalists to the audience[d]. The audience has to do the job the journalists used to do. This could give an opportunity to the traditional media to regain the gatekeeper position and choose the relevant news for their customers, instead of providing an information overload.

The impact of the trends on media (RQ2)

The futures table (Table 2) arranges the trends that affect media demand and presents their impact. Their impact on media demand is considered in three options: the trend is fading, the trend keeps going on steady, the trend is getting stronger. Typically trends have forms like waves. They get stronger, weaker, and stronger etc. Some developments are above trends; they just go on. In my opinion (and maybe wishful thinking), the development of entertainment cannot boom forever, and the appreciation for general knowledge will be back. I do not think that multitasking and busy mornings are healthy developments, but they might still go on. The number of media products will grow, and companies will keep sending the same content in many media, and will thus keep building attractive media portfolios. The options, which seem most credible at the moment from the author's point of view, are bolded in the Table 2.

Some of the impacts are directly influencing demand and some are influencing demand trough companies actions. Supply usually shapes demand. Sometimes changes in supply do not affect demand as companies have wished. This could be due to wrong actions, inadequate or misleading marketing or other changes in consumers' environment (competitors' actions etc.).

Table 2. The impact of trends on media

	Trend is fading (antitrend might prevail)	Trend keeps going	Trend is getting stronger
1. Reforming groups	Traditional media will regain their position	Media will develop products to meet the demand of as many groups as they can.	Media is fragmented to small media products that serve different groups.
2. General knowledge is old-fashioned	Media products that provide a holistic view and an analysed information boom	Niche media boom.	Media products will be narrowly focused specialists.
3. Entertainment is everything	The renaissance of facts and meanings benefit some media	The genres in media vanishes. Entertainment is the prevailing attitude.	All media content is designed to entertain
4. Migrating Finns	Newspapers stop losing their audience due to migration.	National media products gain audience.	Newspapers will develop products for movers.
5. Living alone	More money will be available for media products	Media will respond by developing their products to this target group.	Media products that connect people boom
6. Vanishing mornings	Typical morning media products regain their audience	Media will put extra effort to tempting morning audiences, or try to conquer evenings.	Mobile media takes over mornings.
7. Multitasking is cool	Media products that rewards concentration booms.	Media companies try to serve both focusing and non-focusing audiences	All media content can be browsed through quickly
8. Free media content	Supply of media products will shrink.	It is harder to get money from audience directly.	Since media content is funded by ads, demand for ad-avoidance tech grows.
9. Busy bees are impatient	Demand for good quality stories is back.	Media is developed to serve fast consumption and browsing	All media content can be glanced

[d] Puohiniemi has launched the term "joukkoviestinnän savolaistuminen "to describe the phenomena.

10. Amazing availability and variety	Quite unlikely… But if so, the strongest survive	Demand for well established media stays, but is challenged by new innovative media products	Life cycles for media products are getting shorter. We will witness surprising innovations.
11. Same content everywhere	Media products will regain their identities	Since media companies save money by doing this, they can offer *amazing* content also.	Audience needs only one media for information and fragments of others for fun
12. Built complements	Topics do not cross (much) media types.	Audience follows a topic from certain company media bundle and other topics from other companies bundles	Big media houses boom. Audience follows only media belonging to a certain company.
13. Lost authority	Regained authority saves audiences' time since one source for info is enough.	Media will try to regain authority by expertise and advertising.	Audience distrusts all information sources equally.
14. Fast media	Demand for edited news and analytical stories grows	Media companies try to serve both experiences and understanding needs.	Audience will eyewitness many events as they happen, but will not understand them

DISCUSSION AND CONCLUSIONS

Changes in media demand are mostly due to reforming new social groups and transformation towards entertaining in all genres. The situations media are used are affected by multitasking and the people who accompany us. The opportunity set of the media products has changed tremendously. Media is available everywhere all the time. The variety of media products is huge.

The trends that affect media demand (RQ1) have been gathered in Table 2. Trends can turn back (phenomena is fading), go on steadily or get stronger. The possible influences of these trends (RQ2) are introduces in Table 2.

Nearly all these developments seem to be harmful for newspapers. But fortunately there are many things newspapers can do to improve their position. The needs of fragmented audiences and new social groups could be met by developing interactive services and providing different variations of the paper for different audiences. Migration is a problem for newspapers, and actions to solving this have been taken with various success. Single households pose a problem. Could there be a lower subscription price for those who live alone? Maybe content could be developed to satisfy the needs of singles? Disappearing mornings are problematic. Could they be regained by innovative creation of widely discussed topics, or by transforming the paper so that it would be easier to take along (maybe tabloid size?).

Television can benefit from the new social groups; it might even be a creator of them. By organizing related activities in the net, they might be able to gain some control over some groups. Television is an excellent medium for entertainment, so it will have no problem with growing demand for it. People living alone pose a possibility and problem for television companies. Selling products could be difficult, and some people do not want to watch television alone, while others fill the void of loneliness in the company of television. Disappearing mornings can be taken back during late nights. Multitasking is a little problem for television, since the commercials —where most of the money is still coming from —also gets less attention than before. Television will most likely be the main driver for the complementation task, so there is no need to worry. Real time broadcasting is television $ cup on tea, so public fancying that is a dream situation for television.

Radio is mainly a large audience media, but some channels could meet the demands of smaller groups. Radio has a big entertainment value and all the changes in situations (migration, singles, disappearing morning and multitasking) benefit it. Due to the convergence, radio will get content cheaper than before. It benefits from complementation process by gaining possibly new kinds of listeners.

Magazines can benefit from new social groups, because they can create products from them. Magazines are often read for entertainment purposes, so the increase in demand for entertainment is a good

thing. Magazines could suffer a little bit due to the growing number of singles, but not as much as newspapers. Some magazines are subscribed mainly for individual needs, not for the family anyway. It is quite common to share magazines with workmates, relatives or friends. Magazines benefit from the convergence and could benefit from the complementing task also.

Almost all these changes will benefit internet content providers. There are only two things television does better than the internet; namely entertainment and real-time broadcasting. There is really nothing that the internet, as a media, should be worried about. But since it is not a single media but a bundle of services - social platforms, huge amount of content providers - I guess there will be enough competition to keep the companies doing business in the internet quite alert.

The answer to RQ3 seems quite clear: The ongoing changes are more beneficial to the new media than the old media.

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THE REVOLUTION OF BRAND MARKETING: THE ERA OF VIRTUAL CONSUMER COMMUNITIES

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ABSTRACT – Virtual communities have become a hot topic in modern marketing. Communities such as Facebook, Twitter and Second Life have received tremendous amounts of attention from researchers. From a marketer's point of view the most interesting virtual communities are the Internet-based consumer communities that celebrate a specific brand or activity. These kinds of communities foster diverse dialogues and often gather consumers describable as heavy-users in the same virtual space. Internet communities have become spaces where consumers build their personality, form social ties and exchange information with like-minded people. Regarding products and services, the consumer is no longer dependent on the information the marketers provide. It can be argued that many companies have lost the control over their brand in the digital revolution. As the branding landscape has changed also marketing activities have to evolve accordingly.

INTRODUCTION AND BACKGROUND

Gartner, Inc., the world's leading information technology research company, forecasts that by the end of year 2011 80 percent of active Internet users, and also of Fortune 500 companies, will be participating in virtual worlds, such as Second Life[1]. At present, the Internet has an estimated world-wide user base of 1.5 billion. The current amount of users is nearly 350% greater than the number of users back in the year 2000[2]. By combining the previous statistic with Gartner's outlook, one can only come to one conclusion – the Internet, along with virtual communities, will continue to expand and grow to an even greater magnitude. From a business perspective, the increase in Internet activity creates new business opportunities as well. According to Forrester Inc., European eCommerce will surge to 263 billion € in 2011[3]. In the light of the given numbers, online commerce is becoming a very lucrative business indeed.

The Internet's triumphant march has had an impact on how companies have traditionally perceived marketing. Companies are getting more experienced in using web pages as distribution channels and to purvey marketing messages to large audiences on a global scale. On the other hand, the formidable amount of brand-related information on the net is making consumers more informed than ever. Some researchers argue that traditional branding is losing its effectiveness due to the increased amount of reliable product information accessible through the Internet, whereas others see online branding as an increasingly important success factor[4]. Park and Stoel[5] have found that brands can be in a central role when consumers are making online purchase decisions; strong brands are likely to decrease the perceived risk of ordering via the Internet. Simon[6] argues that companies are losing control over the elements of the marketing mix. The difference between brand owner and brand customer has become blurred as the Internet provides consumers with the tools to globally spread brand-related information and encourages them to take on the role of a co-brander. According to Rowley[4], consumers have become proactive 'prosumers' with greater control over marketing messages and with the willingness participate in producing the total brand experience.

Researchers believe that in the future online communities will be the fundamental basis of companies' marketing strategies[7]. Especially, understanding consumers' brand community behaviour is considered a key success factor in doing business in the digital age[8]. For the past decades companies dictated the field of marketing due to the fact that there were very little possibilities for large-scale interaction among consumers. Virtual communities are changing the way marketing is conducted by enabling consumers to interact without the constraints of physical time and place[9], and to share their experiences and

opinions in order to influence those of others[10]. In addition, consumption focused communities, such as virtual brand communities, more often represent the reference group consumers turn to when making purchase decisions[11,12]. According to Cooke and Buckley[13], companies should, now or never, find ways to make it even easier for consumers to build relationships and share experiences with other community members.

Benefiting from virtual communities

Virtual consumer communities (communities centred on a specific brand or consumption activity) can be of great value to marketers. Firstly, a company can use virtual brand communities for data mining and learn more about its customers, products, and even competitors. From active communities it is also easy to find potential candidates for pre-release product testing. Secondly, the most active members of these kinds of communities can do some of the work traditionally done by the company marketers by providing information seekers with purchase incentives and reliable information. Brand loyalty is closely linked to virtual interaction and to formation of strong social ties between individuals in a community.

The Internet has become an important information source for consumers regarding their brand and product choices[14, 15]. The reason for this is that consumer-to-consumer communication is perceived as a more reliable source of information than traditional commercial sources[16]. Consumers also seek information on the Internet to guide them in the ongoing use of purchased products and services[17]. The Internet is an effective channel in disseminating information to consumers; it can be accessed easily and the information can be shared relatively freely. The open nature of the Internet, on the other hand, means that marketers can gain a better insight on the factors that drive consumers 'purchase behaviour. Pitta and Fowler[18] argue that knowing what consumers desire before any products are even designed can provide the company with a durable competitive advantage.

The Internet holds an abundance of different research environments to utilize, e.g. chats, discussion boards and forums. For marketers, this galore of options is more than welcome. Internet communities are great sources for marketing data that can be used to identify weak points in a company's products and services. The data can be classified as follows[19]: data on satisfaction with the company's offering within targeted consumers, data on preferred product features and attributes, data on brand loyalty and price sensitivity, data on product's suitability for intended use and other possible purposes of use, data on perceived direct competitors for different products, and data on changes in consumer attitudes over time. The data can be extracted from a virtual brand community by passively lurking or by participating in discussions. As monitoring in online consumer communities can be done discretely, it is possible to eliminate the inherent bias of face-to-face interviews and focus group discussions, where the research subjects are in contact directly with the researcher or company representatives[16]. Chat rooms, virtual fantasy worlds, online games, and other interactive applications are harder to utilize as information sources since they may not be accessible to outside parties[20, 21].

In their quest for more reliable and unbiased information, consumers are more and more turning to the Internet. Standardized and ordinary banner advertisements are getting ineffective in affecting the purchase behaviour of modern consumers[22]. Researchers have shown that information search in virtual communities has, to some extent, replaced the information from marketer-dominated sources, such as the company sales personnel[15 ,23]. The amount of web pages designed for rating various products and services is enormous. The emergence of Web 2.0 technologies has empowered consumers by facilitating the production of consumer generated content. This has lead to fundamental changes in people's ability to share their ideas and views with large audiences[24]. On this basis, companies should not underestimate the interaction taking place in virtual communities. Consumers can prove to be effective in marketing the company and its brand.

Word of mouth, buzz/viral marketing are concepts used to illustrate consumer-to-consumer interaction in commercial context. Villanueva, Yoo and Hanssens[25] have found that consumer-to-consumer information exchange can decrease the customer acquisition costs and increase the long term profitability of a company. Consumers affect each others 'opinions in virtual communities by engaging in elec-

tronic word of mouth. Electronic word of mouth (also eWOM, word of mouse, or online WOM) can be defined as *"any positive or negative statement made by potential, actual, or former customers about a product or company, which is made available to a multitude of people and institutions via the Internet "*[26]. Online word of mouth is easier for companies to follow and analyze than statements made in real-life environments[27]. The observation of real-life interaction requires active observation and interpretation for essential information can be lost otherwise. The more consumers build social relationships online, the more likely they are to seek information and ideas online as well[28].

The virtual interplay between consumers is not without an effect: the buying behaviour of a consumer is likely to change in a way compatible to their virtual reference group[29]. This is evident especially in brand-based communities where the pressure from other community members affects greatly one's purchasing behaviour[30]. It can be argued that if a consumer forms bonds with the community and other community members, she is also more likely to adapt her opinions and behaviour to that of the other members. Furthermore, the impact of consumer-to-consumer knowledge exchange on perceived overall value of the company's offering and consumer's loyalty intentions have been found to be significant[31]. A large part of the actual brand experience can be derived from meaningful online conversations where more experienced users give advice to new ones on how to properly use a product in order to maximize the benefit. The future purchase intentions of a consumer are dependent on the perceived total value of the company's offering[32]. In order to actively reinforce consumers' post-purchase satisfaction and future intentions to purchase, the company must create venues for information exchange among consumers.

According to Keller[33], it is of utmost importance for marketers to understand the dynamics of how their brands are being discussed among consumers, and then to use this knowledge to find effective ways to participate in interactive dialogue with them. Therefore, customer contact should not be avoided; on the contrary, marketers should search for new methods to tailor communications in order to stimulate word of mouth. Word of mouth along with the trust, and purchase incentives it brings with are a cost-effective way to gain competitive advantage[34]. The problem with a direct contact is that consumers may be intolerant to commercial interaction in discussion forums, apart from responses to information requests by other consumers. Anti-brand communities and Hate –pages are good examples of how virtual spaces can also be used as a tool for expressing discontent and anger directed towards a specific brand.

Brand loyalty has been found to be affected significantly by the participation in virtual brand communities and by the trustworthiness of the brand[35,36]. Participation impacts brand loyalty mainly by contributing to the forming of emotional and social ties among the members of a virtual community[37]. The formation of emotional ties can be enhanced by increasing identification of members within the community[38]. Members should therefore be encouraged to create personal profiles and accounts to make them more identifiable. In virtual brand communities, the members may discriminate between the loyalty towards the community and loyalty towards the brand[39]. Both dimension of loyalty are essential for a company. Loyalty to the community is a prerequisite for effective monitoring of consumer needs since there is very little monitoring to be done in an empty community, whereas brand loyalty can be seen as the synonym for a certain cash flow.

Research hypotheses

Researchers have found that participation in virtual communities can increase members' brand loyalty[36, 40]. The impact of participation on brand loyalty can best be explained by the development of strong emotional ties with the brand as a consequence of interaction among community members[41]. The more actively a consumer participates in a virtual brand community, the more she is likely to change her behaviour to that of the other community members[41]. In addition, social ties with other community members are effective in binding a member to a specific community[40]; with time, the members begin to develop a sense of community. The development of strong social ties in virtual context is referred to as bonding or sense of community by researchers[42, 43]. In essence, we are dealing with the same concept, which in this paper is defined as community bonding. The extant research implies that community bonding is likely to

have a positive effect on both community and brand loyalty. Therefore, the following two hypotheses can be proposed:

- *H1a:* Community bonding has a positive effect on loyalty to the community
- *H1b:* Community bonding has a positive effect on loyalty to the brand

Consumers, who have strong social ties with a community and the other members of a community, are the ones more likely and/or able to seek information or ideas in the Internet environment[28]. These bonded consumers perceive the content on a virtual community as more credible than those with weak emotional ties[44]. Therefore, the following hypothetization can be offered:

- *H1c:* Community bonding has a positive effect on the effectiveness of eWOM

Researchers argue that bonding is facilitated through active participation in virtual discussions[43, 45]. Members who actively take part in discussions in a virtual brand community are likely to build strong inter-personal relationships with the other members, and create a sense of community in the process[47]. On the other hand, passive participation is often driven by a consumer's informational needs[46]. It is probable that consumers, who frequently visit a virtual community in order to access information, slowly build a sense of loyalty towards the specific community they perceive trustworthy as an informational source. Thus, the following hypotheses can be formed:

- *H2a:* Community bonding is positively affected by active participation
- *H2b:* Community loyalty is positively affected by passive participation

Electronic word of mouth has been found to be a significant driver of brand loyalty in the online environment[33, 47]. According to Gruen, Osmonbekov and Czaplewski[31] electronic word of mouth can be effective in evoking buying behavior and creating added product or service value, thus creating behavioral and attitudinal brand loyalty. The underlying assumption is that a positive attitude towards virtual exchange of information, and ideas is linked to growth of brand loyalty. Implications of existing theory lead to the following hypothetization:

- *H3:* Electronic word of mouth builds brand loyalty in virtual brand communities

MATERIAL AND METHODS

The data for this research was collected from four different virtual brand communities during the period in between March 20th and April 10th 2008. The brands chosen for the research are Hasbro's Transformers and Apple Macintosh. An online survey was used to collect data from each of the four virtual brand communities.

Questionnaire design

The used questionnaire was the end product of extensive literature review on each of the research variables. The functionality of the questionnaire was tested prior to actual research. The survey instrument contained a variety of measures to assess the following six concepts: community bonding, community loyalty, brand loyalty, electronic word of mouth (eWOM), participation. The previous concepts were measured with four variables each. A seven-point Likert -scale was used to measure each of these 20 research variables.

In practice, the questionnaire was made available to the audience by posting a survey link along with a motivational text to discussion board sections of the examined communities. IP filtering was used to ensure that a single respondent did not fill multiple questionnaires from the same IP address this way relieving the bias inherent in web surveys.

Development of the measures

In this research, the items used to operationalize the latent constructs were adapted from previous studies and, in some cases, modified for a better fit to the virtual brand community context. The objective of the adaptation was to guarantee the face validity of the measurement items. Face validity refers to which degree the respondents judge the items to be appropriate for the targeted construct. Furthermore, an ex-

pert was consulted on the face validity of the research items; items were qualified as representative of the underlying constructs.

Analysis methods

The empirical research in this paper is confirmatory by nature. It seeks to confirm relationships that have previously been theoretically or even empirically established in the literature. Exploration of the research hypotheses combines elements of both multiple regression (measuring dependencies between variables i.e. confirming or disproving hypotheses) and factor analysis (representing latent constructs with sets of variables). The chosen analysis method for the research was structural equation modeling (SEM). SEM was selected largely because of its transcendent confirmatory capabilities compared to other options. SEM estimates a series of separate, but interdependent, multiple regression equations at the same time by specifying the structural model used by the statistical software[48].

The SEM procedure was two-phased. First, the measurement models for the latent variables were estimated using confirmatory factor analysis (CFA). Second, the structural model was built by constructing the model from feasible measures. In this case, few of the initial variables in the constructs were dropped based on low factor loadings. The results and specific indicator values of the structural equation are under examination in the next chapter. In the first stage of CFA the aim is to confirm that the research variables belong to separate sets of variables that measure a single latent variable each. It is called confirmatory analysis since the objective is to confirm a researchers own preconceived notions, based on theoretical support or empirical evidence, on the actual structure of the acquired data. A factor can be described as a dimension inside the data; a grouping of different variables that out of the whole set of variables best represents a specific factor[48]. After coming up with satisfactory results with CFA, the separate latent variables (factors) were examined for reliability and validity.

RESULTS

The sample

The initial sample consisted of 299 filled questionnaires (Transformers = 110 and Apple = 189). Only 2 responses were discarded, due to a palpable remissness in completion of the web survey. The gender distribution of the respondents was 94 percent male and 6 percent female. This can be explained to a great extent by the chosen brands. The distribution of age reveals that the majority of respondents were between 17 and 34 years of age. A staggering 90 percent of the respondents reported owning a product/products of the brand around which the community operates.

SEM procedure

The hypothesized structural model was tested using Lisrel 8.80[49]. Modeling was performed deploying covariance matrix and the maximum likelihood estimation procedure. The fit statistics for the structural equation model (χ^2 = 388.08 [df = 145, p = 0.00], NFI = 0.95, RFI = 0.94, CFI = 0.97 and RMSEA = 0.075) show a reasonable fit. The likelihood-ratio chi-square (χ^2) for the model is notably high. However, as a fit measure χ^2 is appropriate for samples between 100 and 200, with the significance test becoming less reliable with sample sizes outside the range[50]. The acquired sample consisted of 297 respondents, thus inevitably resulting in a high χ^2 value. On the other hand, the normed chi-square for the model, χ^2/df = 2.68 ($p<0.001$), is below the suggested 3.0 value, indicating a good overall fit[51].

Hypothesis tests

Hypotheses 1a and 1b: There was a significant positive correlation between community bonding and community loyalty (β = 0.54, t = 5.47), thus supporting hypothesis 1a. The link between community bonding and brand loyalty, on the other hand, was not significant enough to fully support hypothesis 1b

(β = 0.10, t = 1.29). This finding implies that community bonding is probably more strongly related to community loyalty than to loyalty towards the brand.

Hypothesis 1c: There was sufficient support for hypothesis 1c (β = 0.57, t = 3.70); community bonding has a positive impact on the effectiveness of electronic word of mouth communication. In other words, bonding with the community seems to enhance a consumer's opinion about the usefulness and reliability of the community content, and the opinions of other members of the virtual brand community.

Hypotheses 2a and 2b: As hypothesized, there was a strong and significant relationship between active participation and community bonding (β = 0.75, t = 6.99) meaning that the more willing and motivated consumers are to participate, the more likely they are to build emotional ties with other community members and the community as well. Passive participation was positively related to community loyalty at a significant level (β = 0.40, t = 3.54). It can be concluded that both of the hypotheses were confirmed in this sample.

Hypothesis 3: although the first hypothesis regarding virtual brand communities and brand loyalty was rejected, the second one was a direct hit. Electronic word of mouth communication was found to have a positive and significant effect on brand loyalty (β = 0.45, t = 3.70). Forming of emotional ties may be more closely related to loyalty towards the community, whereas eWOM can probably concretely build brand loyalty. Nevertheless, it should be noted that perceived quality of eWOM is the mediating element between bonding and brand loyalty.

DISCUSSION AND CONCLUSIONS

Virtual brand communities can provide a company with a new and significant dimension to its brand marketing activities. In essence, virtual brand communities are social networks founded on technological platforms. The development of virtual brand communities is moving towards more versatile interaction possibilities through the implementation of sophisticated communal technologies. Nevertheless, the core of virtual brand communities is formed by the relationships that members establish with the brand, company and other members. The big question regarding virtual brand communities is whether they provide any concrete value for a company. The answer is, of course, definitely. Companies should be interested in virtual brand communities at least for the following reasons:

Information about the customers

The members of a virtual brand community represent the clientele of the company and can contribute a great deal to its competitiveness. The information in virtual brand communities is mostly brand-related and therefore relevant for decision making. Virtual brand communities contain information related to customer satisfaction, brand loyalty, desired future products or services and product attributes, customers 'price sensitivity, and unexpected uses for products. When running an own virtual brand community, a company can build a member register that can be useful in identifying different customer segments; this way the community can easily be transformed into a segmentation tool when targeting marketing activities in real-life environment.

By observing the community a company can find weak signals about the changes in consumer behaviour and use them to anticipate future trends. Marketing campaigns and real-life events can draw a great deal from the community culture and the traditions community members share. This way it is possible to bring marketing activities closer to the customer and make them more relevant. Needless to say, the extractable data can make a difference between success and failure in the competition.

Information about the competitors

Members of virtual brand communities often oppose competing brands, thus providing useful information on the performance of a company's products and services in comparison to those of competitors. The open nature of the Internet makes it possible for companies to take a peek inside competitors 'virtual brand communities; the same option is, of course, available to the competitors as well. Virtual brand

communities of a competing brand can be examined in order to find out what are the main benefits consumers get from using the products or services of a competitor.

Test new product ideas

Virtual brand communities can be used to find potential candidates for a company's new-product testing campaigns. User profiles and registration information can be used to discover the most active and brand loyal consumers. These consumers can then be contacted to find out whether they are interested to participate in testing new products and share their opinions about desired product attributes. At this point, companies should also consider the possibility to purvey the experiences of the testers to larger audiences; blogs can be utilized as diaries where the testers share their experiences with a product or service.

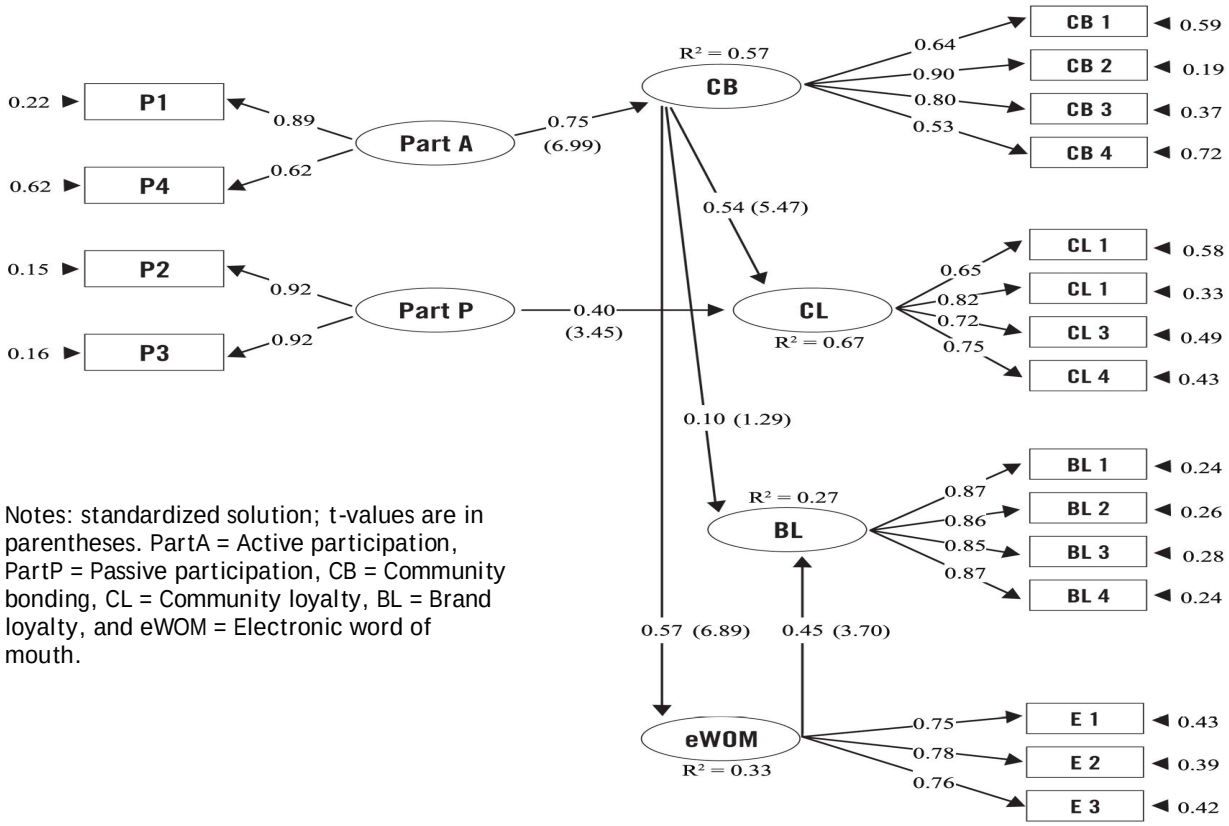
Brand loyalty

For consumers, virtual brand communities are convenient sources of brand-related information; they are more reliable than a company's marketers, they are easy to access, and enable interaction among like-minded consumers. The brand-centred consumer-to-consumer information exchange has an impact on consumers' brand loyalty. Positive electronic word of mouth can serve as the needed confirmation for a consumer's purchase decisions. The more consumers get involved in a virtual brand community, the more likely they are to adapt their purchase behaviour to that of the other community members.

Virtual brand communities in the Internet are easily accessed and explored by companies. A company's virtual brand community strategy can concentrate on utilizing existing communities as data mines and sponsoring the most prominent ones, or on the process of building an own virtual brand community, with the last alternative being the most challenging path.

The research results presented in this paper give several cues on what makes a virtual brand community thrive. Bonding is the most central element in binding consumers to a specific community. In order to enable bonding consumers have to be aware of the community and they have to be incited to take an active role in generating content to the virtual brand community. It is of course obvious, that all of the user will not become equally active, thus from the perspective of information seekers the community platform has to be designed for easy access of information.

In conclusion, it can be stated that virtual brand communities cater for the only asset indispensable for every company – the customer. Modern managers are too often chanting for shareholder value, with lack of interest for anything else. It is undeniable that shareholder value is the grand objective of any company, but even so, many seem to forget that customers are the only source truly contributing to its generation. By bringing the brand closer to its customers, a company can breathe life into it, thus assuring that economic value, along with positive shareholder value, is created in the future as well.



Notes: standardized solution; t-values are in parentheses. PartA = Active participation, PartP = Passive participation, CB = Community bonding, CL = Community loyalty, BL = Brand loyalty, and eWOM = Electronic word of mouth.

Figure 1. The structural equation model.

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SUSTAINABLE CONSUMPTION

DOWN-TO-EARTH ECONOMY: THE DISCURSIVE CONTRIBUTION OF SUSTAINABLE CONSUMPTION AND PRODUCTION DEBATE

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ABSTRACT – Sustainable consumption and production (SCP) is a topical concept as national SCP programmes have been drafted by several countries around Europe. This discourse analysis, based on interviews with Finnish SCP committee members, suggests that sustainable consumption and production can be a useful concept for approaching economy in a down-to-earth manner. It can enrich the environmental policy agenda that has long been dominated by technology-oriented ecological modernization. A critical point is, however, that the SCP debate is more concentrated on the needs of consumers than on the needs of poor, the initial focus of sustainable development. Moreover, ideas on how to really change consumption patterns seem to be scarce, scattered, and also contradictory among the SCP stakeholders.

INTRODUCTION AND BACKGROUND

Sustainable consumption and production (SCP) is an emerging policy field that has evolved particularly after the Johannesburg World Summit on Sustainable Development (2002). In Johannesburg, it was agreed that a 10-year framework of programmes will be developed in support of regional and national SCP initiatives. The aim of this paper is to shed more light on the *discourses that the SCP concept enables and encourages.* As empirical material has been used 20 interviews conducted with people who participated to the working of the Finnish SCP committee.

An empirical study that organizes the discourses can be fruitful in the case of SCP as there seems to be *continued confusion* over just what is or should be included under the heading of sustainable consumption and production. The confusion was evident already in the Earth Summit of Rio de Janeiro (1992) where some governments emphasized only consumer information while others were willing to problematize Northern consumption patterns in a more profound way.[1]

Hajer[2] has stated that developments in environmental politics critically depend on the specific social construction of environmental problems. From constructivist perspective, certain policy concepts may enable, encourage or hinder the expression of certain facts, views or visions for future. A discourse is embedded in language and it enables 'those who subscribe to it to interpret bits of information and put them together into coherent stories or accounts'.[2] What kind of discourses the concept of sustainable consumption and production promotes in the Finnish context? And what are the conceptual roots and theoretical linkages of these discourses? By addressing the first one of these questions, this article aims at providing a broad yet organized picture of the big questions present in the SCP debate as well as of their mutual relationships. By discussing the latter, the attempt is to shed light on the diverse theoretical roots that the SCP debate stems from.

MATERIAL AND METHODS

In Finland, the making of the SCP programme was broadly participative: a committee of some 40 people deliberated for one and a half years to come to a consensual proposal. The committee members represented various ministries but also other stakeholders of the SCP field such as business and industry, labour unions, environmental organizations and research institutes.[3] The finalised programme 'Getting more and better from less' was accepted in 2005. It introduces in total 73 proposals for action. Key proposals include establishing a material efficiency service centre, defining long-term policy guidelines to

reshape the taxation system and initiating material- and energy efficiency dialogues for different industrial sectors.

The lengthy deliberative process that produced the Finnish SCP programme can be seen as a fruitful background for analysing discourses. Approximately half of the people involved in the working of the Finnish SCP committee were interviewed for the study. The 20 focused interviews concentrated on certain themes such as the provisions and the making of the Finnish SCP programme and the general politics on sustainable consumption and production.

The interviews were recorded, transcribed and later coded and analyzed by Atlas.TI. When tracking the discourses, the aim was to find the important bits from the empirical material and to see, by using theoretical knowledge about the field, what kind of stories or accounts they could make.[2] Thus, the analysis combined both theoretical and empirical approaches.

RESULTS

When making the analysis, one of the most striking features of the interview material was the great *variety* of ways that the term *sustainability* was used. What was labelled as sustainable varied a lot within the material. The era of sustainable development can be seen to begin with the publication of the Brundtland Report in 1987. As frequently cited, Our Common Future defined sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs".[4]

In my interviews, this original definition had given way to more recent definitions of sustainable development. The generally shared idea was that sustainability means taking into account the three or four "pillars"[3,6], the ecological, economic, social and, as some added, cultural dimension of sustainability. However, the material showed a number of ways to *weight certain pillars over others*. Thus, visible was how sustainable development allows for different interest groups or sector-representatives to package their message and interest as something that promotes sustainability.

"Finland is losing jobs all the time ... mostly to the former socialist countries and also to Asia .... [S]o of these dimensions of sustainable development one should emphasize employment or this social dimension in the future ... [I]f we think for example Finnish agriculture ..., so this ecological dimension is not a problem."(H07)

When talking about sustainability, Finland was characterized both as a *model country* for sustainable development and as a *predator* that makes others pay environmental and social price for its prosperity. Accordingly, the change needed was seen both as fundamental and as superficial. On the other hand, typical for sustainability talk was the recognition of the *global context* where the possible problems of sustainability occur and need to be addressed. The globalised economy is a challenging field for grapping the problems as it works beyond the powers of a single state. Moreover, in global context, worries about national competitiveness may override other concerns. Thus, some considered that sustainable development has lost its environmentally conscious roots.

"[I]n my opinion, the whole history of [sustainable development] has dealt with the aspect that there was the need to strengthen environmental angle in economic processes while taking into account that it has social consequences. So now it feels that it has turned upside down."(H05)

Dryzek[7] has pointed out that the Brundtland report itself is a bit ambiguous on the existence of *environmental limits*. In addition, the *capitalist economy* is taken pretty much for granted by the advocates of sustainability. The environment versus growth controversy that polarized the debate in the 1970s is partially side-stepped. Emphasis is in the reorientation of growth to meet the urgent needs of the world's poor and to reduce the impacts of economic activity on the environment.[6,8] Thus, sustainable development appeals to established notions of progress, equity, prudence, and stewardship, but combines and extends these in new ways.[9]

While the idea of sustainability may be vague and even controversial as a concept that defines, for example, what should be done to our consumption and production patterns, it has also another dimension. This dimension deals with the ways to create fruitful circumstances for policy-making on sustain-

able development. In this context, ideas about *participation* and consensus-oriented deliberation play key roles. Some of the interviewees saw participatory governance and social learning as the practical means to implement sustainable development. The same process-oriented view is held also by many academic writers of sustainable development.[6, 10, 11, 12]

"[I]n sustainable development, ... we Finns have had that kind of approach that emphasises social learning, so that we don't aspire at a...[sighs] grand plan that is carved to stone, and that is then implemented ... . But we depart from the idea that we learn all the time, we learn new things, and there will be new programmes "(H11)

Lafferty and Meadowcroft[13] conclude that sustainable development provides a framework within which to reconcile different sorts of interests and considerations. Meanwhile, Dryzek[14] calls sustainability as "the axis around which discussion occurs ". This idea about sustainability as a kind of *discursive forum* to deliberate on the big challenges of our time is the approach utilized in this paper.

When making the analysis, it was noticed that a considerable amount of the empirical material dealt with the ways how the interviewees saw the relationships of the different pillars of sustainable development. Finding synergies is the essence of sustainable development.[15] Thus, it was particularly interesting to analyse the positive *win-win* relationships that the interviewees found to exist between the pillars. The material that dealt with the "double-dividends "between these pillars formed the plot for the discourse analysis. For example, Industrial welfare state discourse was built upon empirical material that dealt with the win-win of meeting social needs and promoting economic growth. Support for constructing the discourses and putting the pieces together was got from the theoretical literature of the sustainable consumption and production field. Interesting was that there seemed to be a lot of material that dealt with double-dividends between some two – and not all the three – of the pillars. The names and mutual relationships of the discourses can be found from the Figure 1.

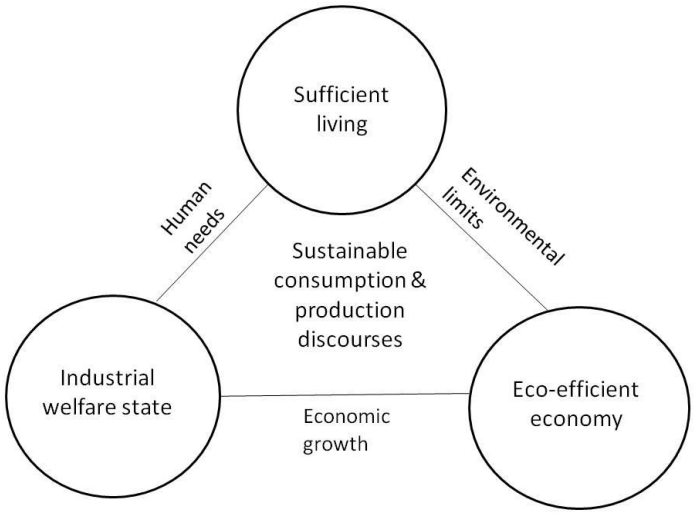

Figure 1. The discursive dimensions of sustainable consumption and production.

Industrial welfare state discourse

What kind of discourses Figure 1 entails? In Industrial welfare state discourse, the core idea is that meeting social needs and promoting welfare requires strong economy. Therefore *risking economic growth risks also the social sustainability*.

"Finland is a raw-material intensive country the well-being of which, in our opinion, is based on successful export industry .... If that suffers ... so we think that it will affect our well-being in Finland. " (H09)

The flexible nature of the sustainability concept allows for the Industrial welfare state discourse to play down environmental challenges. Meanwhile, the importance of social and economic dimensions is

stressed. Environmentally-oriented thinking is pictured as 'luxury,' something that can be afforded once the more basic needs are satisfied.

"But also here in Finland, we have poverty and a lot of that kind of social things, problems, the fixing of which promotes sustainable development by all means ... [I]f the lives of people are not all right, so it is useless to go and tell them about environmental issues, being ecological, if people have so little money."(H14)

In addition, an important part of the Industrial welfare state discourse was the idea that *environmental problems* or sustainability problems in general, are *not that serious* – at least in Finland. Thus, what was seen to be the goal in the process of sustainable consumption and production, and sustainable development in general, was largely to defend the current status quo. And if some changes would be needed on international level, there was no reason for a small country to play too brave. Other, more influential, countries should take the lead.

"[I]f you think globally, so we cannot by ourselves…And then here is also the dilemma that even though Finland and EU would do everything ... so it would be only 8 percent of this climate change." (H20)

Industrial welfare state discourse shows the strong standing that the long-dominant discourse of *industrialism* still has in our society. In addition, it demonstrates how the concept of welfare state helps those worried about social services to find those promoting stronger economic growth. According to Dryzek[16], industrialism is committed to growth in the quantity of goods and services produced and to the material well-being which that growth brings. Environmental discourses depart from these terms. Still, in the Finnish context, ideas about welfare state probably have so strong positive connotations that they can be easily associated with sustainable development.

Eco-efficient economy discourse

Eco-efficient economy discourse is based on the notions that there can be win-win relationships in promoting economic growth and obeying environmental limits. The supposition is that *fixing environmental problems is also economically beneficial*, at least in the long term. Eco-efficient economy discourse takes the environmental challenge related to SCP much more seriously than Industrial welfare state discourse. Further, it promotes restructuration of the political economy along more environmentally sound lines.

"In Germany, regions that have improved their eco-efficiency ... for example also employment rate is better, economy goes fine. And regions that have traditional heavy industry are not bearing out. ... That kind of far-reaching structural adjustment programme would be needed."(H01)

Closely linked to science, the development of environmentally sound *technology* is an important part of the SCP solution package provided by the Eco-efficient economy discourse. It reflects hope in human capabilities to come up with rational solutions. The emphasis on technological innovations as means of solving environmental problems links Eco-efficient economy discourse firmly to the *production* dimension of the SCP concept. About consumption, it has much less to say.

"[T]he development of environmental technology plays a key role if we think about getting forward."(H08)

As already the name reveals, the societal vision of the Eco-efficient economy discourse includes emphasis on energy and material *efficiency* as well as on life-cycle thinking. In general, it seems that eco-efficiency is an important concept in the whole discussion on SCP as it was frequently mentioned in the interviews. What helped in piecing together the Eco-efficient economy discourse was the theory of *ecological modernization*. As a political project, ecological modernization breaks with both strategies requiring radical social change and those offering end-of-the-pipe solutions.[17] Ecological modernization recognizes the structural character[18],[19] of environmental problems and highlights the win-win possibilities between protecting the environment and boosting the economy.[20, 21] Thus, it shares the starting point of the Eco-efficient economy discourse.

Ecological modernization was first identified in the early 1980s by the German social scientists Joseph Huber (1982) and Martin Jänicke (1985) who observed and interpreted its development in Ger-

many. Hajer[17] suggests that with the global endorsement of the Brundtland Report and the general acceptance of Agenda 21 in the Earth Summit, ecological modernization became dominant in political debates on ecological affairs. From this perspective, sustainable development and ecological modernization would share a lot in terms of both history and content.

According to Lafferty and Meadowcroft[22], promoting eco-efficiency, integrating environmental considerations into decision-making and linking the long-term economic progress to environmental protection are features embraced both by sustainable development as provided by the Brundtland Report and ecological modernization theory as presented in this article. On the other hand, contrasts between the two are also significant: While sustainable development is international in focus, ecological modernization concentrates on national level. Moreover, sustainable development cannot be reduced to the sort of narrowly economistic and technocratic approach like that of ecological modernization.[23] However, as Eco-efficient economy discourse was so popular among the interviewees, it can be that sustainable consumption and production has become the politically re-invented name tag for ecological modernization. Also Spaargaren[24] concludes that the approach of ecological modernization is focused primarily on the reconstruction of those institutions of modern society which are involved in production and consumption. This would make it well-fit to the discussion on SCP.

To sum up, Eco-efficient economy discourse follows the main lines of argument of the general ecological modernization theory: It calls for scientifically grounded environmental reform of economy and technology and reflects the win-win between environment and economy. Eco-efficient economy has a rather strong change-oriented focus compared to, for example, Industrial welfare state. Still, considering the complexity of consumption and production practices, it can be asked whether its analysis and tools are a bit too mechanistic and technocratic.

Sufficient living discourse

As a seed for Sufficient living discourse acted the idea that promoting environmental sustainability in consumption and production would be beneficial also for people and their well-being. What essentially characterizes the Sufficient living discourse is the logic that for a country like Finland *less stuff means more life quality.*

"[W]hat is aspired is also the wellbeing of people, not in economic sense but perhaps more like joy and happiness. And I don't remember how we put it ... it was less stuff and more life quality. That, in my opinion, kind of pictures the goal the society could set for itself. "(H08)

According to Jackson[25], it has been a frequent suggestion in the literature that this kind of double dividend is inherent in sustainable consumption. Manoochehri[26] points out that the roots of the sustainable consumption debate lie both in the long-standing concerns about natural *resource depletion*, and in the analysis of economic demand *behaviour*. A first seam of literature relevant to sustainable consumption was devoted to the practices of consumers, both in terms of behavioural drivers and the social and environmental costs of those practices. This seam stretches from Veblen's (1899) idea of conspicuous consumption to, for example, Durning's (1992) well-known book 'How much is enough?'

"[F]irst thing is of course that consumption should stay within the framework that nature can take. - - So the problem is that we are so rich. - - [A]nd then the question is, that should we content ourselves with somehow less. "(H07)

What emphasizes the link between sustainable development and sustainable consumption is the fact that the most broad-ranging outcome of the Earth Summit, Agenda 21, includes Chapter 4 entitled 'Changing Consumption Patterns'. Even though Agenda 21 is a non-binding plan of action for the international community on sustainable development, Chapter 4 could be seen as a mandate for altering consumption and production patterns. Manoochehri[26] interprets, however, that compared to even the limited things that have been achieved based on the other chapters of Agenda 21, the results of the Chapter 4 mandate are close to a failure. According to him, one of the reasons behind the failure has been lack of distinction between sustainable development and sustainable consumption. In addition, sustainable consumption is easily cast as a negative message, either economically or morally, as it calls for restraint use

of resources and changes in behaviour. Moreover, it remains hard to balance the technical, efficiency-oriented message familiar from ecological modernization, with the more socially-complex issues of consumer preferences and behaviour.

A critical point made by the Sufficient living discourse is the realization of the *limits to eco-efficiency*. In the interviews, it was taken up that while for example cars have become more efficient, the growing size of vehicles has allowed for the traffic emissions to keep on growing. Thus, this so called rebound effect challenges the hopes vested to solving SCP-related environmental problems by efficiency gains alone.

The critique of eco-efficiency made the interviewees seek solutions from the social domain. The call was to change the *values and behaviour* of people. Different thing was, however, how this change could be eventually realized as it seemed that the criticism on eco-efficiency casted a shadow over the whole toolbox provided by the Eco-efficient economy discourse. Thus, views were split as regards the usefulness of economic instruments in solving the 'behaviour problem 'of sustainable consumption and production. While some saw economic instruments as the only effective way to change peoples 'behaviour, others counted more on informational devices and education, and some just concluded that changing the values and behaviour is extremely difficult.

As regards the role of *consumers* in making sustainable consumption happen, already Veblen[27] rejected the idea of rational homo economicus that is capable of maximizing his personal utility. For Veblen, humans were conspicuous consumers that competed, contrary to reason and better knowledge. More recently, writers such as Moisander[28] have criticized the role scripted for green consumers. There has been a tendency to rely on an individualist view of the subject as an autonomous, conscious, and self-contained agent whose mind is capable of independent thought and action. On the whole, Moisander concludes, such an individualistic conception of subjectivity and human agency largely fails to recognize the historical, political and social conditions and limits of everyday life.

"This [changing of consumption and production patterns] is challenging of course in the sense that this deals largely with persuasion or shaping the sentiment or the behaviour. So contrary to something like money or fiscal policy in which you just need to crank the tap and something happens." (H04)

Sufficient living discourse also had some own proposals for shaping the political economy. The idea was that the actual *needs* of consumers should be taken to the *core of the economy*. Thus economy should be need-driven and not production-driven. As it could be more environmentally friendly to satisfy needs with *services,* instead of material products, the development of the service sector should be promoted.

Moreover, Sufficient living also notices that it is not only money that moves people, and that for example an enabling infrastructure counts a lot. Accordingly, *environmentally sound living* could and should be *made easier*. Interviewees pointed out that different kinds of product-service systems could help in paving the way for the introduction of environmentally friendly technology.

"This was in my opinion cute; the promotion of new product-service systems ... . This means for example the installation of a solar panel. ... [A] normal person won't like to start to think about that ... . There should be someone who would come to design it for you and say that these are the options and then you can decide between them. Then the same partner organizes the installation and gives maintenance instructions."(H01)

To conclude, compared to Industrial welfare state and Eco-efficient economy, Sufficient living discourse provides a more detailed analysis about the SCP related problems at hand. It points out that eco-efficiency is not enough and even getting the prices right can fail if there are other structural barriers on the way. It opens up new kinds of visions by paying attention to human needs and the opportunities of the service sector in answering them. On the other hand, while behaviour and values of people stand at the core of the Sufficient living discourse, there seems to be confusion about how to really change them. This is a potential weakness of the discourse as it easily leaves the job on the shoulders of the green consumers. While win-win solutions for environment and human wellbeing may exist, the literature shows that they require a concerted societal effort to realize.[25]

On the other hand, product-service innovations as well as the ecological restructuration of economy and systems of provision are ideas that could be shared by both Eco-efficient economy and Sufficient living discourse. As they manage to balance between the different aspects of the discourses, they might be seen as potentially useful tools in the palette to promote sustainable consumption and production.

DISCUSSION AND CONCLUSIONS

In the beginning of this article, the following research questions were posed: What kind of discourses the concept of sustainable consumption and production promotes in the Finnish context? And what are the conceptual roots and linkages of these discourses? Table 1 below answers these questions by summing up the analysis presented so far. What Table 1 shows is that Industrial welfare state and Sufficient living share the interest in social needs. While Industrial welfare state deals with securing the national economic growth, Sufficient living questions the connection made between growth and quality of life. From the social point of view, Eco-efficient economy could be criticized for technocracy. Still, if environmental concerns are seen to be the core of promoting SCP, Eco-efficient economy and Sufficient living sketch some new future visions while Industrial welfare state mainly defends business-as-usual.

On the basis of the analysis, an important question to ask is whether the concept of sustainable consumption and production can provide anything *new* for the discussion on sustainable development and environmental policy. What seems fresh from the mainstream environmental policy point of view are the provisions of the Sufficient living discourse. It is broadening the scope of problem definitions as well as solutions compared to the more mechanistic thinking of ecological modernization. What is particularly appealing is the way it discusses economy. By addressing things such as human well-being and the meeting of the needs in environmentally sound way, the discourse brings *economy down to the grass root level of everyday life*. It enables us to ask questions such as: Is economic growth making us happier? What more ecologically benign consumption and production patterns would mean in practice? And to what extent it is fruitful to talk about economy beyond the social?

What was a bit surprising in the interviews was the rather restricted definition of social sustainability. The discussions dealt mostly with the social dimensions of consumption and production in Finland. Thus, the needs of the world's poor, the initial focus of the Brundtland Report, gave way to the *needs of consumers*. Moreover, the questions on the potentially massive global social problems related to, for example, extractive industries, manufacturing or international trade were hardly addressed in the interviews. Since the understanding about environmental problems and, to some extent, also economy was global in the interviews, the nationally restricted understanding of social sustainability seems odd. An explanation could be that SCP talk in general bears closer resemblance to ecological modernization than to the 'original' sustainability language of Our Common Future. And, as Dryzek[29] points out, 'ecological modernization is completely silent about what might be appropriate path for the Third World societies'.

To conclude, it is fair to say that in the interview material, there was also text that carefully integrated the different discourses presented here. So, the discursive model drafted in this paper is only a kind of caricature of the elements present in the discussions. Still, what it hopes to provide is a more organized, empirically inspired but theoretically rooted picture about the big elements of the sustainable consumption and production debate. It is built upon interviews conducted with SCP stakeholders in Finland. However, as the empirical material went rather easily together with the previous literature on the field, similar discursive structure can probably be found also from other related cases.

Table 1. The discursive dimensions of sustainable consumption and production.

	Industrial welfare state	Eco-efficient economy	Sufficient living
Current situation	Finland as a model country for sustainable development	Finland meeting the global challenge of environmental problems.	Finland facing pressing ecological limits and problematic consumption patterns.
Need for change	No. Rather there is the need to defend the status quo.	Yes. Eco-efficiency should be promoted by incorporating the environmental costs into economy.	Yes. But eco-efficiency is not enough – changes in peoples' values and behaviour are needed.
Future vision	Even more prosperous and socially sustainable welfare state.	Growing but eco-efficient economy with ecologically sound product life-cycles.	Newly structured economy that departs from needs and provides services.
Link to SCP	Restricted definition of sustainability	(Sustainable) production	(Sustainable) consumption
Roots (win-win)	Industrialism (economic-social)	Ecological modernization (ecological-economic)	Critique of consumer society, limits to growth, sustainable consumption (ecological-social)
Critique	Fails to seriously acknowledge ecological challenges. Enables for the social and economic interests to defend the status quo.	Offers a clear and practical approach to solving broad-ranging environmental problems. Still, view on society and consumption mechanistic and technocratic.	Includes a more thorough analysis about social life and human needs. Ideas about how to really change things somewhat undeveloped.

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POLICIES TO PROMOTE SUSTAINABLE CONSUMPTION: FRAMEWORK FOR A FUTURE-ORIENTED EVALUATION

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ABSTRACT – Governments are today developing policies to promote sustainable consumption, yet policy makers face many uncertainties about policy impacts. These include uncertainties about how policy instruments influence consumption patterns and about the impact of changes in consumption patterns on ecological, social and economic sustainability. An assessment of such impacts must account for the fact that consumer action is interlinked with the dynamic activities of other market players and the path-creating effects of technologies and systems of consumption and provision. Our paper presents an interdisciplinary conceptual framework for the assessment of policies to promote sustainable consumption. This assessment is conducted within a recently launched EC FP7-funded project called EUPOPP. It aims to use material flow analysis (MFA) to model the prospective impacts of best-practice policies on selected sustainability indicators in Europe.

INTRODUCTION AND BACKGROUND

The role of unsustainable consumption patterns in the deterioration of the global environment has been on the international policy agenda for more than a decade[1]. As a result, many European governments are developing strategies and policy instruments to promote sustainable consumption, and the European Commission has launched an Action Plan for Sustainable Consumption and Production[2].

The aim of the EUPOPP project (www.eupopp.net) is to analyse the sustainability impacts of the implementation of strategies and policy instruments for sustainable consumption in Europe. Our particular focus is on strategies and policy instruments[3] that target the demand-side, i.e., private or organizational consumption, and products. There is great potential for resource efficiency improvements in these areas, but also great uncertainties about the capacities of public policy to influence them[4].

In the EUPOPP project, we examine the impacts of sustainable consumption strategies and policy instruments by assessing the resultant improvements in economic, social, and environmental performance indicators against a business-as-usual scenario. Our focus is on two of the major fields of consumption in terms of environmental impacts[5], i.e., housing and food.

The impacts of sustainable consumption strategies and policy instruments depend on a complex network of pathways. Firstly, strategies and policy instruments are realised in the form of various outputs, such as laws, regulations, programmes, schemes and implementation measures. Secondly, these outputs can have variable outcomes in terms of changes in consumer behaviour (i.e., the demand, use and disposal of products and services). Thirdly, the changes in consumer behaviour can have various impacts on environmental, economic and social sustainability[6], which are mediated via changes in production patterns, changes in other consumption patterns, and changes in entire product systems.

This paper summarises the conceptual framework of the EUPOPP project and outlines the analytical approach adopted in the paper. Section II discusses the first pathway – the realization of policies in concrete instruments. Section III analyses the second pathway – from policy output to policy outcome in terms of changes in consumption patterns. Section IV discusses the pathway from consumption pattern changes to sustainability impacts. The concluding section draws some implications from this conceptual framework for empirical analysis.

FROM POLICY IDEA TO POLICY OUTPUT

We can trace the pathways from policy idea to policy output by constructing intervention theories[7],[8] in order to identify the conditions under which the policy ideas can lead to the expected outputs, and eventually, outcomes. Policy instruments are central here, and we define them the set of techniques of governance by which public and private institutional actors support and effect social change. For that purpose they usually involve the totality of existing forms of societal steering, comprising institutionalised societal self-regulation (cp. voluntary and procedural instruments), various forms of cooperation of public and private institutions (cp. economic and communication-based instruments), as well as mandatory regulation[9,10]. We have conducted a review of the most commonly applied policy instruments in the field of sustainable consumption in order to identify conditions for success and failure. These instruments include:

- regulatory instruments,
- economic instruments (including the special category of green public procurement)
- communication-based instruments (including the special category of labelling) and
- voluntary and procedural instruments.

Regulatory instruments oblige the addressees (citizens or organizations) to comply with government rules under threat of sanctions. Examples include bans, mandatory standards and permit requirements[11]. In order for these instruments to be successful, a number of context-related conditions must be fulfilled. A functioning legal system is required for establishing and implementing norms and standards. Appropriate physical, human and organizational resources need to be available to collect and assess information on the environmental issues at hand, as well as the capacity to decide on appropriate measures. During enforcement, governments have to be capable to oversee compliance and impose sanctions if necessary[12]. New instruments can thus gain significant benefits from existing regulatory capacities: for example, regulation and minimum standards are especially successful in the housing sector where sustainable consumption policies have been traditionally preceded by health and safety regulations[13]. Building codes are an example of an existing framework that has evolved to include measures to promote sustainable consumption. Apart from this, most environmental regulations have focused on production processes until now. Recently, attention in environmental policy has turned to products, and environmental product standards are a new instrument in the field of sustainable consumption. The EU Eco-Design Directive[14] is an example of a product standard that is expected to have a significant impact on e.g., the energy-efficiency of electrical and electronic products.

Economic instruments involve the distribution or levying of resources, thus making certain behaviours more or less financially attractive. They encourage behaviour through the use of market signals rather than through explicit directives. These instruments can harness market forces, and if they are well designed and implemented, can encourage consumers and firms to undertake behaviour that is both in their own interests and in the interest of the environment. Ideally, economic instruments aimed at sustainable consumption correct for environmental externalities by ensuring that consumers face the full costs and benefits of their actions by altering the price signals faced by consumers[15]. For *economic instruments*, macroeconomic factors such as an adequate market infrastructure and the functionality of the market are likely to be relevant contextual factors. Moreover, the availability of sustainable products and technologies may determine whether an instrument is really capable of delivering a change in market structures or whether it is merely fiscal. This may occur if addressees do not perceive a way to substitute a taxed good or revert to alternative products. Also, economic instruments may entice addressees to attempt to avoid additional costs by reverting to illegal actions, such as dumping waste in the landscape instead of recycling. Other influential factors, with specific importance in energy efficiency improvement include energy price levels and the level of integration between energy efficiency policies and other sectoral policies[16].

Among economic instruments, special attention is given to *Green Public Procurement (GPP)* defined as the process by which public authorities decide to purchase products, services and works with lower environmental impact all along their lifecycle compared to others with the same performance. GPP

represents a kind of organizational strategy for greening the consumption by the public administrations at local, regional or national levels. It is a multifaceted instrument type, featuring characteristics of regulatory or economic instruments, and making use of labels and training, communication and information. At the EU level, GPP is one of the main levers for promoting sustainable production and consumption. For GPP, the review presented a list of contextual factors, including the level of political commitment in the public authority, the perception of the market availability of green products and services, the exchange of experience with other public authorities, the level of centralization or decentralization of purchasing decisions and the existence of a joint purchasing body for different public authorities[17].

Communication-based policy instruments cover a broad range of activities aimed at influencing consumers through the transfer of knowledge, information, exhortation and/or moral suasion without involving coercion or obligation of the addressees[9]. As the provision of information and education are very broad categories, a large variety of tools are available for the practical application of this instrument type, e.g., consumer information campaigns, consumer information centres, or feedback on consumption[18, 19]. An important contextual factor identified in our review was the *reputation* of the agencies providing information, which may be crucial for the addressees to accept the information as trustworthy.

Within communication-based policy instruments, *labelling* deserves special attention as a tool of sustainable consumption policy. Labels give information in a compact, simple form close to the point of purchase and are equally directed at manufacturers that are encouraged or obliged to label their products. If consumers, as well as private and public purchasers, are to take environmental criteria into consideration in their purchases, it is important that they can find easily understandable and credible criteria to enable them to distinguish the truly 'green' products. There are both mandatory and voluntary labelling schemes related to environmental information[20, 21]. Important contextual features include *consumer attitudes* as well as multiple intervening factors between attitudes and behaviour, including abilities, opportunities, consumer empowerment and the social example set by others. Labelling also requires functioning communications from manufacturing through trade to final consumers, and each party in this chain needs to see the benefits of participating.

The traditional regulatory, economic, and communication-based instruments are supplemented by *voluntary or procedural instruments.* Based on OECD[22], we define voluntary instruments as "policies that are designed to influence consumer and producer knowledge and, in turn, consumer and producer willingness to behave pro-environmentally". Four sub-types were identified: participatory mechanisms, voluntary commitments and initiatives, advisory schemes and provision of infrastructure[23]. Their success is linked to various context factors, including political and cultural views on public dialogue, the perceived added value of participation and the public's interest in participation. Moreover, the general regulatory and social context is even more important here than in the case of other instrument types. Pressure on societal actors to voluntarily adopt sustainable consumption and production patterns often depends on the threat of more restrictive instruments being introduced by the government[24, 25].

Our review of factors influencing success and failure will be complemented by a more detailed analysis later on in our project. We will also analyse the feasibility and effectiveness of 'packages' of policy instruments and hybrid forms of instruments. Detailed inventories will be made of policy instruments for sustainable consumption in Europe, and case studies will be conducted of the most promising instruments.

FROM POLICY OUTPUT TO POLICY OUTCOME

In order to specify the links between policy outputs (concrete implementation of instruments) and policy outcomes (changes in consumer behaviour), we conducted a review of consumer research in economics, psychology, social psychology and sociology, integrative research on sustainable consumption[26], as well as gender aspects of sustainable consumption.

Due to space constraints we can only present a summary of the most important results in the context of this paper. Literature suggests that policy instruments can target consumer behaviour directly and

indirectly, the latter by changing the market environment or by modifying the social and physical environment of the consumer (Table 1).

Table 1. Target areas for policy influence on sustainable consumption.

Consumers / individual citizens	Market environment	Social and physical environment
• Ability and opportunity • Routines and habits • Motivation and norms • Confidence and empowerment	• Prices • Product information • Consumption feedback • Market transparency • Availability of products and services • Use of government market power and example	• Systems of provision • Enabling infrastructures and conditions • Support for local sustainable communities and social groups
• Timing and 'windows' of opportunity		

While these target areas are presented above separately, they are in fact strongly interlinked. It is more an issue of which part of the system is primarily targeted. Thus, we can identify mechanisms that focus primarily on the individual level, by trying to build up consumers 'motivation and ability to 'do the right thing 'by providing the appropriate information and incentives or disincentives. The initiatives can target the consumers 'abilities and opportunities, routines and habits and/or motivation and internalized norms. They can also aim to build up confidence and empowerment, e.g., by providing feedback on the aggregated effects of many individuals 'actions, or by supporting tendencies toward political consumerism[27].

We can also identify mechanisms that aim to change the market environment of the consumer by changing the relative prices of products (e.g., via grants, taxes or by setting restrictions on production), but also by providing information about products, about consumers 'purchases (feedback) or about the market in total (e.g., comparative environmental impacts of various products offered in the market). One can also argue that rules about marketing, advertising and product labeling influence market transparency by requiring or forbidding certain information to be provided. Finally, policies can aim to change the entire structure of the market (the availability of goods and services) by supporting R&D in innovative solutions, setting minimum product standards, getting retailers to agree to drop certain products or promote certain other ones, or simply by banning certain products. Government can use its market power through green public procurement aiming to bring new products into the market. Where government also provides services, it can showcase new solutions under the auspices of these services, thus 'leading by example 'and creating demand among private consumers.

Finally, the last row in Table 1 suggests that the ability to make use of these different mechanisms depends on timing and the use of 'windows of opportunity'[28]. This suggests that policy makers should 'bend 'rather than try to 'break 'trends[5]. All fields (consumption, market and infrastructures) have a certain inertia to them, and changes are difficult to accomplish. It is easier to try to influence developments that are already ongoing and have momentum than to try to stop them or to start new developments through individual policy instruments.

FROM POLICY OUTCOMES TO SUSTAINABILITY IMPACTS

Successful policies and policy measures should have an effect on consumption patterns and through the consumption patterns on overall sustainability. These impacts can occur in a variety of ways[29]:

- Shifting consumption within a product group to less environmentally harmful products in the same product category.
- Shifting consumption from one product category to another.

- Reducing the consumption of certain product categories or commodities such as energy, water, meat or petrol.
- Reducing overall consumption (as defined in monetary terms), which on an aggregate level would lead to a reduced share of consumption in gross domestic product (i.e., more savings and investments, less consumption), or to a decline in gross domestic product.

From a consumer perspective, we can also analyse changes in consumption in terms of changes in ‚needs areas', i.e., in the way in which certain basic needs (such as nutrition) are fulfilled[30]. Needs areas represent grouped demands for goods and services. Changes toward sustainability can include a number of the previous changes, i.e., shifts to less harmful products, shifts to other product categories, or the reduction of the consumption of certain product categories.

Material flow analysis has become a common approach to examining the impact of consumption patterns on the environment and sustainability[31]. Material flow analysis is a systematic assessment of the stocks and flows within a system: it connects the sources, pathways and final sinks of a material[32]. It can be conducted on different levels of aggregation (individual products, consumption categories, expenditure on consumption categories or time use of various household activities). Conventional life cycle assessment (LCA) is a special case of material flow analysis, which focuses on physical flows in the production-consumption chains, usually of individual products. Changes in consumption pertaining to entire needs areas (e.g., food and housing) are more readily modelled using a broader material flow analysis[33]. Shifts in consumption between different product categories and changes in the overall level of consumption are best modelled with economy-wide input-output models[32]. The EUPOPP project focuses on the needs area level, thus making material flow analysis the most appropriate approach.

The relationship between consumption patterns and sustainability effects is rarely linear. It is mostly indirect, mediated by the resulting impacts on production patterns. The more indirect it is, the more there is a possibility of confounding factors. We can identify a number of mediating chains, and exemplify then with impacts on greenhouse gases.

Changes in consumption mediated by changes in production patterns

There are some examples of relatively direct impacts, e.g., changes in disposal patterns. If consumers sort organic waste for composting, this has a direct impact on methane emissions (providing that waste is appropriately composted, resulting in carbon dioxide rather than methane emissions). Most changes in consumption patterns, however, have an effect on greenhouse gases via changes in production patterns. For example, if consumers substitute green electricity for the electricity mix of their current supplier, this should have an impact on the production of various kinds of electricity, and the ensuing greenhouse gas emissions. There are intervening variables, however: e.g. the impact depends on whether demand for green electricity exceeds the existing supply.

The changes in the effects from consumption to production and to greenhouse gases are not always linear. For example, if consumers reduce their demand for electricity, less electricity needs to be produced, resulting in less CO_2 emitted from power plants. The amount of reductions in CO_2 emissions is not constant, however, but also depends on the impact of the consumption reduction on the load shape. Usually, the reductions in CO_2 emissions would be proportionally larger in the marginal/peak load than in the base load.

Changes in consumption patterns mediated via changes in other consumption patterns (and then followed by changes in production patterns)

Changes in the consumption patterns are often mediated into sustainability impacts via changes in other consumption patterns (and only thereafter via changes in production patterns and the resulting reductions in greenhouse gases). Such changes can offset part of the reduction in environmental impacts, and they are conventionally called rebound effects.[34, 35, 36]

For example, purchasing of more energy efficient appliances should lead to less consumption of electricity, eventually leading to less production of electricity, resulting in less CO_2 from power plants. But there is an additional intervening variable here: As it is relatively cheaper to use more energy efficient appliances, they may be used more frequently (e.g., lights are left on). This is called a direct rebound effect. Usually, direct rebound effects for lighting are in the order of 10%[37], so part of the reduction is offset by increased use.

Additionally, changes in the consumption of an individual commodity, such as energy, can lead to unpredictable changes in the consumption of other commodities, with ensuing changes in production and greenhouse gases. For example, if we manage to reduce the demand for residential energy use via a successful campaign, and the price of energy remains constant, the consumers will have more money to spend on other things. The energy intensity of all other commodities is lower than that of energy, so the total demand for energy is reduced[30], but not to the extent of the initial saving, because part of the savings accrued are offset by increased consumption of, e.g. recreational services. This type of rebound effects are called indirect rebound effects.

Long-term structural changes in production and consumption patterns

There are also changes that are mediated via long-term structural changes in production and consumption. Savings of energy and natural resources (and the ensuing reduction of CO_2) are often at least partly offset by 'transformational 'or 'enabling 'effects, which are a further category of rebound effects[38]. This type of effect is most obvious in information, communication and transportation technologies. Efficiency advances in these technologies have enabled global communications, which have a self-reproducing effect of increasing the demand for more communications and transportation[38]. Another example of transformational effects is the introduction of the microwave oven, which is more energy-efficient for heating food than a conventional oven. Microwave ovens, however, have not replaced conventional ovens, but have rather engendered a totally new category of products (ready-to-heat microwave meals).

This discussion does not aim to imply that the gains from sustainable consumption policy measures are always offset by rebound effects. It is also possible to envisage the opposite kinds of positive spin-off effects (e.g. if consumers reduce their demand for energy or natural resources, they become more favourable to policy initiatives that increase the cost of energy and natural resources)[39]. Rather, the discussion suggests that close attention needs to be paid to intervening variables between changes in consumption patterns and the resulting effects on the environment, society and the economy. These intervening variables need to be analysed on a case-by-case basis, as they can be different for different kinds of policy measures and targets.

The EUPOPP aims primarily to use material flow analysis to identify the influence of changes in consumption patterns on other parts of the product life cycle (including dynamic effects such as increase or decrease in the demand for various factors of production). Influences of changes in individual consumption patterns on overall consumption patterns and influences of changes in products and technologies on overall consumption patterns will be addressed on a case-by-case basis.

The above discussion also suggests that the dynamic effects of sustainable consumption policies depend on overall developments in policies, institutions and the market at large. Production-consumption systems are complex and interlinked in many ways. Thus, improvements in one part of the system may lead to a shift of impacts to another part. Piecemeal policy instruments may thus result in counterproductive effects, whereas consistent policies are likely to support each other and avoid counterproductive results[30]. Influencing society via sustainable consumption policies needs to be embedded in a broader and consistent set of policies in order to have the desired effects.

DISCUSSION AND CONCLUSIONS

In our conceptual framework, we have identified key pathways for evaluating and modelling the prospective impacts of policies to promote sustainable consumption. Our empirical approach for analysis is presented in Figure 1.

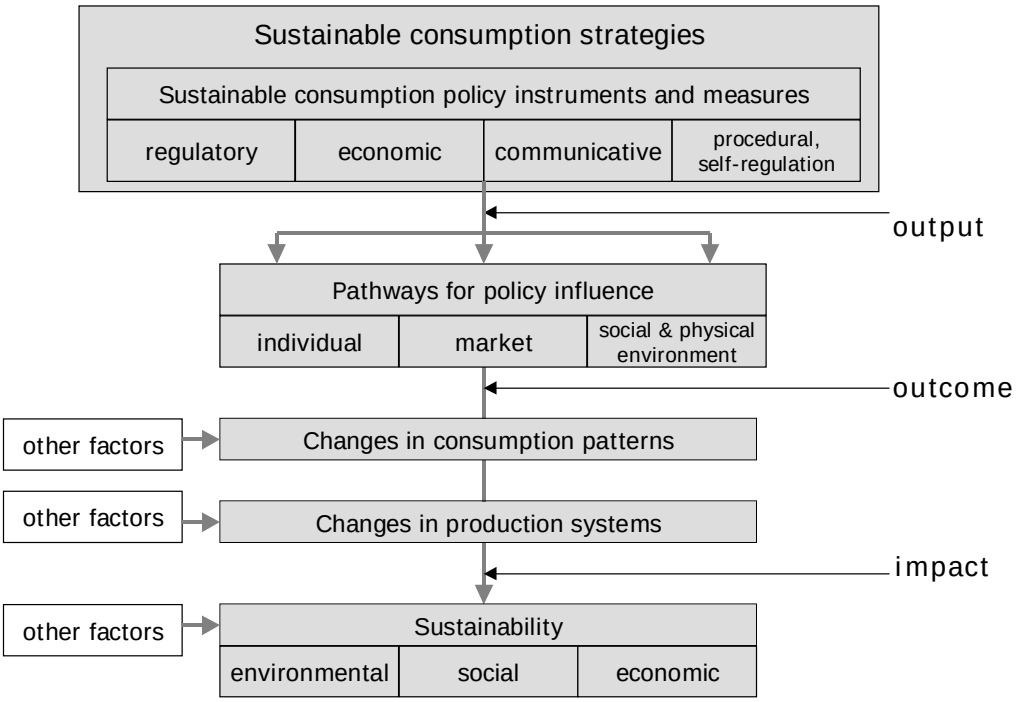

Figure 1. Three-step framework for connecting sustainable consumption policies to their sustainability impacts in the EUPOPP project.

We can use this framework, for example, to analyse and model the impact of a package of instruments to reduce the environmental impact of housing. Outputs and outcomes of effective instruments are analysed using policy analysis (who was reached, what behaviour changes were accomplished). Interviews and data on consumer behaviour and residential energy and resource consumption allow us to identify changes in consumption patterns. A careful analysis of trends and business-as-usual scenarios enables us to distinguish the impact of the selected policies from the impacts of other factors. Further, material flow analysis is used to identify changes in production systems (e.g. energy, construction, appliances), as well as the resultant impacts on selected sustainability indicators within and outside Europe. This analysis will allow us to provide much-needed advice for policy makers aiming to steer Europe on a path toward more sustainable consumption.

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3 Strategies are here the broadest and most overarching level, exemplified, e.g. by national strategies for sustainable consumption as outlined in the UK and Finland. These strategies are operationalised in policy programmes consisting of a coherent set of policy instruments, usually including a time frame and plans for implementation. Finally, "policy interventions "refer to the actual implementation of policy instruments so as to change existing behavioural patterns (Weiss 1998: 7)

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COMMUNICATING CORPORATE SOCIAL RESPONSIBILITY

COMMUNICATING CORPORATE RESPONSIBILITY THROUGH MEDIA

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ABSTRACT – The purpose of this paper is to examine how a company communicates its corporate responsibility activities through press releases and how these activities are then presented in the media. Companies are nowadays expected to acknowledge their role in the society and to perceive that they have a wide range of important stakeholders who ought to be taken into account in decision-making processes. For the large public, media represents the main source of information regarding companies' operations and actions. Our analysis is targeted at a case where a Finnish forest industry company was caught in the middle of a heated debate in Southern-America. We analyze the content of the company's press releases dealing with the construction and the start-up of the mill as well as articles related to the case published in the biggest quality daily in Finland to find out if the issues covered in the newspaper are congruent with the content of the company's press releases in terms of corporate responsibility and stakeholder issues. To conclude, we discuss if companies can rely on press releases and media in fulfilling their communication demands set by various stakeholders regarding corporate responsibility issues.

INTRODUCTION

Companies are nowadays expected to acknowledge their role in the society and to perceive that they have a wide range of important stakeholders who ought to be taken into account in decision-making processes. Transparency and openness are seen as means to respond to the expectations of different stakeholders and to create trust[1]. For the large public, media represents the main source of information regarding companies 'operations and actions. Media has power to decide which issues will be covered and which not.[2] Especially in Finland, where newspapers are widely distributed and read, the top newspapers have significant influence on public thoughts and opinions.

The purpose of this paper is to examine how a company communicates its corporate responsibility activities through press releases and how these activities are then presented in the media. Regarding corporate responsibility, we are especially interested in stakeholder relationships and ask how they are presented both in a company ś press releases and newspaper articles. The theoretical framework of our study is based on corporate social responsibility discussion, on stakeholder approach, and on the role and influence media has on companies and public opinion.

Empirically we are interested in a case where a European pulp and paper manufacturer invested in a pulp mill in Southern-America. In the situation under scrutiny, Europe ś second largest pulp producer, Metsä-Botnia (hereafter Botnia) has been caught in the crossfire of heated debate between two countries – Uruguay and Argentina. The conflict erupted when the Finnish pulp company began the construction of a major pulp mill in the city of Fray Bentos in Western Uruguay. The pulp mill was built on the Uruguayan side of the Uruguay River, which forms the border with Argentina. Initially, the dispute began as a disagreement between two nations. Soon, however, it grew into a public issue, which attracted various sets of stakeholders.

The paper starts by introducing the theoretical framework of the study. After that, we present the research data formed of the company ś press releases and newspaper articles related to them. The research results are presented in the third part of the paper and the paper is concluded by a discussion on the elements of stakeholder relationships as shown in this study.

CSR, STAKEHOLDERS AND MEDIA

The operational environment of companies has changed during the last decades. Companies are expected to acknowledge their role in the society, and corporate social responsibility (CSR) has arisen as a subject of discussion both in academia and business world. In this paper, corporate social responsibility is conceptualized through the notion of the so called triple bottom line where responsibility consists of three dimensions: financial, social and environmental responsibility.[3] In relation to financial responsibility, companies are expected to acknowledge the impact of business operations on the society on a wider scale. Thus, financial responsibility is about taking into account and creating financial wellbeing for other stakeholders as well – not only the stockholders. The second dimension of CSR, social responsibility, covers issues related to, among others, human rights, equity in recruiting, employee wellbeing and creating social welfare in the society. Environmental responsibility is the third dimension of CSR and includes issues like striving for reducing the environmental impact of business operations, efficient use of natural resources and protecting the natural diversity.[4]

Along with the three dimensions of CSR, stakeholder approach has recently gained importance in analyzing responsibility issues in business. This approach acknowledges that companies have a wide range of important stakeholders who ought to be taken into account in decision-making processes[5]. Involving stakeholders in decision-making processes means that companies and stakeholders share information in a two-way communication process where both parties have a chance to express their views and opinions[1]. By communicating openly and transparently a company can, through achieving trust and reliance, also reach legitimacy for its business operations[6]. Communicating corporate responsibility to stakeholders should, according to Barney[7], be continuous. By continuous communication and stakeholder inclusion a company can affirm and retain trust among its stakeholders.

Various researchers have pointed out that a typical classification approach to stakeholder management provides only a statistic view of the situation, although there is a need to understand the dynamic nature of stakeholder attributes[8]. The critical relationships between organization and its stakeholders cannot be described as a simple transaction based exchange between parties but they include cooperation, collaboration and network influences[9]. Thus, the focus should shift away from viewing stakeholders as separate actors from the focal organization to actors whose relationships to the organization constitute the organization. Consequently, the features of relations and activities between the organization and its stakeholders come into the focus of attention.

We base our analysis of stakeholder relationships on two earlier categorizations. Mitchell et al.[10] presented a thorough discussion on the elements of stakeholder relationships and concluded that the salience of stakeholders should be based on three attributes: (1) power, (2) legitimacy, and (3) urgency. According to them, power is engaged in a relationship when one actor gets another one to do something that it would not have otherwise done. Legitimacy is a generalized perception or assumption that the actions are desirable, proper, or appropriate according to social norms, values, and beliefs. And, urgency is the degree to which stakeholder claims call for immediate attention. These three elements have been frequently used in various stakeholder studies. However, Myllykangas[11] has presented six additional elements of stakeholder relationships: (1) history of the relationship, (2) objectives of the stakeholders, (3) interaction in the relationship, (4) information shearing in the relationship, (5) trust between stakeholders, and (6) the potential of stakeholder to learn. By analyzing these six elements, we can bring the stakeholder research closer to business viewpoint and better understand the value creation of business. In this study, we combine the above presented two studies, and, as a result, look at nine different elements in stakeholder relationships.

Though companies engage in activities and communication directly with stakeholders, for the large public, media represents the main source of information regarding companies 'operations and actions. Media has power and influence on thoughts, choices and decisions by making the society aware of certain issues or agendas. Especially in Finland, where newspapers are widely distributed and read, the top newspapers have significant influence on thoughts and opinions. Media can be seen as having a role of a gatekeeper since it has the possibility to tell about certain issues and leave certain issues without atten-

tion. Media has influence on, also, in what way as well as who gets to share their view.[2] Besides the power of deciding what issues will be covered in public, media affects, for example, for the construction of companies 'reputation.

There are several reasons why and ways how media might work as one possible communication channel for business organizations. Media releases and other information received from companies serve as important material for journalists and, when there is a lack of resources in the editorial offices, materials published by organizations may be published as such[12]. However, media often has an active role in choosing and shaping the issues that will be published, too. With the help of media it is possible for an organization to participate in public discussion and to affect on its stakeholders. But, it is also worth to remember that the relationship might work in the opposite way as well: companies include issues discussed in media in their reports and releases. Motives for this sort of informing are, for example, pleading against the possible accusations or doubts that are raised in media.[13]

It is possible that the targets and goals companies have imposed regarding their media releases may not be achieved. The issue in question might never get any publicity, or the message is reformulated in media so that the original thought in it is lost. Related to the modification of messages, it is said that besides the communicational objectives of the company in question, the form the sent message gets in media depends on the public's expectations for media, on the commercial goals of the media corporation, as well as on the journalist's personal motives, preferences and methods.[14] Thus, the message the company wants to send might not achieve the target group at least in its original form. In this paper, we are interested in how a company communicates its corporate responsibility activities through press releases and how these activities are then presented in the media.

RESEARCH DESIGN

The case

Our empirical analysis is targeted at a case where a Finnish forest industry company Botnia constructed a pulp mill in Fray Bentos by the Uruguay River in Western Uruguay. The investment has been considered remarkable because it, firstly, is the biggest foreign industrial investment a private Finnish company has ever made, and secondly, the pulp mill project is the biggest industrial investment in the history of Uruguay. The pulp mill benefits the state of Uruguay and its citizens financially, and Botnia has stated that the mill has a considerable reflationary impact on the economy of the area as well as on the trade balance and national economy of the whole state of Uruguay. It has been estimated that the mill will employ directly or indirectly about 8,000 persons.[14]

There can be found several reasons why Botnia decided to place the mill in Uruguay. First, there is an increasing need for affordable raw material in Finland, and the price of eucalyptus pulp produced in the new plant is only about one tenth of the cost of Finnish raw material[15], and the eucalyptus tree also grows more rapidly than trees in Finland. Secondly, there is a general need among pulp producers to be located close to customers in order to serve them better and be cost-efficient. Thirdly, Uruguay is a good location as there is a well-defined regulation framework compared to the neighbouring federative states Brazil and Argentina, where each state has different tax and environmental laws.[16]

Before the investment decision, the risks related to mill's location next to a border river between Uruguay and Argentina were evaluated. To its surprise, after the building process had started, Botnia became caught in the middle of an intense debate between the countries. Demonstrations and different kinds of protests, such as road blocks on the bridge crossing the border river, were organized against the pulp mill especially by the Argentinean stakeholders. The opponents even demonstrated in front of the Finnish Embassy in Argentina. The opposition started because of environmental concerns, related to the contamination of the river and thus, to the negative effect on their tourism income, although the environmental impact of the mill was minimized by exploiting the best available technology[17]. The debate grew into a public issue that attracted various sets of stakeholders, and was politicized into an open conflict between Uruguay and Argentina. As this case was widely discussed in the Finnish media, too, it of-

fers an excellent research target. The research period analyzed in this paper starts from May 3, 2004 and ends at November 29, 2007. This period was chosen because it covers extensively the main events related to the pulp mill project.

Data collection

The data for our study was collected from two sources dealing with the building process of the Botnia pulp mill in Uruguay. First, Botnia's press releases related to the preparations, construction and start up of the pulp mill were gathered from the company's web pages so that each release containing the word Uruguay in its heading or in the text was selected as part of data. Releases were gathered from May 3, 2004 to November 29, 2007. As Table 1 shows, from 2004 two press releases were included in our data, from 2005, 2006 and 2007 there were 6, 16 and 14 press releases included respectively.

Second, the biggest quality daily in Finland, *Helsingin Sanomat* (hereafter HS) was chosen as a source of empirical research material from media. HS is widely respected, it serves as an official voice in the public sphere, and it has both direct and indirect influence on Finnish society, since other newspapers and media use it as their source of ideas and information. This newspaper plays an important role determining the importance of issues in society and politics in Finland.[18] The quality, circulation, and level of influence of HS provide a good basis for analyzing the public representation of the investment conflict debate. The proportion newspaper articles published in HS were limited to those from the same period and the search words used were "Botnia" and "Uruguay". Further, we cropped out articles about designations and organizational issues and all editorials and letters to the editor. As Table 1 shows, 147 newspaper articles were included in our analysis, from 2004 there were no articles, from 2005, 2006 and 2007 there were 12, 89 and 46 articles.

Table 1. *The amount of Botnia's press releases and articles published in Helsingin Sanomat May 2004 – December 2007.*

Period	Botnia's press releases n	Articles published in *HS* n
2004	2	–
2005	6	12
2006	16	89
2007	14	46
Total	38	147

Data analysis

The analysis was conducted as a qualitative content analysis[19] of the press releases and newspaper articles related to the pulp mill project. We started by analyzing the content of the data according to the three dimensions of corporate social responsibility and looked at the financial, environmental or social issues in order to identify what kind of responsibility issues were communicated by the company, and how they were presented in the media. At the second phase of our analysis, we took a deeper look at those issues that were presented in both press releases and newspaper articles. We identified and analyzed stakeholders and stakeholder relationships related to the corporate responsibility issues and concentrated on the dyadic relationships between Botnia and its stakeholders. First we identified the different stakeholders that were presented in the data. After that, we analyzed the most important relationships based on earlier categorizations of the dimensions of stakeholder relationships.

RESEARCH RESULTS

Dimensions of responsibility

All the three dimensions of corporate social responsibility were presented in both the company's press releases and in the case related newspaper articles. The issues are clearly related to the events and progression of the project. When the project was been prepared in 2004, the press releases covered information mainly concerning the results of the different impact studies conducted by the company. As the construction works started in 2005, the diversity and intensity of issues increased in both sources of data and the same trend continued throughout the rest of the project. Further, as the conflict escalated, new issues and actions were brought up in the data. Examples of that are clearly seen in 2006, as then the company declared its willingness for treatment of domestic sewage of the city of Fray Bentos and for enhancing the quality of the water in River Uruguay. In 2006, the company was also accused of corruption and therefore it emphasized its ethical standards. In the same period, Botnia also placed announcements about its environmental standards in Argentinean newspapers in order to reach the Argentinean audience. During the last year of the project 2007, no major new corporate responsibility issues were presented as the company was preparing for the start-up which was hoped to clear the concerns of the opposing stakeholders. In Table 2, we have summarized the results of our analysis on a yearly basis. The first column identifies the corporate responsibility issues that were presented by Botnia in its press releases. The second column identifies those issues that were presented in the related newspaper articles, and the last column, summarized issues presented in both data.

In press releases, all three dimensions of corporate responsibility were covered throughout the whole research period. The variety of issues and activities presented in the releases increased, as the construction works of the pulp mill progressed. Issues related to environmental and social dimensions were clearly highlighted during the construction works in 2006 and 2007. The growing number of environmental actions can be seen as a response to the escalating conflict and growing stakeholder demands. Through the press releases the company can only reach a certain audience, though, and therefore the issues presented can be seen as reassurances by the company to the owners and financiers and also to the large public, to the extent that the media also presented the issues.

Also in the newspaper articles all three dimensions of corporate responsibility issues were covered throughout the media coverage. Financial issues were emphasized in the articles and other issues were typically presented in congruence with the statements and demands of the opposing stakeholders. In 2004, there were no newspaper articles covering the pulp mill project, even though the company had released public information about its responsibility activities, such as the socio-economic impact study (SES) and environmental impact assessment (EIA) conducted by the company. It is also noteworthy that the media presented a few issues that were not included in the press releases. These covered mostly information about financial responsibility issues and only very little information about social or environmental actions. However, as a response to the corruption accusations in 2006 the company did not publish a press release, but its position on ethical standards in operations was presented by media. Media aims at presenting issues that have news value, and in this case, the news value of the project increased as the conflict escalated. Therefore, it is not surprising, that media took more profound interest in this case towards the end of the research period, and was active in presenting additional information about the project and the company. Media also presented the conflict and voices of opposing stakeholders remarkably wider than the company.

Table 2. Corporate responsibility issues presented in press releases and media texts May 2004 – December 2007.

Year	Press releases	Newspaper articles	Both
2004	*Financial:* Impact on the GDP, BAT (Best Available Technique) *Environmental:* BAT, results of EIA (Environmental Impact Assesment) *Social:* Results of SES (Sosio-Economic Study), impact on employment		
2005	*Financial:* Issues related to Finland, impact on local forest owners, BAT, impact on the economy of Uruguay *Environmental:* BAT, environmental permit *Social:* Impact on employment	*Financial:* Issues related to Finland, impact on local forest owners, impact on the economy of Uruguay *Environmental:* FSC-certificate of the eucalyptus plantations *Social:* Impact on employment	*Financial:* Issues related to Finland, impact on local forest owners, impact on the economy of Uruguay *Social:* Impact on employment
2006	*Financial:* Results of CIS (Cumulative Impact Assesment), impacts on the economy, impact on the GDP *Environmental:* EIA, BAT, FSC-certificate, treatment of domestic sewage, enhancing the water of the river. *Social:* Impact on employment	*Financial:* Results of CIS, impacts on the economy, impact on the turnover of the corporation, ethical standards *Environmental:* EIA, international standards, announcements in Argentinean newspapers *Social:* Impact on employment	*Financial:* Results of CIS, impacts on the economy *Environmental:* EIA *Social:* Impact on employment
2007	*Financial:* Final price of the investment, the entire mill is fully inspected prior to the start-up and it complies with the standards set by the IFC and Botnia, SES *Environmental:* BAT, the standards of IFC and Botnia, treatment of domestic sewage, audits by DINAMA, surveillance displays *Social:* Impact on employment, SES, surveillance displays	*Financial:* Final price of the investment, impact on the economy *Environmental:* Landscaping projects, treatment of domestic sewage *Social:* Impact on employment	*Financial:* Final price of the investment *Environmental:* Treatment of domestic sewage *Social:* Impact on employment

In 2005, the responsibility issues presented in both sources of data covered the financial and social dimensions of CSR. The financial issues included such issues related to Finland as the acquisition of machinery from Finland and the domestic content of the project. Issues related to Uruguay discussed the impacts in local forest owners and on the economy of Uruguay. Related to the social responsibility dimension, the impact on employment namely on the Uruguayan side was brought up. In 2006 the results of the cumulative impact study (CIS) were presented, they were in line with the earlier impact assessments and therefore confirmed the positive impacts on the economy and on employment. The environmental issues were brought up in the form of the results of the environmental impacts assessment conducted by the company in the preparetions stage.

In 2007 the only financial issue presented was the final price of the investment which could be seen as an important piece of information to the Finnish audience. The impact on employment was furthermore emphasised and as a new issue, the company ś willingness to treat the domestic sewage of the city of Fray Bentos was presented.

Relations with the most important stakeholders

In order to find out which stakeholders were the most important in this case, we calculated how often different stakeholders were mentioned in the press releases and the newspaper articles. The five stakeholder groups that were mentioned most often are presented in Table 3.

In the press releases, Uruguayan government, financiers, workers, local people, and Argentinean government were the five most often mentioned stakeholder groups. In the newspaper articles, Argentinean citizens, Argentinean, Uruguayan, and Finnish government, as well as civic and environmental organizations were mentioned most often. Based on this analysis, we evaluated that the Uruguayan government, Argentinean government, and local people were the three most important stakeholder groups of Botnia in this case.

Table 3. The top five stakeholder groups mentioned in press releases and newspaper articles.

Press releases	n	Newspaper articles	n
Uruguayan government	21	Argentinean citizens opposing	56
Financiers	9	Argentinean government	42
Workers	8	Uruguayan government	41
Local people	6	Finnish government	16
Argentinean government	5	Civic and environmental organizations	15
Total amount of releases	38	Total amount of articles	147

To further understand the quality of the relationships between Botnia and these stakeholder groups, we took a deeper look at these relationships by analyzing them according to nine elements of stakeholder relationships based on earlier research by Mithcell et al.[10] and Myllykangas[11]: (1) power, (2) legitimacy, (3) urgency, (4) history of the relationship, (5) objectives of the stakeholders, (6) interaction in the relationship, (7) information sharing in the relationship, (8) the potential of stakeholder to learn, and (9) trust between stakeholders.

Relations with the Uruguayan government

According to our two sources of data the relationship between Botnia and the Uruguayan government as a whole can be seen based on strive for mutual benefit. Both parties had power to affect the other in this relationship. Botnia, for example showed its power towards the government by pointing out the financial benefits the pulp mill brings to the country. The Uruguayan government, on the other hand, had the power to decide if the mill would receive the final environmental permit, and thus, if the mill could be started at all. The Uruguayan government has, also legitimate claims on the firm, when it, for instance, expected Botnia to carry out an environmental impact assessment that is expected by law in Uruguay. The requests for the suspension of the works of installation were important to the Uruguayan government even on a political level and thus, urgent. The objectives of the Uruguayan government were to have the pulp mill started since it showed support for the project by, for example, granting a free trade zone status for Botnia. Information was shared by both parties throughout the whole project. The notable difference between the two sources of data was that the newspaper articles presented direct interaction in this relationship and the formal nature of the relationship and especially on the interaction between these parties was emphasized. The elements of history of the relationship, the potential of the government to learn and trust were not covered in the data. It could be interpreted though that there was some trust be-

tween the parties and at least Botnia tried to create it by showing willingness to share information and to support the efforts to solve the conflict between Uruguay and Argentina.

Relations with the Argentinean government

The relationship between Botnia and the Argentinean government had mainly indirect elements. The Argentinean government strived for influencing the Uruguayan government to prevent and later to halt the construction works. By striving for these objectives, the Argentinean government showed its power. The Argentinean government exerted its power through other parties such as the World Bank and the Hague International Court of Justice. The claims for halting the project were based on the contract between the countries concerning the usage of River Uruguay and could, thus, be seen as legitimate. The request for suspending the works of installation were important to the Argentinean government and thus, urgent. The third element of stakeholder relationship that was evident in the releases was the objectives of the Argentinean government. It clearly wanted to prevent the construction of the pulp mill. The only example of having an effect on the actions of the other party is that Botnia decided to suspend the works of installation when requested. But it should be noticed that the suspension was not requested together with the Uruguayan government. The other five elements of stakeholder relationships were not presented in the data.

Relations with the local people

The third stakeholder group that we included in our analysis is here referred to as local people. This group includes both the citizens of Fray Bentos and Gualeguaychú and in the press releases these groups were not separated which refers to that Botnia treated these groups of people as one group. However, in the newspaper articles these two groups were separated since their objectives and interests were opposite. According to our analysis Botnia had only a little or none direct interaction with either of the groups. The relationship between Botnia and local people was built on sharing information. People in Fray Bentos were responsive and thus, the information sharing efforts paid off. Through these information sharing practices Botnia was trying to create trust in the relationship and, to some extent, it could be interpreted to have succeeded in Uruguay. But, the newspaper articles showed that the efforts for sharing information with the citizens of Gualeguaychú did not succeed. The objectives of local people were conflicting as the citizens of Fray Bentos supported the project for the employment prospects and the citizens of Gualeguaychú opposed it in the fear of the negative effect on their tourism income. Through these grounds the claims of this stakeholder group can be seen as legitimate. Based on the time sensitivity and criticality of these claims we categorise them as urgent.

DISCUSSION AND CONCLUSIONS

It is evident that throughout the research period, the company provided more information about its responsibility than what the media presented to its audience. There were only a few issues that the media presented in addition to the ones from company's sources. And even when the company was not able to get all its information published directly in newspaper articles, we can assume that the information was later on retrieved and therefore in adequate context, presented to the audience.

On the other hand, the newspaper articles consisted of much more information than the press releases. Stakeholder relationships were described in more detail in the newspaper articles than in press releases, too. To conclude our research we summarize the elements of stakeholder relationships in Table 4. The nine dimensions are looked at in relations with the three most important stakeholder groups in terms of whether they were present in press releases (P) and/or newspaper articles (A).

Table 4. Elements of stakeholder relationships in relations with the three most important stakeholder groups.

	Uruguayan government	Argentinean government	Local people
Power	P, A	A	
Legitimacy	P, A	P, A	A
Urgency	P, A	P, A	A
History			
Objectives	P, A	P, A	A
Interaction	A		
Information sharing	P, A		P, A
Potential to learn			
Trust	P, A		P, A

P = press releases, A = newspaper articles

In terms of the elements of stakeholder relationships, history of the relation and stakeholders 'potential to learn seem not to be an important issue in this case. As we can see from Table 4, there are clear similarities but also some differences in terms of which elements were emphasized in press releases and which in newspaper articles. Regarding relations with the Uruguayan government, power, legitimacy and urgency in the relations as well as objectives of the relation, information sharing and trust were emphasized both in press releases and newspaper articles. In addition, interaction between the company and the stakeholder was presented in the newspaper articles. In relations with the Argentinean government, legitimacy, urgency and interaction was emphasized in both data sources whereas power was presented only in newspaper articles. In relations with the local people, only information sharing and trust were presented in both data sources, whereas legitimacy, urgency and objectives were presented only in the newspaper articles.

It seems that stakeholder relations and their elements were more widely described in newspaper articles than in press releases. However, a surprisingly large amount of stakeholder relationships 'dimensions was similarly presented in both data sources. Maybe companies could and should trust on media as a communication channel more and offer more open and transparent information regarding its stakeholder relations. Journalists are writing about cases like this no matter what and it is as well a business interest as a responsibility issue that they have the best possible information at their hand when preparing articles for publication.

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ECO-EFFICIENCY IN ENVIRONMENTAL REPORTING IN FINNISH FOREST INDUSTRY

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ABSTRACT – Corporate environmental reporting (CER) is a tool of corporate environmental management. The aim of CER is to inform the stakeholders about the environmental work done. The aim of this paper is use the content analysis of to analyse the environmental reporting of Finnish forest industry companies in the point of view of eco-efficiency. The reports of Stora Enso, UPM-Kymmene and M-real from 1998–2007 are used for the analysis. The literature was used to develop the analysing criteria. The concept of eco-efficiency is seldom used by the companies. The case companies use some of the eco-efficiency indicators. The role of the environmental reporting in the future will be discussed.

INTRODUCTION AND BACKGROUND

Corporate environmental reporting

Companies have a rather long tradition of environmental reporting. The first environmental reports have been published in 1980s[1]. Corporate environmental reporting (CER) can take many forms: a stand-alone environmental report, a stand-alone corporate social responsibility report or a section in the annual report. Currently, the corporate webpage is becoming an important part of the CER. The aim of CER is to inform the stakeholders of companies' environmental performance[2, 3].

A good environmental report gives a reliable picture of company's environmental performance. Reliability here means that the reports cover the positive and the negative areas of the operations[4]. Reliability also includes the data quality. Companies need to audit, check and verify the data in order to ensure the bias free presentation of the data[5]. In addition, reporting should follow the company values and the targets based on these values[4]. On the other hand, environmental reporting can be seen as a way to improve corporate environmental management. CER is the result of corporate environmental management[6]. O'Dwyer, Unerman and Bradley (2005) point out that especially the stakeholder involvement urge the company to improve the reporting[7].

There hardly exists any legislative requirement for environmental reporting[8]. However, more and more countries are requiring companies to include environmental information in the financial reports[9]. On the other hand, there is a strong stakeholder pressure to push companies to report[1, 5, 7]. A wide range of stakeholders are interested in companies environmental work and environmental report, and their interests also vary[5] which causes difficulties for companies[2,8,10]. Actually, Mätäsaho, Niskala and Tuomala (1998) point out companies are not able to meet the various stakeholder demands with just one report[11].

Although, the environmental reporting has evolved, there are still several problems in the published reports. One problem is that companies tend to publish only positive information of their operations[12,13]. In other words, when researchers compare the picture of the company of the reports with the picture of media they are not the same[4]. As Deegan and Rankin (1999) point out, a reader could make false decisions based on the biased information[12]. Second problem is structure of reporting. Due to no mandatory format of the reporting, companies develop their own way of reporting, which hinders the comparability of different companies' reports[10,12,14].

The problems in CER are quite difficult to understand, because environmental reports are not the only reports that companies publish. Many researchers wonder why the environmental reports have not reached the high quality of financial reporting[4,7,10]. In addition, O'Dwyer et al. (2005) point out that if environmental issues are not present in the annual report this might give a signal of their low impor-

tance[7]. One solution for this problem would be the cooperation of the environmental and the financial departments[8, 12, 14].

Companies have various reasons for the quality problems in their reports. One problem is the collection of data[5]. Evidently, some companies lack a systematic way of collecting environmental data from their various departments. Second problem is the cost of collecting the data[12]. Thirdly, the companies are afraid of the stakeholders misusing the information provided[12]. Fourthly, environmental management is at different stages in the reporting companies[2].

Introduction to the research theme

The aim of this paper is use the content analysis to examine the concept of eco-efficiency in CER in Finnish forest industry. The three biggest Finnish forest industry companies, namely Stora Enso, UPM-Kymmene and M-real, are used as case companies. Their environmental reporting from 1998–2007 is used for the analysis.

The concept of eco-efficiency is an interesting but also a challenging research topic. Eco-efficiency has been the topic of many researchers and many more have included eco-efficiency as a keyword of their research. For example, eco-efficiency can be applied for a product, company, business sector, regional, national or global level[15, 16, 23, 33]. However, only a few studies provide an actual definition of eco-efficiency. The summary of the various eco-efficiency definitions is provided in the material and methods section of this paper.

Finnish forest industry is an interesting research topic of CER. The high stakeholder pressure has shaped the industry and it has been forced to improve its environmental performance and reporting. Over the years, Finnish forest industry has improved its environmental performance quite significantly[17]. However, the biggest challenge for the Finnish forest industry companies today is the structural change of the whole industry: shift of the production from Europe (stable or decreasing demand of the products) to developing world (increasing demand of the products). This shift places demand on the management of environmental issues (especially in the developing world) and social issues (both in Europe and in the developing world).

This paper has the following structure: In the next chapter the material and methods used are described in detail. The following chapter presents the results of the eco-efficiency analysis in Finnish forest industry. This paper ends with conclusions and discussion of the future role of environmental reporting.

MATERIAL AND METHODS

Material

Three Finnish forest industry companies were selected for the analysis: Stora Enso, UPM-Kymmene and M-real. Stora Enso is the largest (by the amount of the production, the number of the employees and the amount of the sales) of these three and M-real is the smallest. In 2005, these three companies were among the 10 largest forest industry companies in the world[18].

The environmental reporting of the case companies was analysed from 1998–2007 (Table 1). In these years, the reporting has changed from the environmental reports to the corporate social responsibility reports and finally into a section in the annual reports. Altogether 32 reports are analysed, because in 2002 Stora Enso and in 2003 M-real published both an environmental report and a corporate social responsibility report. Most of the reports were available from the companies 'webpage and the English version of the reports was used for the analysis. However, the following exceptions apply: M-real's first reports (1998–2000) were ordered from the company and they were received in Finnish language. UPM-Kymmene's report of 1998 was ordered from the company and it was received in Finnish language.

Table 1. The type and the length of the analysed reports.

	Stora Enso	UPM-Kymmene	M-real
1998	CER (40/40)	CER (32/32)	CER (50/50)
1999	CER (36/36)	CER (44/44)	CER (54/54)
2000	CER (40/40)	CER (48/48)	CER (50/50)
2001	CER (50/50)	CER (48/48)	CER (40/40)
2002	CER (36/36) CSRR (0/20)	CSRR (21/52)	CER (40/40)
2003	CSRR (18/56)	CSRR (35/83)	CER (40/40) CSRR (0/8)
2004	CSRR (20/66)	CSRR (18/63)	CSRR (13/60)
2005	CSRR (12/58)	CSRR (18/63)	CSRR (19/60)
2006	CSRR (14/58)	CSRR (16/51)	AR (9/105)
2007	AR (20/217)	AR (18/136)	AR (12/128)

CER= corporate environmental report
CSRR = corporate social responsibility report
AR=annual report
(Amount of environmental information pages / total amount of pages in the report)

As can be seen from the Table 1, of the 32 analysed reports, 15 were environmental reports, 13 corporate social responsibility reports and four annual reports. The length of the reports varied some. The standalone environmental reports were shortest (43 pages in average) and the annul reports were the longest (147 pages in average). The amount of environmental information disclosed varied from 0 to 54 pages (average in 28 pages).

Methods

The reports were analysed with a content analysis method. The content analysis covered eco-efficiency in two ways. In the first part, the reports were analysed in order to find out, how the companies used the term eco-efficiency. In other words, the definition of eco-efficiency and calculation of eco-efficiency were looked after.

In the second part of the content analysis, the literature was reviewed in order to find the literature definition of eco-efficiency. Four definitions were found (more detail in [19]). First, eco-efficiency is defined as more from less (e.g. natural resource productivity) [20, 21, 22]. Second, eco-efficiency is a ratio between economic output and environmental output[23, 24, 25]. Third, eco-efficiency is a management strategy[26, 27]. Fourth, eco-efficiency is seen as various ways to improve the corporate environmental performance[28, 29].

Later these definitions were used to make the analysing criteria. The two indicator type definitions were selected. The first criterion was resource productivity. It was understood as a ratio between the amount of the incoming resources and the amount of the production. The second criterion was the ratio of the produced economic performance and generated environmental performance.

RESULTS

Definition of eco-efficiency

The case companies seldom use the concept of eco-efficiency. Typically the concept is mentioned in the vocabulary of the reports. Also, eco-efficiency is mentioned a few times in the text of the reports.

Stora Enso uses the concept of eco-efficiency in three reports each time with a different meaning. Eco-efficiency means for Stora Enso waste minimization, chemical recovery and recycling, and water consumption. UPM-Kymmene defines eco-efficiency as resource productivity in the vocabulary section of the two recent reports. M-real has eco-efficiency in the vocabulary section in five of their reports. Their definition relates with the ratio of economic and environmental performance. In addition to the vocabulary section, M-real mentions and calculates eco-efficiency of their production in four reports.

Eco-efficiency as resource productivity

Eco-efficiency as resource productivity ('more value with less raw material ') indicator is not used by the case companies. The reader of the reports could, however, calculate the indicator, with the data provided in the reports. In some of the reports, the companies show ratios of the energy consumption and the production.

Stora Enso uses in its midterm reports the concept of recourse efficiency, which is almost the same concept as eco-efficiency: Resource efficiency means for Stora Enso waste minimization, chemical recovery and better utilization of wood and waste. In 2006 and 2007, the consumption of electricity and heat is presented in relation to production. UPM-Kymmene presents the consumption of energy in relation to production in the 2007 report. M-real presents in its midterm reports specific energy consumption figures (relation to year 1997).

Eco-efficiency as a ratio of environmental and economic performance

There is a great variation between the case companies, in how they present their environmental performance figures (waste and emissions) in relation to the economic figures. None of the case companies use monetary figures, all of them use the amount of production. Most commonly, emissions are presented in relation to production.

Stora Enso publishes emissions in relation to production only in the most recent reports. UPM-Kymmene has in its all reports various emissions in relation to production. M-real differs significantly from the other companies. In the early reports, M-real publishes emission figures in relation to production. In its mid-term reports, M-real provides specific emission figures in relation to three environmental problems: green house effect, acidification and eutrophication.

DISCUSSION AND CONCLUSIONS

The aim of this paper was to examine the concept of eco-efficiency in the corporate environmental reporting in Finnish forest industry. This topic was examined in two phases. First, the reports were analysed by looking for the corporate definition of eco-efficiency. The case companies do not often use the concept of eco-efficiency and, therefore, a coherent corporate definition of eco-efficiency can not be made. Second, the reports were analysed by looking for eco-efficiency indicators in the reports. Resource productivity indicator is not widely used by the case companies. Only the recent reports show the energy consumption figures in relations to the production figures. The relation of environmental and economic performance indicator is used rather often by the case companies. Nonetheless, the case companies do not use monetary figures. This indicator is usually interpreted as the amount of emissions per the amount of production. The results of the paper are equal of those of Erkko et al.[14] and Hoffrén & Apajalahti[30]. Therefore, it can be said that Finnish companies do not use of concept of eco-efficiency.

The generalizabity of the results can be evaluated from the point of view of environmental reporting in Finnish forest industry, environmental reporting of the forest industry in general and environmental reporting in general. The generalizability of the results is limited. The selected case companies represent the majority of the Finnish forest industry as measured in the production capacity. The remaining companies are small and they report environmental issues to a lesser degree. On the other hand, it was very hard to discover coherent reporting trends with the current material, so it is difficult to generalize the results to the whole Finnish forest industry. The same applies to the forest industry in general and in environmental reporting in general.

The connection between the environmental reporting and the actual environmental performance of the company is somewhat obscure. Some authors argue that corporate reports do no give a reliable picture of companies 'doings[1, 4, 31]. Companies report only on the well-managed issues and avoid reporting on the badly managed issues[12, 32]. Based on the previous research, Clarkson et al. were uncertain, does a good environmental reporting equal to a good environmental performance. With their own research,

they proved that well performing companies also report the best.[33] If this is expected to apply to Finnish forest industry as well, then it does not give a positive picture in eco-efficiency perspective.

The role of environmental reporting offers an interesting area of discussion. The author finds the role of environmental reporting still unclear. For years, researchers have raised the question of the quality of the reports [5,34,35]. Although in this case, the author cannot criticize the quality of the analysed reports: The widest reports had over 50 pages of environmental information, both in qualitative and quantitative format. Also, the reporting had clearly evolved during the analysed period.

The future role of environmental reporting is also wondered upon based on the material. The stand-alone environmental reports have already turned into stand-alone corporate social responsibility reports in many companies. In these case companies, there was an obvious fall in the amount of environmental information in this change: The amount of environmental information pages dropped to half or less. It seems that the case companies have finished publishing also the stand-alone corporate social responsibility reports and instead include the environmental issues as a part of their annual reports. In this change, the amount of environmental information has stayed almost the same.

The change in the reporting format also raises the question of the target audience of the reporting. Obvious target of the annual report is the shareholders. Is the target audience of the environmental reporting the same? Companies might be unaware of the target audience of their reports. Of course, if the connection to the annual report improves the quality of the environmental reporting then this change is highly welcomed. As many authors have pointed out, the same insufficient reporting, as in environmental reporting, would not be tolerated in financial reporting[4, 7, 10].

Quite a few researchers have analysed environmental disclosure from the annual reports [12,13,35]. Now that it seems that the focus of environmental reporting is shifting to annual reports, it would be interesting to see if the quality of environmental disclosure also rises.

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CONSUMERS AND CHANCING VALUES

INDIVIDUAL CHOICES? BIOSCIENCE, CULTURE AND SOCIETY AS APPROACHES TO GENES, EATING AND HEALTH

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ABSTRACT – The interest in food, eating and health is increasing within a number of disciplines. This paper presents the background and a plan for an interdisciplinary study that aims at examining the practices of eating as an entanglement of biology, culture and society all together. Our interest is on genes not only as a biological fact but also as a scientific discovery that increasingly shapes our understandings of the interconnections between genotype, eating patterns and health. Genetics is assumed to bear a growing role in the self-understanding and eating practices of future consumers. In this paper, we first highlight the basic assumptions on the role of the social and the individual in theory of practices, food-relating taste psychogenomics, and cultural studies. Then we present our own effort to put these approaches together as an empirical study that employs both analysis of genotypes of voluntary participants, qualitative and quantitative studies on notions of eating, genes and health, and a critical analysis of the production and the context of the empirical knowledge generated in the study. And finally, we discuss the potential challenges and discoveries we might face in the process of finding a common language, developing our theoretical ideas and producing new perspectives.

FUTURE, GENES AND EATING

The interest in food, eating and health is increasing within a number of disciplines. Biosciences such as nutrition, genomics and biochemistry study the interaction between food characteristics, diets, genes, and health outcomes; and social and cultural studies and future studies examine the role of food in social life, meanings of eating as well as dimensions of food choice in particular cultural contexts. However, these fields rarely meet to discuss the ways in which the diverse theoretical perspectives could be combined to enhance the understanding of eating patterns in contemporary society.

This paper presents a plan for an interdisciplinary study that aims at examining the practices of eating as an entanglement of biology, culture and society all together. By combining our backgrounds in food chemistry, psychogenomics, consumer economics, sociology of food, cultural research, ethnology and future studies we aim at a 'hybrid form of competence' in analysing simultaneously the role of genes in the formation of eating patterns, the social and cultural practices of food and eating as well as the meanings of food, health and genes in lay and expert discourses. Our interest is on genes not only as a biological fact but also as a scientific discovery that in the future increasingly shapes our understandings of the interconnections between genotype, eating patterns and health.

In this paper we first highlight the basic assumptions on the role of the social and the individual in theory of practices, food perception in taste genetics and psychogenomics, and the construction of knowledge from an ethnographic perspective. Then we present our own effort to put these approaches together as an empirical study that employs both analysis of genotypes of voluntary participants, qualitative and quantitative studies on notions of eating, and a critical analysis of the knowledge generated in the study. And finally, we discuss the potential challenges and discoveries we might face in the process of finding a common language, developing our theoretical ideas and producing new perspectives.

OUR APPROACHES TO THE COMPLEXITIES OF EATING

When seen from different disciplinary perspectives, the individual and social aspects of food and eating gain very different meanings that are not always explicated but which, nevertheless, may easily conflict with each other in ways that are not easily reconciled. In the following, we introduce some perspectives that are rooted in our backgrounds in natural as well as social and humanistic sciences.

Practices of food and eating

Our first starting point is the idea of food and eating as a profoundly social and cultural practice the meanings of which are tied both to the past, the present and the future. The concept of practice used here is to be understood from practice theoretical point of view as articulated in recent years particularly by Schatzki[1], Reckwitz[2] and Warde[3]. Even though developed earlier by theorists such as Bourdieu[4] and Giddens[5], it was only in the late 1990s that the practice theoretical view on social life started to gain a more prominent ground in social theory and especially in empirical studies.

Reckwitz[2] notes that the turn to practices seems to include a rising interest in the everyday and the life-world.[6, 7] Practice theoretical approaches emphasize the importance of studying human activities, understood both as bodily actions and verbal utterances, not forgetting that these activities take place in a material environment. Reckwitz[2] provides a verbose definition, saying that á practice '(Praktik) is a routinised type of behaviour 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 '(p. 249).

Interestingly, several theorists of practices conceptualise their thinking by using a triangle of concepts. For Schatzki[1] for instance, a practice includes understandings, a set of rules, and a 'teleoaffective ' structure, meaning that action is informed by an orientation to ends (teleology) and by 'how things matter '(affectivity) (p. 53). Warde[3] delineates his theory of practices as a triangle consisting of understandings, procedures and engagements, whereas Shove and Pantzar[8] underline the material nature of practices by accentuating the integration of images, artefacts and forms of competence.

In social studies on food and eating the notion of 'food practices 'has been used at least since the 1970s. However, at this point our somewhat sketchy search on the use of the term suggests that the concept of 'practice 'has been used more as a general term describing patterns of eating than as an analytical idea guiding the analysis. The uptake of practice theory in empirical studies of food consumption has been rather slow, perhaps due to the difficulties faced in operationalising 'practice 'into feasible concepts for empirical analysis. Recently the idea of practice has gained a more prominent place in studies of eating.[9, 10,11, 12]

When seen as a practice, eating includes on one hand continuously renewing intentions, images and understandings, on the other hand it is filled with social action and doings that are all tied in with concrete material, food. The perspective of practices highlights the idea that the ways of eating cannot be explained merely as individual choices. Instead, the analysis of eating has to take into account the fundamentally social nature of eating, including the formation and significance of habits and routines, culturally shared understandings and various social commitments related to eating. In addition, the social structures and institutions within which people live their daily lives are continuously shaping and renewing the ideas and understandings of food.[2, 3, 10]

Recently it has also been suggested that the concept of appropriation might be usefully adopted in social studies of food and eating.[13] Appropriation can be defined as the ways in which people live with material things and identify with them, make products their ówn 'and transform them into an integral part of their everyday lives.[14, 15] The analytical distinction between conceptual and practical appropriation[13] brings the concept of appropriation close to the notion of practices in which both mental and bodily activities as well as objects play a key role. Conceptual appropriation is understood as the symbolic work that we need in order to incorporate a new object into our world; it is based on the idea that objects exist not only physically but also 'in our heads .' Practical appropriation, in turn, refers to the material side of appropriation, living with and using objects in everyday life. These two 'sides 'of appropriation are tied

together but not necessarily in coherence. As Miller[15] (p. 155) has noted, the distinctions made in language and ideologies do not necessarily find a practical counterpart in distinctions made on objects. Hence, the analytical distinction between conceptual and practical appropriation can be useful in understanding the alleged discrepancy between people's expressed attitudes and their actual behaviours.[16]

As an object to be appropriated, food has its own special character. Food is perishable, it has to be constantly renewed, and it is a 'composite commodity'[17], i.e., food products acquired from the market are used to create dishes that fulfil our norms and expectations of good and proper meals. Our interaction with food is far more intimate than with other material world: by eating food, it becomes literally part of us to the extent that we believe that 'we are what we eat.' The appropriation of food may therefore be an exceptionally sensitive element of consumption in which socio-cultural practices, traditions, tastes, social norms and routines intertwine with the increasingly pervasive aspect of health and the role of genes in it that are loaded with a multiplicity of meanings and contradictions.

Food perception and taste psychogenomics

Food products and food ingredients become food for people after swallowing and ingestion. No matter how healthy or important a food product is, it does not reach its goal if people avoid it. For many people, food flavour has a great impact on food choice, acceptability and eating. By flavour we mean the combination of odour, taste and other chemosensory sensation when food is taken into a mouth. This chapter will focus on taste, an essential component of flavour.[18]

The perception of taste begins when specific non-volatile food components contact receptors in the human mouth. The chemical signals are converted into the electrical signals by receptor cells and transducted to central nervous system. There the information is perceived as sensation and recognized[19]. Human sense of taste detects at least five sensations (sweet, salty, sour, bitter, and umami) that are critical for our nutrition and survival. Sweet and umami tastes are mainly mediated by TAS1R receptors[20]. The perception of bitterness is known to be the most complex taste sensation with twenty-five putative G-protein-coupled TAS2R receptors[20, 21].

Psychophysics represents science that relates sensory experience to stimulus properties[22, 23]. Psychogenomics add the genetic aspect to psychophysics by relating sensory experience to stimulus properties and our genomics. It assists in forming a link between the behaviour and sensory experience of an individual. It is known that humans as consumers experience their own personal sensory worlds, which may result in expression of very individual food preferences. It is important to understand these individual differences in sensitivity when evaluating the quality of food and preferences[24, 25, 26, 27].

Bitter taste is believed to allow an organism to detect and avoid toxins from the environment[28]. This way bitterness is a big challenge for food choice by being maybe an important reason for food rejection. Human's ability to taste bitter compounds that contain a thiourea (-N-C=S) structure, such as phenylthiocarbamide (PTC) and its chemical relative propylthiouracil (PROP) show a bimodal distribution that distinguishes two phenotypes, sensitive and insensitive. Individuals who are sensitive to bitterness of PROP have been demonstrated to be sensitive to sweet substances, to sharp-tasting foods, and to the trigeminal irritant capsaicin, too[29]. Also the perception of fat in salad dressings has been linked to PROP tasting differences between individuals[30]. The lower acceptance for vegetables and fruit has been associated to PROP tasting status when subjects were asked to self-report the preferences based on a checklist[31, 32]. Some studies have also reported that bitterness of vegetables may decrease their consumption among PROP-tasters[33, 34].

The degree of taste sensitivity for PTC and partly also for PROP has been shown to be explained from a genetic perspective and TAS2R38 taste receptor genotype[20, 35, 36]. Recently also a number of other N-C=S -compounds with regard to bitterness were connected to *hTAS2R38* gene[37]. Moreover, the same genotype has been related to disliking or liking of bitter or sweet tastes in children. Bitterness of different glucosinolate producing vegetables such as plants belonging to Brassicaea family depends on this genotype[26]. In addition to TAS2R38 taste receptor also at least TAS2R43 and TAS2R44 so far have been reported to be involved in bitterness perception[38]. These examples point out that a better understanding of

our genetic differences in taste perception is necessary for the study of food choices and specific food preferences.

Individual differences in genotypes vary with respect to amino acid substitutions encoded at certain positions on the taste receptor protein. When a North American (Philadelphia, US) sample of *hTAS2R38* genotypes was compared to a North European (Finland) sample it was found that less than 15% of people were sensitive in Finland, while in the Philadelphian multicultural sample the share was almost 25%.[39] The results indicate the influence of wider gene pool on distribution and show the conservation of genes in isolated populations such as Finnish.

After finding a gene for TAS2R38 taste receptor many questions have arisen[36]. First, why do such individual differences exist in regard to sensory perception on taste? One hypothesis is that bitter compounds could be also toxic and by being sensitive to bitterness some people are able to detect toxic compounds[37]. Second, what is the relationship between sensory perception and our everyday practises? For instance, could product development of foodstuffs in food industry be more focused on targeting specific genotypes and ethnic populations?[40] Or could the taste of food contribute to the increase in consumption of healthy and nutritionally valuable foods to optimise health and well being? At the moment, individual sensory worlds are only partly understood and more studies are needed to understand their implications to nutrition and people's health[27]. In addition, we need more and better communication, co-operation and connection between food sensory perception and cultural or social studies.

Food choices, future and construction of knowledge

In cultural research and future studies on food and eating the focus is on the context of the changing food choices. The context is made of the changing environments as well as the temporal and spatial practices of choice. It is thus both framing and setting conditions for the future environments of action and the practices of food and eating.

From this perspective, the practices of eating are narrated and made more explicit in discussions and discourses in various public arenas, such as paper and electronic media as well as web environments, including the increasing role of both expert and peer networks. In order to gain an insight into both the role of genes in people's food choices and the ideas, accounts and practices surrounding genes, eating and their relationship, it is pertinent also to study the ways in which the knowledge of genes is produced and delivered in both expert and lay discourses. This perspective starts from the idea that the appropriation of practices of eating and understandings of food is tied up with both lay conceptualisations as well as expert and authorities' knowledge on food, eating and health.

In recent developments in the theories of knowledge construction, we can see a blurring of boundaries between knowledge characterised as 'lay' and 'expert'. On one hand, the harsh criticism since the 1990s towards the 'deficit model' of public understanding of science has led to increasing acknowledgement of the relevance of the local lay knowledge in science and technology issues[41, 42]. On the other hand, public or lay views are often uncritically romanticised by experts[43]. Hence, it is necessary to be aware of the making of knowledge as an interactive process between lay people and experts – and us as researchers.

These approaches are essential in the study of the future of food as produced by a multitude of actors. Scientific and technological knowledge on health and healthy eating is in many ways participating in the process of shaping individual preferences and food choices. They also play a major role in eating seen as part of the building and governance of the human body in a proactive and future-oriented process in which people actively produce themselves as proper, healthy citizens[44].

From a future studies perspective, it is important to note that the discourses on food repeat and reproduce various historically and culturally specific notions of the alternatives and the desirable paths of development in society[45, 46, 47]. Hence, lay and expert accounts on the bases and applications of genomics inevitably fuel each other and take part in building the future.

From an analytical point of view, then, it is significant to examine the ways in which lay and expert discussions reflect both humanistic and (bio)scientific discourses on genes, food and eating. The analysis

of these discussions and discourses can help understand the nature and contents of the changes assumed to take place in contemporary and future practices of eating. It may show a variety of possible views and scenarios of the future, and provide 'thickly described paths' that lead to different views of the future.

COMBINING PERSPECTIVES IN AN EMPIRICAL STUDY

Against this background, we argue that in order to explain and interpret the formation of eating patterns we need to know about not only the practices of eating and the relations between psychological and genetic factors in food choice but also the ways in which the knowledge of all these is produced and reproduced in both scientific and everyday discourses.

By triangulating – understood here as an effort to gain a deeper understanding of the phenomenon under study[48] – i.e. combining quantitative and qualitative data, methods, and differing theoretical orientations, we examine the relation between (some) genes and eating patterns, the practices of eating in the context of personal genetic information and the knowledge that take part in producing them. First, we aim at conducting a survey on food habits among people who have been genotyped with regard to *hTAS2R38* by Functional Foods Forum of University of Turku[26, 35]. The characterisation of genotypes will be achieved by applying different multivariate regression analysis such as L-shaped partial least square regression.

In addition, our aim is to conduct focus group discussions and/or in-depth interviews among a sub-sample of the above participants in order to gain an insight into the everyday doings and sayings on food, genes and health and in particular into the encounters of food practices and novel genetic self-knowledge in everyday life. In the group discussions, the focus will be on identifying images of future eating with particular emphasis on the potential for personalised nutrition advice based on genes.

Furthermore, these materials will be analysed relating them to the underlying discourses involved in the very processes that produced them. We will analyse the changing environments of action by analysing media discussions and studies on societal and scientific discourses and constraints relating to genes and eating. The ethnographic/ethnologic observation is necessary for us to see critically the process of the making of the future, and the tensions and restrictions for intersubjective understanding as well as possible breakthroughs. This viewpoint will add a critical contextual, cultural and future oriented level to our study.

TOWARDS MULTIDISCIPLINARY UNDERSTANDING

In this project, we aim at looking at both the significance of genetic factors in the development of food habits and the deeply cultural and social environment in which the daily eating takes place. We want to analyse both expert and lay accounts and understandings of food, health and genes as part of the social and cultural discourse on change. By so doing, we search for a better understanding on the meanings and significance of genes in future practices of eating, on one hand, and on the production of these practices within scientific and societal frameworks.

By using our different backgrounds in natural and social sciences we hope to be able to integrate our approaches, ways of thinking and theoretical viewpoints into a fruitful cooperation that generates novel perspectives on food and eating. At the same time, we are conscious of the difficulties we might face in the course of the cooperation. For instance, during the preparation of the study we have become aware of the fact that our languages and understandings of 'the natural/biological,' 'the social' and 'the cultural' contradict in ways that are not easily conceptualised or resolved. Our different ways of thinking about the people we study as 'research subjects,' 'interviewees,' 'participants,' 'informants' or perhaps even as 'consumers' already contain deep-rooted and conflicting assumptions of the roles of both ourselves and the people involved in the making of research.

We might also face challenging times when trying to bring together our different views on such basic concepts as operationalisation, generalisation, validation – and many more. However, by sensitising ourselves to these differences we try to develop new insights into how they may be bridged and make a productive use of our dissimilarities. The cooperation has already helped us to challenge what we would

otherwise take for granted. For instance, we are better aware of the implicit assumptions in our own theories and of the limitations that they entail. We are also slowly beginning to understand what we don't understand in each others' perspectives and learning to ask sensitising and problematising questions that help us develop our own thinking.

In conclusion, our objective is to create modes of cooperation that can facilitate a fruitful encounter of scientific approaches that originate from very different research traditions. Our ambition is to reach true interdisciplinary understanding in the form of close collaboration, use and interpretation of jointly produced data and writing of research papers for both bioscientific and social science audiences. Should we succeed, natural scientists could deepen their understanding of the social and cultural backgrounds of individualising practices of eating, and social scientists could learn about the ways of thinking, methods and recent findings in the quickly developing biosciences.

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CONSUMER VALUES AND ECO-FASHION IN THE FUTURE

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ABSTRACT – This paper discusses the consumer values, attitudes and expectations regarding sustainable textiles and clothing. Consumers' interest in ethical issues is currently raising ethical questions in the mass market. What does a consumer expect from sustainable products in the apparel industry? And what is future eco-fashion?

INTRODUCTION AND BACKGROUND

The growth in cheap industrial mass production has led to growing consumption: the post-modern consumer is marketing-prone, and inexpensive products tend to lead to unsustainable consuming behaviour. This materialistic way of fulfilling inner needs leads to a negative attitude towards the environment.[1]

However, cheap textile and clothing production in low-cost countries has taken on a bad reputation, and this is slowly changing the attitudes of consumers. Fortunately, the principles of sustainable product design are rather well researched, and material innovations and technological development have provided new eco-design and -production possibilities in the textile and clothing field. Even radical changes in system design and production are possible. Still, rather little has been studied regarding the consumer's readiness to accept these new eco-possibilities. Development in the textile and clothing field has been technological and cost-sensitive up to now. The textile industry has emphasized the price of the end product and efficiency in production. The question remains, however: what kind of textiles and clothes do future consumers want?

This paper discusses future eco-design opportunities and links these to consumer attitudes and wishes. The main interest is in the consumer's ethical purchasing decision, clothing and fashion consumption, and how it interlinks to identity construction. The paper also discusses possibilities to help a consumer's ethical decision-making by increasing the amount of available ethical information, changing textile maintenance habits, increasing the producer's environmental responsibility and public authority's actions. Finally the paper concludes future possibilities to do eco-design according to consumer attitudes.

ECO-DESIGN

Product design and development has a fundamental role in designing and producing sustainable products. The decisions made during the product design and development process affect up to 80% of the environmental and social impacts of a product. The choices made in materials, forms, colours and production systems also affect the use and disposal of the product in the whole life cycle, and the designer thereby also influences patterns of sustainable consumption.[2]

In product development there have been two main approaches to sustainability since the 1990´s: eco-efficiency and eco-sufficiency. In eco-efficiency the principle is to produce the same or more products from less material. In eco-sufficiency the aim is to gain the same welfare benefit out of fewer goods and services.[3]

Eco-design includes product life-cycle thinking. In designing for the environment the designer must consider not only aesthetical, trend and fashion issues, but also the production process, logistics, the use and maintenance of textile items and finally the recycling or disposal of the product.[4]

CONSUMER ATTITUDES

An inquiry into the attitudes and expectations of Finnish consumers towards sustainable products in the textile and clothing field was conducted as an online survey in April 2009 by the author. A total of 249

respondents participated in the survey. The survey is thus not extensive regarding Finnish consumers, but it nevertheless offers some guidelines to future eco-design opportunities. The largest group of respondents was students, 40.4%, and the second largest group consisted of civil servants (29%). The majority of respondents were fairly young: 38.4% of them were 18 to 25 years old, and 41.6% were 26 to 35 years old.

In earlier studies of consumers 'ethical attitudes it has been pointed out that environmentally-active consumers appear to be more educated, have a high income, and are more often female. This shows that women in general are slightly more interested in ethical purchasing than men. In a study by Oksanen, for example, it was found that in Finland, 74.3% of women say that ethical aspects do affect their purchase decisions. With men, the number is 63.2%.[5]

In the 2009 consumer attitude study by author, 91.8% of respondents were women and 8.2% men. Regarding the respondents 'interest in ethical consumption and products 'environmental impact, 62.7% of the respondents answered that they were very interested in this issue and 28.3% were somewhat interested (total 91%). Regarding actual ethical consuming behaviour 20.8% agreed that they behave ethically as consumers and 57.1% agreed slightly with this. This group thus totalled 77.9% of all respondents. This shows that people are rather sincere while estimating their attitude and desire to act ethically and their real, everyday consuming behaviour. When asked about the ethicality, product safety and environmental impact aspects of textiles and clothing while purchasing, 49.2% reported thinking about these aspects often and 16.7% always. And when asked about their real textile and clothing purchasing decision and how often consumers have actualized ethical thinking in clothing purchasing decisions at some level, 56.1% of these respondents have done so (always 8.9%, often 47.2%) (see Table 1).

Table 1. Consumers 'interest in ethical consumption.

Attitude	never %	seldom %	can't say %	often %	always %
ethical interest in general	4.1	3.7	1.2	28.3	62.7
real ethical consuming behaviour	2.4	14.7	4.9	57.1	20.8
ethical interest in textiles and clothing	1.6	24.4	8.1	49.2	16.7
real ethical purchasing decision in textiles and clothing	2.4	28.9	12.6	47.2	8.9

ETHICAL PURCHASING DECISIONS

Ethical consumption refers to ethical, environmentally-conscious consumption decisions as well as, instead of buying products, investing in services. In the textile field this involves, for example, promoting Fair Trade products, regionally produced items, eco-labelled products, recycled materials and less purchasing in general.

In the centre of attention should emerge the eco-efficiency of consumer choices and the importance of environmental aspects in consumers 'everyday purchasing decisions[6]. Yet consumer choices are somewhat irrational and not always well connected to his/her values. A consumer fulfils deep inner motivations and unconscious needs by consuming.

Consumption includes two kinds of functions while fulfilling a person's needs, targets and values. The consumer can try to achieve individual or collective benefit by consuming. Ethical products manifest individual motives or collective benefit for the person. Individual benefit involves issues such as price, quality, saving of time and purchase convenience.[7]

Ethical decision-making relates to the consumer's social orientation, ideals and ideology. Ethical consumption can create an individual, symbolic feeling of advantage which links to a certain lifestyle or expression of personal identity and other social values.[7]

Lifestyle as a theoretical concept means the totality of a person's social practices as well as the story that he/she tells about them. Person thereby states reasons for himself/herself and others about his/her actions. When a person realizes that his/her thinking is contradictory to his/her own everyday choices, practices, habits and routines through some new perspective (for example ethical consumption),

and these old habits do not bend to his/her new inner picture of himself/herself, for example as a ethical consumer, he/she will change his/her habits and practices. He/she thus harmonizes his/her own self-image and tries to maintain an undamaged one. Through this shift a person keeps his/her dignity and self-conception, and he/she balances his/her "life story" with his/her everyday routines.[8]

This is how a consumer's discourse awareness develops, changes and is challenged, through discussion, new information and experiences, and, on the other hand, this discourse awareness changes into practical knowledge that the consumer uses in everyday routines.[9] The entire time the consumer has to balance between individual needs and social benefit. At the same time the consumer wants to fulfill his/her present desires and future needs.[10] While consuming ethically, the consumer knows that he/she acts morally correctly and in this way he/she approaches an ideal ethical world[5].

CONSUMING FASHION AND SELF CONSTRUCTING

Fashion is symbolic production. As a concept it differs from clothing, which is material production linked to physical needs for protection and functionality. Fashion links us to our emotional needs; it expresses our inner individual personality by external marks and symbols, brands and status items.[11]

Psychological human needs include affection, understanding, participation, creation, recreation, identity and freedom[12]. Fashion enables identity building, participation in social groups and class, and also creativity.

Up to now fashion and trends have led consumers' choices in the clothing business. In the USA in 2004, eight out of ten consumers said that environmental issues are important. They considered themselves as environmentalists. However in real life when buying clothes they do not actualize environmentalist thinking and values. Price and style are more dominant factors when they buy clothes and especially fashion items. The consumer's need for newness and to practice a form of fashion has created the opposite situation to sustainable values. How can fashionable and environmental aspects in clothing be combined in the future? Or can sustainability become a fashion?[13]

In this study 84.1% of respondents said that price affects their clothing purchase decisions. However, suitability, colour, and quality are also important factors while shopping for clothes, according to this study.[14]

Fashion cycles are short, and the race for cost efficiency is tight. The cost of clothing and the value of goods have steadily gone down.[15] However, the 'Slow' movement has also reached designers and producers in the clothing industry. 'Fast' fashion and cheap mass production is especially stimulating a counter-reaction among consumers. Slow fashion is produced at a slower rate; clothes are made with more care, resulting in better quality. Slow fashion needs deeper consideration, taking responsibility for one's own clothing purchase acts and their effect on the environment as well as social responsibility. While making a 'slow fashion' decision the consumers respect high quality, made-to-last characteristics as well as ethical or even local production and the lowest possible environmental impact of the production and use of product.

Future consumers want to feel good about their consuming behaviour. Yet the concept of feeling good and happiness may change in the future. Perhaps consumers will make a selective purchase decision according to their inner ethical values. Consumers may even feel good when avoiding shopping, fashion, and external processes of identity construction. Consumers may also feel good when changing the purchasing decision to renting or other services.

In the 2009 study respondents were also asked about the meanings of clothing. A total of 91.4% answered that clothes mean the owner's own identity, and when asked if clothing reflects the direction in one's life (for example building identity), 53.9% of the respondents agreed strongly or slightly with this. When asked if clothing means practicality to you 93.5% agreed with this statement.

The respondents were also asked about the facts that strongly affect their clothing purchasing decisions: they answered in the following way. "Suitability" was chosen by 98.3%, "multi-functionality" 94.9%, the real need for new clothing 93.5%, colour 93%, quality 92.2%, price 84.4%, need to renew 62.2%, brand only 28.4%, and following fashion trends 19.5%. Perhaps these respondents have stronger

ethical values than the average consumer, or consumers do not recognize when they are following trends or fashion, even ethical ones. It can be stated thus that fashion and trends affect us also in a subconscious way.

ENVIRONMENTAL INFORMATION

In this 2009 study 56.7% of consumers strongly agreed that it is difficult to find information about products 'environmental impact and ethicality, and 36.3% somewhat agreed with this (total 93%). Finding ethical information from the consumer point of view is problematic. Because consumers do not find this information, they still select products on the basis of price, appearance, design, convenience, ergonomics and functionality.[16]

In Oksanen's study of ethical products, according to the opinion of 74.2% of the surveyed consumers, finding ethical information is complicated. Younger generations and the group of higher educated respondents are also suspicious of the information companies give about their ethicality.[5]

In the 2009 study the respondents estimated which sources of environmental and ethical information in textiles and clothing are the best sources, and the most reliable ("excellent") were standardized environmental labels. Second-best ("good") was information from authorities, civic organizations and the Consumer Office. The mass media seems to be satisfying as an information source only to the same level as companies, producers, importers and trade organizations.

It confuses consumers that a company might have one ethical line and, at the same time, produce unethically; producers thus do not help consumers to make ethical purchase decisions by offering contradictory information[5]. Consumers cannot easily find ethical or environmental information from different products and at the same time there are so many different kinds of this information on textile products that it is very difficult to compare it. Lately the public focus has shifted toward the ethical production of clothes, and this information has become more common in the textile area.

Nevertheless the consumers 'need to acquire information is strong. In the 2009 inquiry it was also asked what environmental information the consumer wants to find regarding textiles and clothing in the future. All the existing labels were given strong support: the Nordic Swan and European environmental labels, as well as the Fair Trade logo and Ethical Production labels. This reveals that producers simply must provide more ethical and environmental information for consumers 'use. At the same time researchers have to develop further environmental labelling so that it is easy for the consumer to evaluate products on the basis of sustainability.

ETHICALITY AND PRICING

The consumer's expectations of ethical products are somewhat unrealistic. Consumers prefer the sustainable products to be at the same price level as other products. In this case purchasing decisions would be easy to make on the basis of environmental aspects.

On the other hand consumers realize that sustainable production following better and newer processing technologies and using safe and sustainable materials also means extra costs that have an influence on the end price of the product. In the 2009 study, 58.8% of the respondents agreed that it is too expensive to consume ethically. When they had to estimate how much more they would be ready to pay for sustainable textiles and clothing, the dispersion was rather widespread. A total of 29.7% said that they would be ready to pay 10–14% more, and 19.9% said that they would be ready to pay 5–9% more. Only 3.7% said that they do not want to pay more at all, and, on the other hand, 9.3% were even ready to pay more than 25% for sustainability (see Table 2).

Table 2. Consumers 'readiness to pay more for sustainable textiles and clothing.

how much more you would be ready to pay	respondents
not at all	3.7%
1–4% more	12.6%
5–9% more	19.9%
10–14% more	29.7%
15–19% more	14.2%
20–24% more	10.6%
more than 25%	9.3%

Traditional products which harm the environment are not priced to include all environmental costs of their production. Externalities associated with production are often subsidized by society and the result is lower prices for the consumer. In contrast less environmentally harmful products are not subsidized by society and therefore all costs from development are passed on to the consumer in the form of higher prices.[17]

Some researchers recommend pricing the product by taking into account also the environmental load of production. The pollution load would affect the final price of the product. This system would be controlled by public authorities, and the responsibility would thus move from consumers to public authorities.[6] Environmental and green taxation seems to be a very effective way to move towards sustainability[18]. The idea of adjusting product prices by green taxation has received encouragement from consumers. In the 2009 study 51.2% of respondents strongly agreed and 34.8% somewhat agreed that mass production with a heavy environmental load should be levied a tax (total 86%). There is a will and interest from the consumers 'side to change industrial processes towards more sustainability and ethicality even if it means higher prices.

In the same study 92.2% of respondents said that while buying clothes quality is an important aspect and higher quality means a higher price. The consumer weighs up the purchasing decision more when buying valuable items. If the clothes are expensive, they will be used longer; they will be repaired, maintained and recycled, especially if they are made of high quality materials. This raises the following question: how can good quality products be produced and, at the same time, make sustainability and ethical production such important elements that it will be accepted that they raise costs? As one of the respondents answered: *"We should return in our consuming behaviour back to the time, to the stage where we bought a little, but expensive and good. Now cheap products block in the way to realize this ideal."* The best decision for sustainable development would be minimizing consumption in total, in which case an increase in prices in general would be a best alternative as this would affect more the total volume of consumption[19].

TEXTILE MAINTENANCE

Textile and clothing manufacturing creates a big environmental impact through the fibre cultivation and manufacturing processes. Maintenance of the textiles, however, especially clothing, also has an important environmental load (washing, drying, and ironing). These two processes are critical when doing a textile LCA. Textile maintenance uses very much energy and water. One study done in the Netherlands found that the average piece of clothing stays in the wardrobe for 3 years and 5 months. The customer has worn it for 44 days during that time, and it is worn for 2.4 to 3.1 days between washing.[20] Clothes frequently washed have the highest environmental impact. By optimizing the best textile materials and product colours for each purpose and use, the designer as well as the consumer can minimize the number of washing times during the use of textiles.

Clothing, workwear and household textiles have a large relative environmental impact during use. Their impact during production and disposal are estimated to have a small relative impact.[11] Depending on the material and its need to be washed frequently, the impact of consumer care can be as high as 75 – 80% of the total environmental impact of a cotton shirt.[21] In this case better environmental (eco-labelled) material choices do not actually offer much improvement to the environmental aspect in the total LCA.

In the same 2009 study the consumers were asked about their interest in finding more information about products 'environmental impact during wear and maintenance. A total of 66.7% of consumers were keen to find this kind of information on textiles and clothing in the future. This kind of information is completely lacking at the moment, yet it seems that consumers are interested in their own actions and how they link to environmental load. Still, information about the environmental load of textile manufacturing was more important from the consumers 'point of view (85.8% would like to find this information in the future).

Furthermore minimizing ironing and lowering washing temperatures can also have a strong effect.

When asked how many would be ready to lower the washing temperature for environmental reasons, 76.6% were ready to do this. It is estimated that lowering the washing temperature by 10 degrees essentially lowers the energy consumption during consumer care. This is quite possible to do by selecting suitable materials for 30°C washing in regularly laundered clothes.

But when asked if textiles 'and clothing's maintenance will need more work in the future (for example, hand-washing with cool water), 69.3% did not agree with this statement. However, 50.8% agreed when asked if future textiles and clothing could be less frequently washed and if consumers could change their conception of cleanliness a bit. In addition, when asked if the consumer himself would be ready to do this (wash clothes less frequently) 65.7% were ready to change their washing behaviours. We know that only 7.5% of laundry is heavily soiled. The majority is washed more for cultural or behavioural reasons.[22]

Yet it is even possible to design clothes that need minimum washing or do not need washing or ironing at all, and their quality and style can be optimized for the real lifespan of the clothes. With the right kind of material choices clothes can be designed so that they last a certain time of use and after use they can be recycled. However consumers are not ready to buy short life-cycle clothes. Only 7.9% of the respondents agreed with this. However, if the clothes designed to last a short time are biodegradable 34.5% were ready to consider this kind of fashionable clothing. At the same time 96.7% want clothes to be made with high quality and 98.4% want clothes to be long lasting.

Clothes can also be designed with a modular structure so that only those parts that actually become dirty will be washed. The consumers studied are even ready for this (56.4%).

GLOBAL CONSUMER

While textile manufacturing has moved to lower-cost countries so also are the environmental impacts. In the Western world and especially in the EU environmental laws are strict; the situation is quite different in Asian countries, however. Through consuming more and more mass-produced, cheap textiles, consumers affect environments on the other side of the world.

Lately the ethical production of textiles has been strongly in public discussion but not yet the environmental impacts that western countries 'consumer habits have on other countries. This can also be seen in the answers of the 2009 study: 91.8% wanted to see information on the ethicality of production and 92.6% of respondents wanted to see the Fair Trade label on the product in the future. Through regular information in the mass media, unfair production systems have become familiar to Western consumers.

There are several options for informing the end user about the global impact of textile production. These concepts are the carbon footprint and water footprint. A carbon footprint is the estimated figure of the impact a person's activities has on the environment: it includes all greenhouse gases. It is estimated that in a typical person's total carbon footprint in the developed world, 4% goes to clothing. The carbon footprint includes the primary footprint of direct CO_2 emissions (also including domestic energy consumption and transportation) and the secondary footprint (the whole life cycle of products we use). It is also possible to calculate individual products 'carbon footprint, and this gives the consumer the possibility to compare different products. In cheap, mass-produced clothes, cotton cultivation and logistics result in a very large footprint.[23]

A water footprint is an indicator of both direct and indirect water use of a consumer or a producer. Many countries, especially in the Western world, have externalized their water footprint by importing water-intensive products from elsewhere. Global international trade implies international flows of virtual water. For example the water footprint of one cotton shirt is 2700 litres.[24]

The carbon footprint and water footprint are also linked directly to the total amount of consumption and welfare of nationalities. These are good indicators to evaluate consumption levels and consumption's environmental load.

In the 2009 study respondents were asked about their interest in seeing this information, the water footprint and carbon footprint, on textiles and clothing. A total of 72.6% of respondents wanted to see a water footprint figure and 77.1% a carbon footprint figure on clothing products. While these are rather new figures, last summer in England there was a strong demand for carbon-footprint-labelled clothes.

The whole production chain of textiles is very fragmented and complicated. The "Made in" label does not truly give the needed information any longer. Nonetheless in the same study 91.3% of respondents want to see a "Made in" label (the origins of the product) in future textiles and clothing, and 60.5% want future clothing to be produced in neighbouring areas.

POWER GIVEN TO THE CONSUMER

In the 1990's Finnish public authorities believed that by increasing information about sustainable products and product life cycles, consumers will act wisely and choose products with less environmental load. It would thus be possible to decrease the environmental load of consumption and industrial production. A key responsibility was thereby moved onto the shoulders of the individual consumer. It was also presupposed that in this way the number of ethical products on the market would increase. A majority of consumers feel that their values are based on ethicality, but the authorities have given too much power and, at the same time, too much responsibility to individual consumers.[25]

In the 2009 study consumers were asked about their wishes regarding products' environmental optimization. A total of 73.4% of respondents agreed that it would be good if products in the future were automatically optimized according to environmental impact and thus no extra environmental labelling would be needed (38.8% somewhat; 35.1% strongly).

While discussing best practices to change the present development in consumption, the respondents raised some interesting comments. Some consumers want public authorities and producers to take responsibility more clearly in environmental matters. *"Producers have to carry the responsibility. In shops there should only be ecological and ethical clothes and other products. It is incomprehensible that now the responsibility has been pushed to consumers and while maximizing profits we have ended up in a situation where consumers have to separately demand ethicalness and 'ecological-ness'. Enterprises should somehow be forced to follow ethical and ecological principles with the help of legal institutions and laws, and these have to be tight enough. "*

More information about the ethical bases of production and the actual tracing of makers (Made by labels and transparent production) in textile and clothing production are desired by 96.7% of respondents. This reveals that consumers are most eager to find more information and actually have the possibility to themselves check the background values of a product.

While asked about the best ways to change consumer consumption behaviour 41.6% feel that increasing information is the best way and 37.4% feel that increasing green taxation and other public authorities' controlling measures would be the best way to make an essential change.

In conclusion, consumers still want to have the power and possibility to weigh their own individual purchase decisions, but at the same time they wish to have help from producers, legislation and authorities.

ACCEPTANCE OF ECO-CONCEPTS

We do have various possibilities to design and produce textiles and clothing differently in the future. Yet these new eco-concepts, material choices, designs, aesthetical concepts, and maintenance habits depend on the consumer's acceptance and willingness to change his/her preconceptions and routines.

Consumers connect strongly to social mores, which have a moral connotation and are based on the central values of the culture[26]. Acceptance of mores is considered mandatory. Rules on dress necessitate appropriate professional appearance such as a coat and tie for a man.[27] In the 2009 study one of the respondents said, about the meaning of clothes: *"I have tested it: in my workplace I make progress only when I am dressed in the code of my profession that means wearing a tie."*

In some situations clothes have the function to confirm or change our own role, and this affects other people's attitudes. Clothes and fashion are linked to acceptance and social codes and consumers have the deep need to participate in social groups and classes. Can we break or change even some of these accepted social norms? When the maintenance of clothes has a significant environmental impact, can we change this aspect of clothing? All assumptions and preconceptions have a slow historical change pattern. Our conception of cleanliness has changed radically in 100 years. The technical development of washing machines, tumble dryers and better detergents has also driven our concepts of the cleanliness of clothes. The same kind of change can be seen in the concept of comfort and convenience in clothing. Convenience as a concept is linked to rush and an existing busy lifestyle. This interconnects to the use of polyester clothes, easy washing, tumble drying and no need for ironing. Yet we know that polyester clothes need more frequent washing because they cause more sweat.[28]

Can future fashion be wrinkled, recycled, less colourful and acceptable in the office? This new eco-fashion concept seems to be not as easy to accept among consumers. In the study 70% of respondents want eco-clothes to look exactly the same as ordinary clothes. Consumers do not want apparel to be different in design or appearance. Only 30.2% of consumers want clothes to declare eco-aesthetics. It might be more advisable to develop the eco aspects in materials, production and textile maintenance than in new design concepts.

ECO-FASHION IN THE FUTURE

Value change is the most important factor in sustainable development[29]. For sustainable development it would be best to consume less. However nowhere near all consumers are willing to reduce consumption and by doing so create their identity without external symbols. Behind the need to consume there are, besides the actual need, other deeper reasons such as the need to be associated with some social class, or constructing personal identity through product symbols and brands, and this is obvious in consuming clothes and especially fashion. To change this tendency in consumption, critical aspects can be seen in individual consumers and their set of ethical values.[19]

Yet in the future through material innovation and production processes it is possible to produce textiles and clothes with different quality and life cycles and target these for different consumer groups. Perhaps there should be fast fashion and slow fashion production systems and different taxation and labels for these.

Slow fashion would be designed according to an ethical consumer's values. The clothes would be designed to be durable, high quality and in sustainable materials. The production lines would be ethical and perhaps even local production. The style would be more classical and longer lasting in design, colour and print. The clothes would be long-life products made from durable materials. The material choices would be optimized so that the clothes need very little maintenance, especially washing and ironing. And materials and clothes could also be reused and even recycled into a new textile material. Multifunctionality and a modular structure is important, and producers can also offer new service concepts, such as repairing, recycling, changing, renting and leasing clothes.[30]

Fast fashion would be directed towards the younger generation, and it would be based upon their need to consume and build identity with fashionable items. This might mean new sustainable clothing materials which are optimized for the real lifetime of the product. Perhaps they are used for only 6–12

months, and they are then recycled into new materials. They are mainly made from recycled materials and not virgin ones. There would be a good recycling system for these clothes or they could be biodegradable. Perhaps they would not need to be washed at all during their short lifetime. Fast fashion could also mean do-it-yourself design or tuning, and this could deepen the customer ś relationship to the product as well as his/her level of self-actualization, thus extending the product lifespan.

In the future we all have to satisfy our needs in a longer lasting manner than by consuming products. This means a huge step and change in our behaviour. By balancing prices between sustainable and unsustainable products using green taxation, this might help consumers to behave more rationally. As one of the respondents commented, cheap clothes confuses consumers rational behavior, meaning to buy more expensive clothes and also to invest in better quality and sustainability. In this inquiry 94.6% of respondents were ready to buy better quality, durable, repairable, more expensive clothes in the future and use them longer to decrease their own environmental impact.

DISCUSSION AND CONCLUSION

Better consideration of what consumers expect and value in the future might offer new design and production opportunities. Sustainability and eco-design will be a megatrend, and consumers are ready for this and even ready to pay more for sustainability. When production systems, designers and retailers understand better the consumers 'values it is possible to extend the supply of sustainable items on the market.

Enterprises have been taking into account production systems 'environmental impacts more and more in recent years. In Finland producers are far ahead in terms of using LCA tools, but a true radical change in design thinking is still waiting to emerge. A radical systematic approach to sustainable design is needed, and we have to challenge the consumer to actualize his/her own ethical values into purchasing behaviour. To change consumption habits, the consumer wishes to have help from producers and public authorities.

If concern for the environmental actualizes in radical political measures such as green taxation, sustainability may also be the only way of designing and producing products in the future. The early bird catches the worm: it may therefore be advisable for producers to specialize in sustainability as soon as possible.

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HOW TO ANALYZE VARIOUS CONSUMER DATA IN THE FUTURE?

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ABSTRACT – In this paper, we present the concept of "open data": The new kind of consumer data produced by the consumers themselves from their perspective and for their own purposes that is not intended to be used primarily as consumer data. It is shared publicly in such a way that it can be used as basis for the business and non-profit organizations in their quest for novelty and understanding of changing consumer trends, also for the benefit of the consumers themselves.

We discuss and analyze three cases of opportunities brought by open data: web enhanced brand communities, the weak signals approach and conceptual mapping, which is in its early phase of development.

INTRODUCTION

IT is a often stated problem that market-oriented firms have a lot of data in various forms about consumers but this data does not always help in making the right decisions concerning product development, strategies and marketing - often because it answers pre-formulated questions for which answers are already known. This is the reason why new methods to exploit data may represent a relevant source of competitive advantage.[1] Important new challenge is the extensive quantity of the new data produced by the consumers themselves. Consumers produce different kinds of reflections to their own consuming patterns and the everyday life in general, mostly with the help of new technology. We refer to this data with the concept of *open data*. By the term we describe both the openness in terms of accessibility of the data mainly in the Internet and the open nature of the data itself: it is not pre-structured to answer a set of questions defined in advance.

The purpose of this paper is to analyze and propose an additional way to create data in the producer - consumer relations. The paper is structured as follows: We begin with empirical findings from the Lego case study where we suggest that the open data is successfully "tamed" with the company supported web enhanced communities and user panels built on them. We then discuss the open data in a wider perspective as weak signals of the future, and how these signals can be used as representations of the future consumer needs. Third, we present a work-in-the-progress approach to simulating open consumer data through conceptual mapping in a case where relevant open data does not exist a priori or is difficult to find.

DEALING WITH CONSUMERS THROUGH WEB-ENHANCED BRAND COMMUNITIES: THE CASE OF LEGO

In this section, we present the key findings from the Lego case study based on three interviews with creative manager and product designer from the perspective of company relations to consumers and changing marked trends.

The case company and marked trends in brief

Lego is a Denmark-based family held company established year 1932. It is the sixth-largest manufacturer of toys in the world in terms of sales. The core of the company's products is the colourful interlocking plastic brick that can be used in building and re-building things. The Lego brick, as it is nowadays, was patented in 1958. For a non-enthusiastic consumer, the trademark "LEGO "refers to the colourful bricks,

in some cases childhood memories and the assumption is that LEGO works in children toy industry. But that is not exactly the case anymore. In the following it is presented how the business changed and how LEGO is coping with the trends, and with the open data.

The toy market changed severely when computer games grasped the attention of the new generations in the early 1990s. LEGO had to compete with electronic toys in the market and it had problems also within the company: coordination, the running of a "well-oiled machine", had become more important in the organization than creativity in product development.[2] "Copycats" sold inexpensive products similar to LEGO bricks after its patent had expired 1981. Market change put tremendous pressure to LEGO. At the same time, there were fanatic LEGO users who shared their critical views of the company at the lego.com message boards. The rapid spread of the Internet and technology-oriented toys, and the critics of the users, meant that LEGO had to create radically different products compared to what it was used to.

Involving users into product development

Market situation pushed LEGO to invent a totally new concept of computer-enhanced toys. The task of the new product development team was not easy, the product concepts were internally considered too difficult to use and there were mistrust towards the creative team working on the project. Eventually the team working under great instability and lack of internal support convinced the CEO with its new Mindstorms concept of LEGO robots.

In 1998, LEGO launched a programmable brick based on a micro controller that enabled users to build up robots and other creations that move. Within the first three months 80 000 Robotics Invention Systems were sold and they became instant success in universities such as Massachusetts Institute of Technology and Stanford. Unintentionally, a new market was born: the adult fans of LEGO. This consumer group did not appear in any of the LEGO Group strategies but the communities built themselves.[3] The reason for these users to form the web communities was their need to get more out of the experience of their hobby.

Web communities were turned into a product development tool by building user panels on the active consumer communities. Users were involved into the Mindstorms product development in 2004 when the LEGO Mindstorms user panel was created to help build the next generation products. The experience of having user panels has been positive since LEGO has user panels today for many of its products. The Mindstorms panel was a pioneer: first five enthusiastic community chat room members, whose identities were afterwards revealed, were asked to log on to a secure site where they chatted and later they were told (after signing up the non-disclosures) about being involved in the project of developing the next generation Mindstorms. For over a year the panel met through the Internet and also face-to-face and gave its suggestions to the next generation products. After one year the panel was expanded and had fourteen members to learn about the challenges on the market. In two years time the panel had one hundred members in order to help in finalizing the product. In that, LEGO is a pioneer in involving users into the actual product development.

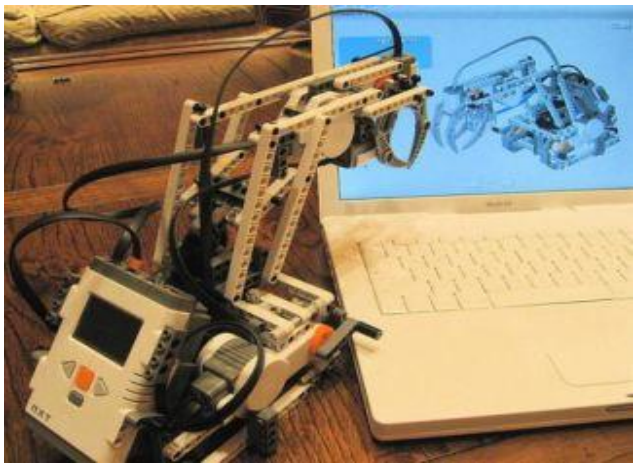

Figure 1. Lego Mindstorm creation looking at the design of itself. Photo by Steve Jurvetson (flickr).

Company relations to consumers

LEGO is often acknowledged as a company pioneering in user involvement.[4, 5, 6] LEGO adult fans have contributed importantly to the development of Mindstorms product line, LEGO has the LEGO Factory concept, which allows users to create their own products with a digital designer –program and Lego is keenly involved in family collaboration through different events and it has opened up active web community also to other than the adult fans.

Having the enthusiasts, instead of a representing sample of the total markets, to contribute to the company is a strategic choice and also in this case a practical one. The first LEGO enthusiasts were hacking LEGO site and their criticism needed to be turned into a positive force instead of lawsuits against them. Also, the primary users of LEGO products, children, are not easily ethically enrolled to serve company goals. Adult enthusiasts instead share the experiences and are passionate about LEGO. The community contributes to the brand value instead of contributing only to product details: they "fuel the community around the trademark ". The community, together with the story of company history, makes the product genuine and authentic compared to copies. The same effect and use of user communities can be seen at sports industry as well [7, 8]. At LEGO it has been found sometimes that user communities are not controllable and there always lies a risk in opening up forums for criticism. However, in the case of LEGO, adult LEGO fans are committed to the brand and their criticism is found constructive. Lead users in an important role in product development however can lead to undesirable conformity and uniformity in product variety since the lead users often form like minded communities.[7] It remains to be seen if the adult fans of LEGO are guiding the product development into the right direction compared to other users ' interest and market trends. Because of this risk, LEGO has other, more traditional methods than user panels, for market analysis.

Lego officially states, that "the situation facing all toy manufacturers at present is that they are pressured from many quarters - by consumers, customers and competitors. The LEGO Group meets this challenge with a determination to bind consumers, fans and retailers even closer to our organization. "In the interviews this point of view was coherently held. The LEGO Company was presented only as a part of what constitutes "LEGO ". The trademark is owned by LEGO Corporation but the brand is open. In the network of actors, LEGO Corporation is not put in the middle but aside. Lego adult fans form a brand community, which is "a specialized, non-geographically bound community, based on a structured set of social relations among admirers of a brand ".[9]

WEAK SIGNALS APPROACH FOR ANALYZING CONSUMER TRENDS

In the previous case the method for using the open data is a devoted brand community that strengthens interactive company-consumer -relations. A brand community is, by its definition, not necessarily en-

hanced by the Internet but nowadays that is often the case. In this following section, we present another way that is recently used within business context for taming the open data. The weak signals approach is enhanced by the new technologies and it is especially used to anticipate the *future* consumer trends.

The concept of weak signal

Weak signals can be considered as early information of possible forthcoming changes. The concept of weak signals is not established in academic discussion and there are countering arguments on the subjective and objective nature of weak signals. However, academics agree on the concept of weak signal meaning the first sign of a possible change in the future.[10]

Even though there does not exist academic consensus on the concept, weak signals are used within business context, where the concept often means:

- An idea or trend that will affect how we do business, what business we do, and the environment in which we will work.
- New and surprising from the signal receiver's vantage point (although others may already perceive it).
- Sometimes difficult to track down amid other noise and signals.
- A threat or opportunity to your organization.
- Often scoffed at by people who "know".
- Usually has a substantial lag time before it will mature and become mainstream.
- Therefore represents an opportunity to learn, grow and evolve.[11]

Weak signals in the business context

In the business context, weak signals often threaten the status quo, and they are recognized when "there is something different happening".[11] The ambiguity of weak signals is what both fascinates business organizations and causes resistance in them. In this paper, we take the stand that by collecting, combining and analyzing weak signals it is possible to try to anticipate future changes for example in consumer behaviour.

Weak signals are observations, news articles, blog writings, and internet sites about new issues. It is important not to try to filter weak signals in the early stage and not to collect some signals because they are not considered as potential. The potentiality of one weak signal for the future is not relevant- what counts is the masses of weak signals that give together evidence of potential future trends. This is the key of the weak signal analysis: combining weak signals together and trying to form patterns of change. This analyzed information can be used for bases of decision making for example as a raw material for scenarios.

From this perspective for anticipating the future, the most relevant information lies in the primary signals that are signals of issues that are not yet interpreted by any actor.[10] From the point of view of the sensing the emerging consumer trends, it is important to seek the fountain of the change as it could be found in its purest form (primary signals). An example of primary signal could be a demonstration of a new activist group. These kind of signals are not "distorted" by outside actors, which could happen for example in a case that a journalist (an actor) is writing her story (producing secondary signals) on some emerging topic (primary signals). In this case, the journalist could write a story about the demonstration, based on true observation or rumours she heard about the demonstration, often adding something more to the case.

The challenge using weak signals pose in addition to finding them is to separate the true signals from false and combining signals to meaningful and potential trends. Actor's role in the change is essential, because they are the ones that can strengthen the underlying issues or try to prevent them to happen.[12]

Figure 2. *Image of a weak signal. A pair of modified Crocs from a science fair. In these, one can feel they are walking on artificial snow and hear the creaking of the new snow. Photo by Elina Hiltunen (www.whatsnext.fi)*

Weak signals in the Internet

Web and especially the open discussion forums and other social media services with platform of open discussion like Facebook, Twitter and blogs provide source for sensing the changes. These services are today's market places or bazaars where stories are told - stories that can tell about the changes also in the consumer behavior. From an organizational point of view "listening "to the discussions in Internet provide companies valuable information of the underlying changes and true consumer experiences. Today the changes can spread like blaze because of the effective communication channel. Ignoring the discussions in Internet can be damaging: an example of this is a Finnish Magazine *7 Päivää* which ignored at first an internet petition of the readers against the magazine because of publishing photos of unmasked Eurovision song contest winner, even though he had asked not to show his face without the mask publicly. The number of people that signed the petition sky rocketed in couple of days and the petition lead to boycott of the magazine (by consumers and advertisers, which were afraid of consumers 'reactions). Finally the editor of the magazine asked for apology. Reacting in early phase in the weak signals of emerging resistance to the magazine could have helped the magazine. Now it suffered from losses of subscriptions and advertising income.

Compared to the previously presented brand community method, weak signals approach is a less organized way to analyze consumer trends but the perspective is much more comprehensive. On a daily basis, people in the organizations scan the environment for clues on how consumer and customer trends change (see [11] for details). Weak signals are especially important in anticipating the (surprising) changes in the consumer behavior that could not have been anticipated via traditional forms of market research.

The tools for organizational weak signal crowdsourcing are unfortunately scarce. For gathering weak signals into a shared database by employees in a business organization there exists a tool called Trendwiki (www.trendwiki.fi). This tool allows employee participation in observing the changes and pattern management of weak signals into possible trends. After gathering interesting clues of the future developments in consumer trends, however, there need to be the advocates who collaborate in making them true. In organizations, not believing in changes altogether can often be the biggest obstacle in seeing the changes.

SIMULATING THE CREATION OF OPEN DATA – THE PROPOSED EXPERIMENTAL METHOD

In the first part of this paper, we presented a case where open data was successfully linked to the product development process through web enhanced brand communities. In that case, there is a win-win situation as fans can give lots of useful information about the markets to the company and fans themselves get new products that better correspond to their needs. In the weak signals approach, on the contrary, the

data is richer in its diversity but also more unfocused than in the brand community context. Because of the deviant nature of weak signals, the approach is more challenging to be intertwined and practiced in the context of business processes that usually aim at predictability, and do not tolerate ambiguity.

From the blogosphere to simulation of open data

In the last case we present, in order to understand the nature of open data, the key analytical question of this paper is turned the other way around to develop the concept and the potential use of open data: Instead of asking how open data can be analyzed successfully, we ask if it is possible to generate open data in those business cases where it does not naturally exist. Here we present the model of simulating open consumer data that we are developing and using in real business cases this year.

We find that the data produced by consumers themselves for their own purposes can benefit both the consumers and business organizations in the business context, as the Lego case study also suggested. Many times, however, business organizations do not have enthusiastic users or even less devoted brand communities. These companies could take advantage of what we call simulation of open data.

Nowadays many companies do not have devoted consumers that are engaged into brand communities or could be asked to join other user panels, but they can try to find relevant data from the discussions in the web. These mean the user-created content in the web, whether it is in the form of blogs, newsgroups, and discussion boards or posted in the review sites or other similar forums. There are several recent studies in which the focus is in developing methods for obtaining and analyzing blog data and its significance for marketing and consumer understanding, including commercial approaches that rely on blog crawling and search, text mining and natural language processing.[13] Several aspects of this kind of data can be specifically studied, i.e., finding key words and interesting and influential text snippets or even mining the sentiment of the blog post.[14] There are also several commercial tools for dedicated searching the blogs. In addition to text, several other features of on-line discussions can be taken into account: for example social web and recommendations, link structures and tagging behavior.

The large amounts of possible material in the blogosphere create their own challenges. The text-mining and graph-theoretical methods can be used to extract relevant patterns and tidbits from the enormous amount of material are tools to narrow down the amount of data. These methods work fairly well for English but other languages may pose a problem, as quite a few of the methods are language-dependent and designed for English, and they may not thus be directly utilized for different languages, like Finnish. Which means that method development in that domain is also required. The on-line texts also differ from traditional texts in the newspapers and articles, though: On-line texts are often shorter, descriptive in nature, and usually more free-formed and they may contain relevant non-textual elements, like links, pictures, videos and so on that also carry meaning. All in all, the blogosphere is an open and free resource, but tools to access and utilize it are required to filter out the irrelevant material and not all of the tools are mature enough yet.

Simulating open data creation – the experimental setup

To get more focused and yet "open" data, we are suggesting a new experimental approach for data gathering or, rather, creation of data. In this simulation of open data, the gathering of the data is focused on to the field in question, which makes it more bounded than in the weak signals approach. It still remains "open" as the input of the consumers participating in the study is less predefined compared to the consumer survey studies.

We propose that the creation of open data can be simulated by using a group of people or different groups of people such as consumer panelists. For this point, they are expected and helped in to produce concept maps of a given topic using their everyday experiences, in a similar way to how people describe their experiences in the blogs. In the experiment, the domain from which the experiences, descriptions of hobbies and conceptualizations are asked will be focused so that the material created is relevant for the organization collecting it. This is done in practice not by asking direct questions of the area of interest of

a company but rather asking consumers to freely associate about the daily life from the perspective of area under study. The study question could be, for example, "Describe what comes to mind about "playing roulette "and what does it have to do with Your life? ." From the theoretical perspective this method is related to open qualitative analysis familiar to social sciences at large. What is different, is the suggested open data analysis *form* of conceptual maps (rather than text or speech) that are analyzed in relation to wider context of concepts with the text analyzing tools.

We suggest that instead of solely written descriptions, concept maps could be used as a medium of conveying the conceptualizations, in addition to pictures and links in between the concepts. We expect that the data collection could be done in the course of events of everyday life with the help of the new technology allowing mobile construction of conceptual maps of a given subject. Or, in a more traditional business environment, the same simulation can be carried out in workshops, where groups of product developers and consumers draw individual concept maps with the help of mentors. This latter setting would also enable more thorough analysis of the experimental setup, as it could be videotaped and then further analyzed in more detail. Analyzed concept maps bring consumer insight into the product development as they point out where the differences in conceptualizing are among different users and reveal differences in linkages between concepts.

The concept of conceptual mapping

We use the term concept map to refer to graphical tools for organizing and representing knowledge. A concept map contains words and visualizations that represent concepts and lines connecting the words and pictures denoting the relationships between these.[15] Visualizations are used because we assume that the consumers feel more comfortable when communicating with pictures instead of only words, even though that the visual elements will be reduced to tag words in the actual analysis.

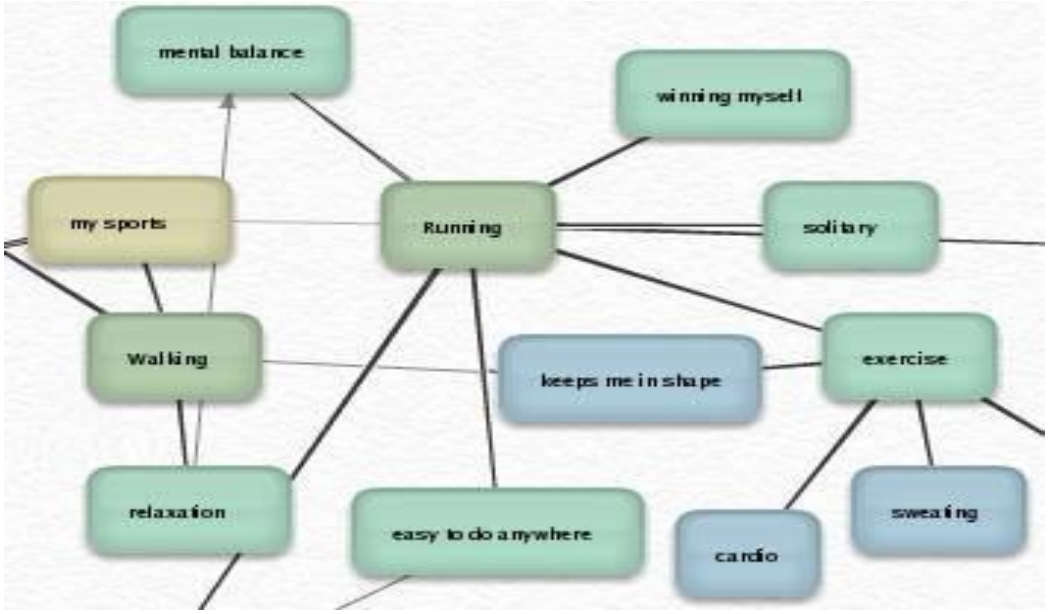

Figure 3. An example part of a large subjective concept map about sports as a hobby.

We are using concept maps for two reasons. Compared to methods relying on textual material, the maps are slightly more structured and giving an access to the relationships between concepts. Our hypothesis is that a well crafted concept map should contain the "essence "of the knowledge of the topic in question, and comparing concept maps of different groups, such as product or service designers vs. potential users, one could gain insight if the conceptualizations of same topic differ between the different groups which in turn could yield into new ways shaping the product and service development.

A version of concept mapping technique has previously been used as a tool for analyzing open-ended survey questions.[16] Despite the same name, this approach differs from ours considerably. In that study, the researchers are the ones who created a concept map based on open-ended survey answers, first dividing the answers into separate concepts, and then using brainstorming technique to create the concept map(s) and then further multi-dimensional scaling for clustering.

Concept mapping technique is ideal for situations where knowledge of consumer values and practices should be understood either in the beginning of a new product or service development project, or redefining products and services. The technique allows surprising findings, since it is open but focuses findings to the area of a selected industry. For example, in the case of gaming industry, concept mapping combined to a workshop can be used to compare the conceptualizations and visualizations of the consumer group to the one of the product developers and further all of the results to text mining results of customer email-feedback. The main idea is to concentrate on assessing, whether the different methods and groups produce considerably different results and whether one could tap into the subjective knowledge of the practices of the people which in turn might help in understanding the games and their usage context better. The possible problems of the method are in the cognitive level: finding and formulating shared understanding and interpretation even of a single concept can be difficult within a firm between the different units and between firms and consumers. This method, however, can also reveal the gaps and missing of a shared understanding when the concepts are explicitly taken into intense scrutiny.

CONCLUSIONS AND DISCUSSION

This paper has discussed three forms of *open data*. In the first case, LEGO users where enthusiastic in communicating in the Internet, sharing thoughts and experiences with other users and eventually linked to product development through web enhanced communities and user panels enhanced by the Internet. In the second case the open data is not organized around a brand or a product: weak signals can be found almost anywhere, also often from the Internet. Weak signals approach relies on the openness of data, finding interesting clues of the future in exceptions and deviants. The third form of using open data is what we suggest as a replacement of eager brand communities in the situations where there does not exists any, and as a more formalized way of seeking the signs of the future of consumer trends by asking users, potential users and non-users to create conceptual maps of the area of interest in question based on their mundane experience. This method differs from other consumer related study methods in that it is not strictly focused on preset question patterns (such as surveys), it uses individual conceptual maps (instead of group discussions) and combines textual material to visualizations (instead of questionnaires). The aim of the method is to simulate open data and to rely on everyday experiences as a source for better consumer products and services.

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SUSTAINABLE FOOD CONSUMPTION

CONSENSUS ON THE DIVERSITY OF CONSUMER AND CONSUMPTION PERSPECTIVES

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ABSTRACT – This paper describes a research based scenario project on sustainable consumption in Belgium. In the Consentsus project a scenario method was developed and tested by the research team to assess scenarios both as learning and participation tools for sustainable consumption. By using a decomposition analysis a solid ground was laid to adequately summarize three guiding principles on how to reach a (more) sustainable consumption: eco-efficiency, decommodification and sufficiency. These 'pure' strategies – showing significant similarities with concrete discourses – were then translated into a participative process: two expert-driven workshops and interim research yielded three future images of food consumption as well as indications on their boundary conditions. These three images reflect truly different approaches on how to organize practices related to food consumption. This structural diversity allowed us to address an archetypical consumer, i.e. a generalized consumer based on the specificities of the scenarios. These consumer perspectives do not aim at indicating real (even potential) groups, but aim at illustrating how the environment of interactions around the consumer fundamentally changes throughout the three sustainability discourses. It is argued that thinking through alternative modes of consumption is of importance to support debate in governance arenas that wish to address the transition towards a more sustainable consumption.

INTRODUCTION: ADDRESSING CONSUMPTION

The issue of sustainable consumption patterns remains a very complex problem where the abstract concepts of 'need,' 'wellbeing' and 'future generations' are theoretically connected yet insufficiently understood. The bottom-line to sustainable consumption seems however amazingly simple: finding a good balance between human needs and available resources. However, when putting this straightforward idea of balancing needs and resources into the realms of practice, reality clearly shows that it is a largely unmet challenge. While consumption patterns are exponentially increasing in some of the economically 'developing countries,' western countries might well generate themselves a slower pace of increased consumption, but in turn are confronted with a confusing stagnation of their levels of happiness or life satisfaction[1].

Part of the complexity of sustainable consumption is directly linked to the definition of 'consumption.' Generally speaking two different strands can be discerned. The first strand dominantly[a] links consumption to the purchase of goods and services. Although this delineation limits consumption to a very specific commercial act it does give a clear entrance point to investigate and/or assess the relation between consumer behaviour and the use of natural resources. To give an example, Spaargaren, uses the concept of 'consumption junction' to speak about the exchange gate of consumption and production (shops, markets, farm, etc.). This junction can be seen as the ideal place to develop what he calls 'environmental heuristics,' i.e. the use of easy rules (of thumb) in daily behaviour, 'automatically' leading to a more socially and environmentally sound way of living[2].

The second strand broadens the 'what' of consumption to a wider socio-economic context, i.e. it holds that also the use-value and service efficiency of the products, after and disconnected from the purchase phase, needs to be considered. The question is posed whether consumption also encompasses non-commodities such as home-made goods and non-commercial services. This process of opening up the conceptual understanding of consumption to a broader socio-cultural field results in a more comprehen-

[a] Dominantly, because in this strand one often also considers the use of goods and services, but merely in function of a purchase.

sive picture of what consumer behaviour is (and consequently, what needs to be changed), but at the same time poses more methodological challenges. Here, there is not such a clear entrance point or 'junction' in order to determine how behaviour needs to change in terms of resource-use. Addressing the wider strand necessitates concepts such 'Wellbeing' and 'Quality of Life', which are partly subjective and complex to be measured or understood.[3] Point out the insufficient conceptualization and slow progress on the evolution of these constructs to properly understand societal orientation. Regardless of intensive research efforts in economics, sociology and anthropology there remain lacunas in the answer to the question of *'what constitutes consumer and societal well-being, or how to enhance (or preserve) that well-being'*.[3] This suggests that what is generally measured is insufficiently precise to link the theoretical assumptions with empirical observations.

Scenarios now are apt tools to incorporate the wider socio-cultural dimension precisely because they allow to integrate factors that are hard (or not) quantifiable such as values, norms, behaviours and institutional features.[4] Also, scenario exercises are characterized by a set of problem definitions, boundary conditions and driving forces, thus offering possibilities to find entrance points to investigate the complex (and interdisciplinary) issue of sustainable consumption.

However, the concept 'sustainable consumption' does not straightforwardly provoke system delineations needed for the construction of scenarios. Partly this is so because the act of consuming as such is a different practice in any given societal domain.[5] For instance, it can be reasonably argued that the mobility practice of an individual (consumer) is of a different nature than his food practice. Such different societal functions are characterized by different functionings, types of rules, producer networks, behaviour, etc. This induces to conclude that the actual content of what consumption is and who consumers are, through these different practices (i.e. consumer domains), is heterogeneous to such an extent that general solutions might not be transferable from one practice (or domain) to another.

As a consequence, Consentsus focuses on more specific practices. Four proposals for specific consumer domains were initially considered (food, tourism, play and toys, music) and evaluated against a series of criteria (available literature and information, importance in terms of environmental impacts or economic weight, expertise existing on Belgian level, interest of team members…). The practice of food consumption was finally chosen and served as a case to attain learning effects with regard to the conceptualization of sustainable consumption.

MATERIAL AND METHODS

A Consentsus[b] methodology

The scenario construction methodology of the Consentsus project has been structured along the results of a literature review on sustainable consumption and on scenario practices and theory. The literature study highlighted the main public discourses on sustainable consumption, leading, through a 'decomposition analysis' to three sustainable consumption 'strategies'. Those three strategies have then framed the whole scenario construction process which was operationalized within the realms of food consumption, including the participative scenario workshops. Indeed, a participative process was set up in the form of three expert workshops where the three strategies have been explored asking the question of food consumption in 2050 if these strategies were to be consequently followed. Based on the brainstormed ideas, the corpus of ideas has then been worked out into three scenario narratives. Due to limited space we will restrict the topic of the current article to the decomposition analysis (methodology) and the consumer perspectives (results) bur for or a detailed description of the specific scenario process and other related results we refer to the report of the first phase of the Consentsus project[6]. Summarizing, we can state that the Consentsus exercise can be categorized both within the exploratory as well as the normative scenario typol-

[b] CONSENSTSUS is the acronym for Constructions of Scenarios and Exploration of Transitions Pathways for Sustainable Consumption Patterns. The project is a cooperation between three research groups: CDO, University Ghent (Erik Paredis, Maarten Crivits), IGEAT, ULB (Tom Bauler, Emilie Mutombo) and IDD (Paul-Marie Boulanger, Anne-Laurence Lefin).

ogy.[7] The ratios from the Decomposition analysis provided a pre-determined (normative) framework of driving forces (see Table 1) and the three images (partly captured in Table 2) are the result of an exploration of the three strategies.

Decomposition analysis to frame sustainable consumption strategies

One of the main objectives of the consumption-oriented strands of the research was to synthesize the (abundant) literature on consumption from different social sciences (sociology, economics, anthropology, psychology, marketing research) into a workable scheme enabling the design of a relevant and consistent set of alternative scenarios. The challenge was to translate theoretical accounts on sustainable consumption into a practical structure for scenario design. This has been solved through the use of 'Decomposition Analysis'. The method allows deducing three interrelated parameters (i.e. macro-economic 'identities') that encompass the construct of sustainable consumption. Decomposition Analysis was initially introduced by Kaya[8] 1989 in the context of climate change and has recently been used in scenario for carbon reduction.[9]

In a decomposition analysis a problem, in this case sustainable consumption is split up in various significant (sub) ratios. This somewhat formal approach starts from the basic assumption that sustainability can be measured by an indicator of productivity of valuable resources (or of material efficiency) in the well-being production process. This can be expressed in the following formula:

$$S = WB / EF \qquad (1)$$

Where:
S: Sustainability
WB : the level of well-being;
EF = the environmental load or ecological footprint.

The formula is not to be considered as an equation with calculable and interdependent ratios but rather as a meaningful way to formalize a construct and hence to think about its internal causal relationships, therefore allowing to organize any discussions on the issues at stake[9].

The Ecological Footprint concept has been incorporated in order to encompass the wider definition referred to in the introduction. As a measure to value ecological functions in terms of bio-productive land it has a significant relation to the issue of sustainable development.

The Ecological Footprint concept is particularly insightful to connect the distribution of resource-use and the role of demand.[10] We however do not discuss these related aspects in detail for the purpose of the scenario construction. Testing robustness of principles could however be an interesting route for future scenario exercises.

We propose to decompose formula (1) in:

$$S= (WB/C) * (C/EF) \qquad (2)$$

Where C = Commodities. Thus (WB/C) refers to the productivity of commodities in terms of well-being and (C/EF) to the intensity of commodities in natural resources.

Formula (2) shows that sustainability can be improved by increasing (WB/C), by increasing (C/EF) or both, or, putting things the other way round, by decreasing the intensity in commodities of well-being, by decreasing the intensity[c] in resources of commodities or both.

Things can be disaggregated further. The term (WB/C) can be expressed as:

$$(WB/Se) * (Se/C)$$

'Se' refers to the notion of service as used by Nørgärd[11] (like in the context of energy and not as used in the national accounting context) who adopted it from Daly (1991). Indeed, what matters for the

[c] The intensity in resource R of a production P is the inverse of the productivity of the resource R in production P. In others words, productivity is measured by the ratio P/R and intensity by the ratio R/P. The more productivity, the less intensity and vice versa.

energy consumer is not energy-use as such but the lighting, mechanical power, etc. brought by energy. Likewise, what matters for the user of a TV-set is not the TV-set as a thing but the services it provides in terms of TV-programs, etc. One way to define the notion of service in a need-satisfier framework advocated by Max-Neef [12] is to define it as the interface between the satisfier and the need or as the "satisfying virtue "of the satisfier. WB/Se stands for the productivity of the services in terms of well-being and Se/C for "consumption efficiency ", the productivity of commodities in producing services. The full formula then becomes:

$$S = (WB/Se) * (Se/C) * (C/EF) \quad (3)$$

This formula highlights three discourses on sustainable consumption: each of the three ratios represents a "pure "strategy to enhance sustainability (for more information see Boulanger[13]). The word "strategy "must be considered as referring to both (1) the framing of the objective to be reached (i.e. the ratio of the decomposition analysis) as well as (2) indications on the way it could be reached (i.e. the corpus of structured ideas). The strategies must rather be seen as structured reflections on general guiding principles rather than as a corpus of ready-made or concrete policy options.

Eco-efficiency – EE (C/EF)

The eco-efficiency strategy aims at increasing the C/EF ratio by decreasing EF, i.e. decreasing directly the intensity in materials (including the non-renewable sources of energy) of the production, use and disposal of commodities. This strategy captures the core of the ecological modernization strand, putting forward mottos like Factor 4 (i.e. a 75% reduction in natural resources uses) and is also linked to the discourses of Industrial Ecolog[14] or the Cradle-to-Cradle movement[15].

De-commodification – DC (Se/C)

The second strategy aims at increasing the ratio Se/C by decreasing C. This ratio has been labelled the De-commoditization strategy. This strategy aims at reversing the "commoditization "process described by Manno16 as the "tendency to preferentially develop things most suited to functioning as commodities – things with qualities that facilitates buying and selling – as the answer to each and every type of human want and need ". De-commoditization implies a decoupling of the functions provided by commodities from the market-based demand, limiting as a consequence the influence of markets and increasing the influence of other systems or organisations through which needs and aspirations can be satisfied through. That is, incorporating other "modes of provision ," heaving over responsibility and management to other societal instances than the markets, i.e. public, communal or domestic agencies.

Sufficiency – S (WB/Se)

This strategy aims at increasing the WB/Se ratio formally by decreasing Se while maintaining or increasing the generated WB. This amounts to partly disconnecting well-being from the services of commodities, i.e. in simplified terms, delinking the product functions (use-value, brand value, etc.) from the wellbeing they generate. This ratio could be called the strategy of cultural de-materialization of needs satisfaction, or in simplified terms, the *Sufficiency* strategy, which is partly captured in the adage "Less is more ". This strategy is highly complex because it entails, as a consequence of a complexification of the understanding of wellbeing, a subjective and an objective factor at the same time[d, 17]. Additionally it has a definite normative or moral dimension because the principle of sufficiency involves the sphere of private needs and wants (individual behaviour) and connects them to a larger societal objective. This strategy is closely linked to the growing, diverse and not unified discourses related to the principle of sufficiency, such as

[d] Sufficiency can be broadly defined in two ways. One is qualitative, implying wealth and plenty; sufficiency means that a purpose has been achieved, a need is satisfied and some sort of optimal state has been reached: 'enough is as good as a feast .' It is subjective in nature and so normally is used in relation to an individual. …The second type of definition is quantitative, implying a clear threshold of acceptability: do we have enough food for the day? Is the rainfall this spring sufficient to allow the crops to harvest? "(Enough is as good as a feast, sufficiency as policy, p111)

Voluntary Simplicity and Religious Frugality. Authors such as Galbraith[18], Daly[19], Sachs[20], Princen[21] have urged the need to address the problem of consumer satisfaction and affluence beyond the resource-problem, and concluded in the direction of steady-state economies or even de-growth.

These three rather theoretical discourses, or strategies, on sustainable consumption have been at the core of the structure given to the scenario exercise. Each of them has further been explored through the construction of a scenario illustrating what the world could potentially look like in 2050 if we were to follow the principles of each of these discourses.

RESULTS

Scenarios of food consumption

The decomposition analysis of the sustainable consumption equation into three strategies, the participative expert workshops as well as further desk work have led to three scenarios describing potential 2050 worlds where the principles of eco-efficiency, de-commodification and sufficiency have been applied. A first table enumerates the general drivers of each scenario (see Table 1). These drivers – or aspects of them – are not mutually exclusive – (for instance confidence in technology is also to be found in the S and DC scenario) – but they aim comprising the logical structure of the scenario.

On a more specific level three alternative modes of food consumption are represented by means of what we have labelled the POPED framework, which aims to structure the food chain along the line of different consumption 'instances,' namely, producing (processing), obtaining (distribution), preparing, eating and disposing. Comparative table 2 summarizes the content of the scenarios along the lines of this integrative framework. It is striking how the food related practices and relationships among actors qualitatively vary across the different guiding principles.

It must however be noted that the final results in the form of the POPED framework are inspired by the particular ideas as they emerged at the workshops. Hence they possess a inevitable subjective factor, and at the same time represent one plausible future snapshot. Nevertheless the scenarios remain logically connected to the underpinnings of the strategies. The E scenario tells of a hypermodern world where food is provided by an anonymous and highly productive service- sector. Food technology has become very energy efficient and food prices have become a representation of the environmental cost.

The DC scenario departs from the idea that the local community has re-gained authority, resulting in the merging of consumption and production. It is relevant to note that the localism inspired scenario (local self-suffiency) is but one possible representation of what a de-commodification could imply. Another possible snapshot image might involve a household based global network, exchanging products on basis of personal connections and mutual need.

The S scenario entails an operational principle based on limits and needs. The psycho-social dimension of the principle results in a scenario where food is embedded in social norm in a particular way, following the dynamics of 'enoughness'[21] throughout the design, production and consumption of food. Food becoming particularly important is logical in a sufficiency-based society due to the 'special' status it possesses as primary need. Technology (and to a certain extent science) in principle becomes instrumental to personal satisfaction, societal wellbeing and the interaction between both.

In this article we specifically wish to focus on the consumer perspectives that can be 'deduced' from the three discourse-based scenarios. It is of course impossible to give a comprehensive overview of the specific types of consumers and consumer lifestyles that would inhabit these 'worlds' for the scenarios are limited and abstract representations of possible realities[e,22,23,24]. We address an archetypical consumer, i.e. a generalized consumer developed on the basis of the structural and content elements of the three scenarios. They illustrate how the environment of interactions around the consumer fundamentally

[e] However is can be mentioned that also in theory and research on consumption a certain degree of abstraction is always made in order to frame distinctive types of consumers (or consumer motivations). This tendency is accurately illustrated by the polarized discussion between the consumer as homo economicus and homo sociologicus[23, 24, 27]).

changes throughout the three discourses. These 'elements of interaction' are interesting for policy makers to use in consumer policy that aims at integrating sustainability discourses, and should be considered as a form of heuristics, enlisting a series of aspects – both human and non-human – that constitute a 'social arrangement.'

The concept of 'lifestyles' is relevant here. This approach receives a multitude of definitions. but can broadly speaking be subdivided in a 'sociological' definition, which sees it as particular ways in which people generate meaning through an assemblage of practices[25], and a 'marketing' definition, which defines lifestyle as 'ways in which people spend time and money'.[26] However, until now it does remain somewhat unclear how lifestyles are precisely to be used in the sustainability discourse.[27]

Three consumer perspectives

Each scenario reveals a different type (or position) of a consumer. Inspired from a categorization of Elizabeth Shove[28], summarizing literature on environmental consumption, consumers can be framed either as decision makers, citizen-entrepreneurs or self-reflexive consumers. Each consumer type is presented in this paper, and further illustrated through a series of constituent aspects (participation, conflicting values, trust and knowledge).

EE consumer

The first group – central in the EE-strategy – defines consumers as autonomous buyers whose aggregate choices determine the future of food production. The concept of consumer sovereignty is central in this perspective. The core argument with regard to sustainability goes that choosing for green products through the market steers society towards sustainable food production, provided that the right incentives are given. Sovereignty implies that a consumer is purposeful and goal oriented. The consumer 'steers' the market deciding what product (s) he chooses (and hence not chooses) to buy, thus deciding which products (and companies) are profitable.[29] A limit of this EE perspective is that, on the one hand, not all market segments are (equally) sovereign (low purchase power), and on the other hand, that not all consumers act (or have the possibility to act) in accordance with a stabilized (goal-orientated) belief-set.

DC consumer

In the DC scenario, the consumer can be seen as a citizen-entrepreneur. This type of consumer has significant influence on the way the food supply is organized. Local governance systems (consisting of local citizens and municipal actors) are configured in order to organize the food system. Consumers in a way are 'entrepreneurs,' taking actively part in the management of the food system. In this less commoditized world, a political consumer emerges. Not just a 'voting' at the check-out consumer[30] but a concerned civic actor[f]. Both individually as well as in groups, this citizen-consumer shapes the socio-technical system as such, i.e. (s) he is taking an active part in the forming of social organisations (the farm, the canteen...) and technologies (processing equipment...).

In the DC scenario as well, limitations can be anticipated. This scenario implies 'command-driven' modes of provision and can be related to a communal ideal, all citizens having equal participation in the food system, which is not at all straightforward to realize.

S consumer

In the sufficiency world, a self-reflexive consumer emerges. Sufficiency revolves around balancing individual needs with 'reasonable" levels of consumption. The personal component is thus complemented with an altruistic element, i.e. considering the consequences of one's actions in a larger framework of social and environmental conditions. For this reason a typical consumer has come to question the underpinnings of consumption practices as such. Aware of the cultural relativity of behavioural patterns, this type of consumer debates on how the good life can be defined. The mainstream consumer in the S sce-

[f] Note that the discourse of de-commodification also focuses on other than strictly local management and governance mechanisms. Also mechanisms of care and reciprocity gain importance.

nario has acknowledged the existence of inevitable underlying complexity. Firstly, he understands personal complexity, i.e. that on a personal level, not only rational (or conceptual) mechanisms drive his/her behaviour. Amongst others, it is understood that (1) other modes of thinking guide behaviour (unconscious motivations, intuitive and emotional thinking), that (2) social norm and culture foster incentives to act and that (3) structural conditions limit possibilities.

Secondly, the S-consumer also acknowledges process-related complexity, i.e. how everyday life is under constant change and how the conditions of wellbeing are related to the contingent situations and thus never completely identical. Uncertainty, unpredictability, uncontrollability and cultural relativity are concepts that one tries to take along in decision processes and evaluation afterwards. The limit of this S perspective is that such a level of self-consciousness and continuous assessment of one's own behaviour is perhaps beyond human capacity. (As such this perspective generates an interesting discussion on the image of men)

The three perspectives are now worked out in a number of constituent elements (see Table 3).

CONSUMER PARTICIPATION

The EE scenario portrays a 'passive' consumer, whose participation and reflexivity in terms of sustainability criteria is integrated at the level of the purchase act, through the types of product and services bought.

The DC scenario is characterized by co-production, blurring the distinction between consumption and production. Therefore, the consumer participates to the very definition (delineation) of the patterns of production and consumption.

The S scenario features a highly self conscious consumer, continuously analysing his consumption behaviour through 'cost/benefit' analysis in terms of impact on personal and social well-being, direct and global environment.

Handling conflicting values

Conflicting values on food consumption vary in the three scenarios.

In the EE scenario, the food provision is highly customized. This customer- and convenience-oriented approach allows for conflicting values concerning food consumption to be 'channelled' by the private institutions that provide the food. Indeed, all kinds of consumer preferences (premium brand products, retail brand products, biological products, fresh products, ready meals, etc.) are available for purchase. They are thus mediated at centralized points, i.e. by the retailers who avoid conflict with regard to values (see Dixon, 2002 in: Lockie[31]).

In the DC scenario, this is more likely a process of value convergence. People will need to limit their individual desiderata about food due to the constraints of local food management. Further conflicts will be mediated through the local citizens' agencies through time intensive direct democracy processes of deliberation.

The S scenario presupposes intensive value deliberation, based on external expertise. The consumption of certain products will be dependent on what could be called their 'needs impact assessment.' For example, does the level of coffee consumption (value of personal pleasure) affect the level of economic dislocation in coffee dependent nations (value of economic equity).

Consumer trust

Consumer trust is related to the kind of institutions or societal actors that are trusted or granted authority. Consumers often rely on information or advice coming from actors who (might) have access to what economists call credence qualities[g, 32, 33], i.e. non-verifiable product qualities (not even after consumption) such as the environmental history of the product.

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g '[…] food technologies are often associated with so-called credence qualities[33], the costs and benefits of which cannot be unambiguously verified by the individual consumer from personal experience, such as

In the EE scenario, business and science are considered as principal generators of trust, i.e. social norm puts great trust in technological and economical progress. These actors communicate through media, advertising, labels, warranties and other 'indirect 'information[h] devices.

In the DC scenario, the mechanism of trust is particularly different because products generally have far less credence qualities than in the EE scenario. People manage their own food supply and have a rather precise knowledge, individually and at the local community level, on the details of the origin, of its production, processing and distribution.

From a sufficiency perspective finally, the individual as such is the basic vessel of trust because self-knowledge is considered essential to assess sufficiency (cf. infra). Yet, anticipating on this possibility, this will only work given adequate educational systems, interpersonal trust, and other similar criteria.

Generally, one could say that, in EE, the consumers trust institutions; in DC, they trust people they know because of the effectiveness of social control; and in the S scenario, they rely mainly on themselves, but with the help of groups and expertise (e.g. psychotherapy, etc.).[i]

Consumer knowledge

Finally, we consider the topic of consumer knowledge.

In the EE world, the distance between producer and consumer widens. The organization of food is left in the hands of a highly efficient and privatized production system. Knowledge on food (production) is very low (due to the highly technological systems only to be understood by specialists). However, precise, comprehensive and understandable information is demanded by the consumers to assess food quality through brands, labels, etc.

A strong link with education is a logical characteristic of the DC scenario. The low level of commodities implies that people have to organize their own knowledge and production networks (there is less standardization). An active safe, healthy and efficient local management of the food system by the citizens pre-supposes adequate education, at the same time generalist (overall sustainability) and specialized (food-related techniques).

In the S scenario the object of knowledge focuses on the nature and dynamics of needs satisfaction, to a large extent, in function of an increased wellbeing and quality of life. This calls for new instruments, heuristics, indicators and lifestyles that integrate the different levels of sufficiency. On a personal level, a higher degree of self-knowledge (or reflexivity) seems to be logically connected with the aptness to reach sufficiency. Indeed knowing one's self implies a more efficient relationship between the desired service and the experienced satisfaction. In respect to the more objective thresholds of sufficiency (for example daily amount of calories, or sufficient top soil quality), the assistance of technology and decision matrices is often used.

DISCUSSION AND CONCLUSIONS

Addressing sustainable consumption has led to a specific scenario approach consisting of both normative and explorative elements.

The scenarios primarily aim at generating learning effects more specifically by stimulating debate in research, stakeholder and mainstream arenas. Framing alternative food consumption practices through structured and discourse-based[j] scenario construction can potentially support bridging the gap

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safety, sustainability, health, and naturalness. These credence qualities are particularly prone to generate perceived risk and uncertainty, particularly when information is inconsistent and trust in authorities is low. '32

h Note an important difference between information and communication.

i This does not imply that the self-reflexive consumer is completely autonomous, hence adhering to the autarchic worldview. On the contrary , a perspective of interdependency is the logical condition for implementing constraints that wish to integrate sustainability (ecological dependency, social interdependence)

j In the Consentsus project we conducted a Q methodology on the a group of SD experts and one of the remarkable results of the statistical analysis was that the three discourse (EE, DC and S) deduced from the decomposition analysis can be found 'purely 'in reality, i.e. the set of statements that reflect the discourses

between academic research and political debate and/or introduce consumption policy to a more encompassing socio-cultural perspective on the issue. The analysis on the consumer perspectives shows that consumer identity consists of more than merely consumer choice, as is often implied in academic research or public campaigning addressing consumption.[29] The discourse approach –in this project generated by means of the decomposition analysis –provides a formal (yet not inclusive) ground to communicate on the relationship between current food consumption behaviour and sustainability goals. This structured approach might well be an appropriate ground for discussion among scholars whose endeavours are never embedded in a 'neutral' discourse.[34]

COMPARATIVE TABLES

Table 1. General drivers of the scenarios.

The scenarios	General drivers
ECO EFFICIENCY Scenario (C/EF)	Confidence in technological innovation through market development. Industrial production with the use of clean technologies at every step of the food chain. Meeting the demand for highly varied and convenience; mostly processed food. Business as principal actor of societal change. Minimal state model, market driven world. Internalization of environmental costs. Competition in markets based on quality and clean technology implementation.
decommodification Scenario (Se/C)	Confidence and engagement in local governance and management systems. De-marketisation of the food sector (production and distribution). Main mode of provision are local and community-based 'food activities'. Highly organized citizenship (deliberative democracy). Co-production (merging of producer and consumer) and barter mechanisms.
SUFFICIENCY Scenario (Wb/Se)	Personal care with regard to resources Needs-oriented individuals and self-reflexive society. Flexible organizational structures (e.g. in order to prevent sunk investments or lock-in effects). Highly qualitative public knowledge.

have 'anchorage' in the subjective dimension of the P-sample. For further information on the Q methodology we refer to the final report.

Table 2. Different instances of food consumption (POPED).

POPED	THEMES	Eco-Efficiency	Decommodification	Sufficiency
Produce and Process	Product Design	Eco-efficient technological innovations are flourishing supported by market forces, including applications in the service sector, like the '*mobile barbecue*' appliance one can rent on summer nights, which requires advanced spatial localisation, transportation and miniaturization technologies.	Local communities and governance structures play a powerful role in the product design. "An important part of the food system is managed through a communal coordination structure which decides, in each local community, through citizen-based peer to peer networks, what has to be grown, how it has to be prepared, etc… "	Before arriving on the market, products are carefully assessed by a central agency according to high-level criteria regarding the societal needs and the products' long-term impacts on well being.
	GMO	GMO's are produced, as long as they reduce resource input or environmental impact in terms of use of water, pesticides, fertilizers… One consequence: GMOs are allowed for domestic production of non-seasonal and exotic species (reduction of transport-related impacts).	GMO's are in a moratorium and social norm generally considers them as unnecessary, e.g. financial motives for monoculture seed production have disappeared (i.e. production is not market-based and labour intensive, hence less efficient agriculture is not problematic) and local agricultural networks are producing within natural boundaries.	A *"cost-needs"* analysis is applied with regard to needs and impacts, and decisions for or against GMO are taken on a species-by-species basis.
	Agriculture	Hybrid agriculture combines elements of traditional, organic and high-technological agriculture. The use of information and communication technologies (GPS, GIS…) in agriculture enables decreasing environmental impacts at the same time as increasing economic efficiency. By means of better monitoring and surveillance mechanisms, large fields can be efficiently managed, also in environmental terms. Agricultural decisions are based on analysis done by computer systems.	The agriculture methods are not necessarily organic, but they fit with the respect of the local environment and its inhabitants. Because of the prominence given to local networks, agricultural output is partly stemming from urban farming, and a part of the food also comes from orchard production in the neighbourhood. Cultivating methods and processes are based on local knowledge. The rather small size of the fields, and the large number of individuals engaged into agricultural activities, makes their management and surveillance easier. Agricultural decisions are taken by citizen/farmers.	Both urban and local agriculture and globalized production exist. There is a very intensive research and development activity on 'limit'-management and carrying capacities. The context imposes either the use of ICT-based agriculture or organic agriculture.

	'Farmers'	Farmers are mostly contract employees in productivity-enhancing production units. When they are engaged in organic agriculture, apart from an elite serving the high-end market, the farms are partnerships or franchises of large enterprises (occasionally even multinationals).	Everybody has a share, at least part-time, in the food production system and has some knowledge or practice on how to farm the land (or to process food).	Social norm considers farming as a highly ascribed profession, which remains in the hands of few strictly controlled units.
	Food processing	A great percentage of the food is highly processed: most of the food is "convenience food": deep-frozen, ready to (h)eat, and the (rare) fresh products are all ready to eat. The kitchens are thus minimally equipped, being used mostly to "regenerate" (defreeze & heat) rather than to cook.	The processing industry has almost disappeared. Most of the meals are freshly cooked, and the remaining processing activities are "community-based" (bread, jams…). Most of the cooking is done on a community-base in canteens, or local kitchens.	Both highly and low processed food are to be fined along the distinction between 'eat' and 'feed'. Fresh meals are often based on products from local/urban agriculture, while globalized agriculture provides the processing industry. Processing is mainly connected either to health, basic needs or wellbeing aspects: e.g. highly processed health 'packages' and functional food provide for 'feeding' products. No more 'non-functional' additives for texture or colour exist, as they are not considered as serving basic needs' satisfaction.
	Meat/Animals	Cattle for meat (issued from a species selection according to their ecological footprint) is bred in a limited quantity, which makes meat very expensive. It is then largely replaced by protein substitutes produced in the laboratories of the processing industry.	People eat meat from locally bred cattle according to local geographical context and citizens' preferences. Animal welfare is taken into account as people are involved in the production process and develop a sense of responsibility with regard to cattle.	In general, people don't eat a lot of meat. A careful questioning about meat eating has become the norm, trying to balance physical needs, hedonist pleasure and animal welfare. Most people eat meat only at special occasions.
Obtain	Product variety	People are provided with any kind of food possible. The diversity is very high (with the exception of real meat).	Local and seasonal food does not per se mean less diversity, and communal institutions reflect to guarantee a "reasonable choice", e.g. through investing in 'forgotten' local species. A system of regulation and limited exchange between communities (at regional and global level) contributes to some 'exotic' diversity.	The diversity of food is relative to the needs expressed by the consumers: according to the norm and the 'cost/benefit' analysis in terms of need, impacts and well-being, plethoric diversity is counter-productive on all aspects.

	Locus of exchange	Food is bought on-line, at hypermarkets, or at highly specialized shops (for some market-niches). Food is delivered either directly to the household's "mailbox-fridges" or to neighbourhood's larders. Efficient transport, saving energy, is a very competitive element.	Food comes directly from the local stocks. It is dispatched to all active citizens/households, at specific hubs like schools, municipalities or workplaces … Fresh communally-prepared meals are available in local collective kitchens.	There is a combination of anonymous and accessible supermarkets and small and local hubs and shops.
Prepare	Cooking	Cooking skills of households are limited, as specialized food services are predominant: people often prefer to eat out, or heat already prepared meals.	Most cooking is shifted to the community level: to the local collective kitchens, as to care-oriented institutions which use cooking as an activity for schools, elderly, etc.	Preparing food is very popular in a lot of societal groups. People like to experiment with recipes, tastes… ('eating' moments). 'Ordinary', daily cooking disappeared and is replaced by functional food packages which need no preparation ('feeding' moments).
	Appliances	Hi-tech cooking devices (BBQ, grill, etc.) are mostly rented and the market develops a high innovation rate. Kitchens are minimally equipped (mostly with only 'regenerative' devices).	Most individual kitchens are minimally equipped, and many households have none. The cooking, even at the household level is mostly done in local communal kitchens 'around the corner'.	The devices are functional. Most preparation for 'eating' moments is done with family or friends and requires few electric appliances. To control their nutritional intake, some people use technological devices, either PC-like, either integrated chips.
	Services	Food economy is almost exclusively a food services economy, answering the consumers' demand for high convenience and specialisation. A large number of restaurants serve large varieties of food, based on market-niches (e.g. special for pregnant women or sports(wo)men).	Local communities manage the food system so as to provide to all at least the minimal nutritionally balanced diet, everybody contributes to the food services, mainly through the collective local kitchens. People often eat out of the house, at neighbourhood kitchens/"canteens".	Services are mainly focused on personal empowerment and research of wellbeing. Lot of services revolves around information and knowledge management. Eating out is quite common, mostly in convivial atmosphere
Eat	Diet	The diet is defined by a rather flexible consumer culture and the products are provided by commercialized structures.	The diet is seasonal-based and partly dependent on a local food management team. Moreover, it is very region-based and culturally specific.	The diet is highly varying within groups and through time. The diet is primarily focusing on personal and social needs and takes environmental and social impacts into account.
	Health	Laboratory research makes it possible to make 'tasty' food healthy by replacing fat and sugar by worthy substitutes.	Food is minimally processed, local and fresh. Local menu service groups work at providing healthy and nutritionally balanced food.	Extreme eating behaviour is socially controlled. Some people use technological devices to monitor personal food intake.

Discard	Waste	There are bio-methanization installations at household or collective level.	Composting is common, even absolutely necessary in order to be able to 'close' the rather local resource cycles.	Waste is considered something very negative and everything is done to prevent it.
	Packaging	Biodegradable (or even edible) packaging provides less environmental impact.	The packaging is very low, since most of the food is fresh.	There is a lot of re-use and prevention.

Table 3. Consumer perspective.

Consumer Perspectives	Eco-Efficiency (EE): Sovereign decision maker:	Decommodification (DC): Citizen–Entrepreneur:	Sufficiency (S): Self-reflexive consumer:
Mainstream driver	Price and quality; self interest	Responsibility and local constraints	Needs and value-management
Consumer participation	'Passive' consumer	Co-production	Self-empowerment
Handling conflicting values	Value mediation through private institution	Value deliberation through local citizens agency	Value assessment on basis of sufficiency and context
Consumer trust	Trust in institutions (market and science)	Trust in their local community	Trust in facilitated self-reflexivity
Consumer knowledge	Food quality assessment through brands, labels, …	Food-system direct knowledge	Self-knowledge (personal attitude towards food)

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IMPACT OF CONSUMERS' DIET CHOICES ON GREENHOUSE GAS EMISSIONS

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ABSTRACT – This study explores the impacts on agricultural and total GHG emissions of Finnish consumption if the share of animal based food products was reduced and if the share of ecologically produced food was to increase in Finland. GHG emissions associated with production of basic food items were quantified (per capita per annum) for current food consumption, for national standard diet recommendations, for a diet with no milk and beef and for a vegan diet including an oat-based milk substitute.

The major source of GHG in primary food production is the cultivated soil. For the present average food consumption the emissions from the soil comprise 62%, the share of the emissions due to enteric fermentation is 24%, whereas energy consumption and fertilizer manufacture both contribute about 8%. Because of the extensive production mode, regarding GHG emissions the environmental performance, of organic production is poor.

A strict vegan diet would result in nearly 50% reduction in GHG emissions from agriculture, but the reduction of the total emissions due to consumption would be about 8%. Reducing the volume of GHG emissions through food consumption would require large-scale changes among the entire population and is, therefore, unrealistic. Instead of stressing the impact of individual citizens' diet choices more attention should be paid to public catering and to development of business and policy instruments. Rather than focusing only on GHG emissions, attention should be paid to the overall sustainability of food supply.

INTRODUCTION

There is growing concern about the environmental impacts of food production, and attempts to slow down climate change are not compatible with continuously increasing use of non-renewable fossil energy in food production and for transport. The environmental consequences of food production have increasingly concerned greenhouse gas (GHG) emissions, and discussion has focused particularly on dairy cattle whose enteric fermentation produces considerably more methane than is produced from pork and poultry production[1].

It has been argued on environmental grounds that a vegetarian diet would pay dividends[2, 3, 4, 5]. Increasing the share of locally grown vegetarian products was shown to reduce GHG emissions when compared with the diets more reliant on imported vegetables and animal products[6, 7], but the impact of dietary choice has also been questioned[8].

The contribution of food production chain to total GHG emissions in Finland is about 24%[9]. Milk products represent about 30% of the average Finnish diet and beef comprises 26% of the meat consumed. About 40% of the consumed beef is a side product of milk production. Dairy products together with beef, provide 33% of the total energy intake in the current average Finnish diet[10].

There is a strong belief that consumers can make a positive contribution to reducing the environmental load through food purchases by substituting animal-based products, especially dairy cattle products, for vegetarian products[11]. These changes in purchasing are encouraged through various tools designed for consumers[12, 13, 14]. Public discussion is lively, and the interest in personal carbon emissions suggests that among environmentally aware consumers there is a willingness to change individual food consumption habits. However, although the consumption of vegetable products has been slowly increasing during recent decades, compared with the national standard dietary recommendations, current average food consumption in Finland is still biased towards animal products[10]. Currently only about 1–5% of

Finns are vegetarians, some of whom eat fish, eggs and/or milk products. The number of orthodox vegans is not known[15]. More often the reasons for veganism concern personal health, animal welfare or simply food price rather than environmental considerations[16].

The benefits of organic production over conventional production appear to be widely accepted in public discussion.[17, 18, 19] One of the central arguments is absence of chemical fertilizers in organic production, the manufacture of which consumes large amounts of fossil fuel with consequent greenhouse gas emissions.[20] As a response to the growing concern about the environment, large scale organic production has been offered as an overall solution to the environmental problems of agriculture worldwide created by the present global food markets[21, 20, 22]. However, global organic food markets are likely to end up with some of the same problems as conventional production, i.e. large scale industrial mode of production with monocultures and competition based on price and efficiency[23]. International trade means long transports, increased energy consumption and GHG emissions[7, 24, 25]. It also means placeless food with the producers and consumers distanced from each other[26]. It has been claimed, that big organic does not anymore represent real alternative, but it has become part of the mainstream global food trade where production is controlled by large agrifood corporations[26].

Various surveys have shown that Finnish consumers prefer domestic products to imported ones and often also organic to conventional food, if such products are reasonably priced.[19] Through the demand-supply mechanism consumers are, therefore, identified as important actors in deciding about the fate of domestic, and specifically of organic, food production. It was reported however that consumers more often express their ideals about food choices rather than make actual choices[27].

This article compares national GHG emissions in primary food production, i.e. in agriculture alone, for four diet scenarios: present day "business as usual" average food consumption, nutritionally balanced diet based on national health impact based dietary recommendations, diet with no milk products and with no ruminant meet, and vegan diet. Also, the GHG emissions associated with conventional and organic production are compared. The aim is to assess, how such diet and/or production system choices, if generalized to apply the whole nation, would contribute to goals of reducing GHG emissions in agriculture, and in the food chain as a whole. With such scenario assessment we wish to stimulate critical discussion on the environmental impacts of food consumption patterns, with the possibilities for consumer choices to "save the world".

MATERIAL AND METHODS

The study deals with the GHG emissions from agricultural production, inclusive fertilizer use and energy consumption, of the food necessary to satisfy Finnish consumption requirements. Domestic production meets the need of about 85% of the basic foodstuffs currently consumed in Finland[10]. In this study it was assumed that meat, milk, eggs, fish, grains, potato, sugar, oil seeds, vegetables, fruit, berries and feed for animal husbandry were domestically produced. This is an approximation, as imports balance the exports of some of these commodities. Fully imported food items not possible to produce in the Boreal agriculture of Finland, i.e. mainly citrus fruit and rice, were not considered in the calculations. Exclusion of these items is justified by assuming that the studied diet scenarios would share equal amounts of consumption of these. Wild berries and even fish in the Finnish case are not agricultural products, and these items were ignored in the calculations.

The field area needed to produce food plants and fodder for livestock to meet consumption demand was calculated on the basis of the following data: food consumption[10], feed requirements of production animals[28], long term average yield per hectare of various food and feed crops, output per animal of various animal products and factors converting yields to food.[29] The number of different production animals to satisfy annual demand for animal products was calculated on the basis of these data.

The greenhouse gases considered here comprise methane (CH_4) from enteric fermentation of the production animals, CH_4 from dung, carbon dioxide (CO_2) and nitrogen oxidule (N_2O) from agricultural soil as well as the CO_2 associated with fertilizer use and agricultural energy consumption. The CH_4 emissions from production animals were quantified using the animal specific emission factors[30], and the

emissions of N_2O and CH_4 from dung were calculated on the basis of published data[31]. For the GHG emissions from soil, the average Finnish annual value of 2819 kg CO_2 equivalents ha^{-1} [30] was used. The emissions from fertilizer manufacture were calculated using the value 2.28 kg CO_2 equivalents kg^{-1} total fertilizer and assuming application of fertilizers according to the terms of environmental subsidy. The energy consumption, electricity and fuel oil, of the various agricultural products was obtained from the farm model data basis[32] the associated GHG emissions were calculated using the emission factor 2.68 g CO_2 l^{-1} for oil, and 250 g CO_2 kWh^{-1} for electricity[7]. The GHG emissions into the atmosphere were expressed as CO_2 equivalents, and the conversion factor of 21 for CH_4 and 310 for N_2O were used[33]. The details of the calculations and the exact figures for the calculation parameters were published in a separate report[34].

A special feature in Finnish food system is a relative large proportion of meat from game, especially elk (*Alces alces*), and from reindeer (*Rangifer tarandus*). Reindeer meat and game meat together represent only about 2.5% of consumed food, but this amount is associated with large populations of the animals. In estimating the GHG emissions associated with these (semi)wild animals the whole supporting population[29] was accounted for, and only metabolic methane production from these sources was included. No GHG emission factors are available for reindeer and game animals, and the CH_4 emissions were approximated by using the factors for ewes for reindeer and deer, and those for beef cattle for elk.

The national diet scenarios, for which the greenhouse gas emissions (GHG) in agriculture were approximated, were:

- BAU: the present day "business as usual" average Finnish diet.
- NUH: a nutritionally balanced diet based on national health impact based dietary recommendations, and including an increased share of food of plant origin, reduced share of food of animal origin, and only 60% of the present day milk consumption[35].
- REX: a "ruminants excluded" diet with no milk products and with no ruminant meet, pork and poultry replacing beef and mutton.
- VEG: vegan diet with no milk and meat products and introducing an oat-based milk substitute at a level equal to the current day milk consumption; according to the ingredient declaration of the commercial product, the milk substitute contains 10% oat, which means about 100 grams extra oat *per capita* per day.

[29] 200.000 reindeer, 84.000 elk and 5000 white-tailed deer (pers.com. Aslak Ermala, Finnish Game and Fisheries Research Institute, October 2008)

Table 1. *The dietary options used in the GHG calculations and expressed on the basis of daily per capita consumption: BAU - current average food consumption; NUH - nutritionally balanced diet based on dietary recommendations; REX- diet with no milk products and with no beef or mutton; VEG - vegan diet; * not accounted for in the GHG calculations.*

	BAU		NUH		REX		VEG	
	g	kJ	g	kJ	g	kJ	g	kJ
Wheat	132	1887	148	2118	160	2290	160	2290
Rye	45	584	70	918	70	918	70	918
Barey	3	35	15	213	20	284	20	284
Oat	12	180	25	374	80	1196	140	2093
Rice*	14	217	11	171	11	171	14	211
Potato	191	595	250	777	250	777	250	777
Sugar	85	1414	81	1346	70	1163	60	995
Vegetable oils	15	542	20	744	27	1004	49	1822
Pea	3	45	5	68	5	68	17	232
Vegetables, excl. tomatoes	116	126	230	251	232	253	233	254
Fruit, excl.citrus	93	206	152	339	152	339	125	278
Garden berries	19	40	85	348	85	348	85	348
Wild berries*	19	40	152	623	152	623	152	622
Citrus fruit*	13	35	13	36	13	36	0	0
Tomato	31	26	35	30	35	30	35	30
Eggs	26	164	30	193	35	225	0	0
Milk	1082	3257	680	1503	0	0	0	0
Beef	51	396	32	250	0	0	0	0
Pork	94	848	35	316	75	677	0	0
Poultry	43	262	45	273	82	497	0	0
Mutton	1	11	1	9	0	0	0	0
Reindeer, game	8	34	8	33	8	33	0	0
Offals*	4	22	4	23	4	23	0	0
Fish	37	187	39	199	39	199	0	0
kJ, total		11153		11153		11153		11153

In each scenario, the GHG emissions were quantified for each basic food item on an annual *per capita* basis. In compiling the dietary options the total energy intake was kept constant, and the options were nutritionally balanced in terms of reasonable daily intakes of carbohydrates, fats and proteins (see Table 1).

For comparison of conventional and organic production options, the GHG emissions were first calculated on the basis of conventional production. Then, the impact of organic production on the emissions was estimated for the present day food consumption using three simplifying approximations: 1) the share of fertilizer manufacture was ignored, 2) for the same amount of production the extensive production mode needed 30% more cultivated area[36, 32] and 3) the feed requirements of the animals were the same as in conventional production, consequently also the output per animal was the same.

RESULTS

The results from quantifying the GHG emissions for the basic food items in the four dietary options suggest that diet choice makes a great difference. Comparing the present day average food consumption (BAU) with the purely vegan diet (VEG), the GHG emissions of the primary phase of food production would be approximately halved. The other options would also result in apparently significant reductions in GHG emissions (see Table 2).

Table 2. *The per capita annual consumption of food expressed in kilograms for the four dietary options, and the associated GHG emissions due to primary production assuming conventional production, kg CO_2 equivalents. "Soil "comprises food and fodder production, "livestock "comprises the GHG emissions from the manure and metabolism. BAU - current average food consumption; NUH - nutritionally balanced diet based on dietary recommendations; REX- diet with no milk products and with no beef or mutton; VEG - vegan diet.*

	BAU	Greenhouse gas emissions, kg $CO_{2eq.}$ /year					NUH	Greenhouse gas emissions, kg $CO_{2eq.}$ /year				
	Consumption kg/capita /year	Soil	Fertiler	Energy	Livestock	total	Consumption kg/capita /year	Soil	Fertilizers	Energy	Livestock	total
Wheat	48	80	8	4		92	54	90	8	5		103
Rye	16	27	2	2		30	26	42	4	2		48
Barley	1	2	0.1	0.1		2	5	9	1	1		10
Oat	4	11	1	1		13	9	24	2	1		27
Potato	70	10	1	1		12	91	14	2	1		16
Sugar	31	149	21	2		172	30	142	19	2		163
Vegetable oils	5	63	6	2		70	7	86	9	2		96
Pea	1	2	0.1	n.d.a.		2	2	3	0.1	n.d.a.		3
Vegetables, excl. tomatoes	42	5	0.4	3		8	84	9	1	6		17
Fruit, excl.citrus	34	34	4	7		45	56	56	6	11		74
Garden berries	7	11	0.3	2		13	31	49	1	8		57
Tomato	11	0.3	0.1	34		34	13	0.3	0.1	38		39
Crop production total		394	44	56		494		523	53	77		653
Eggs	9	36	3	2	1	42	11	42	4	3	1	49
Milk	395	355	43	28	268	695	248	223	27	18	165	433
Beef*	18	71	8	8	64	152	12	49	6	6	45	106
Pork	34	139	12	20	32	203	13	52	4	7	8	72
Poultry	16	46	4	10	5	64	16	48	4	11	5	67
Mutton	0.4	4	1	n.d.a.	1	6	0.4	4	1	n.d.a.	1	5
Reindeer and game	3				35	35	3				35	35
Animal production total		650	71	69	408	1198		417	46	44	261	768
All		1044	115	125	408	1692		940	99	121	261	1421

Table 2. *continues*

	REX	Greenhouse gas emissions, kg $CO_{2eq.}$ /year					VEG	Greenhouse gas emissions, kg $CO_{2eq.}$ /year				
	Consumption kg/capita /year	Soil	Fertilizers	Energy	Livestock	total	Consumption kg/capita /year	Soil	Fertilizers	Energy	Livestock	total
Wheat	58	98	9	5		112	58	98	9	5		112
Rye	26	42	4	2		48	26	42	4	2		48
Barley	7	12	1	1		14	7	12	1	1		14
Oat	29	76	6	4		86	51	133	11	6		150
Potato	91	14	2	1		16	91	14	2	1		16
Sugar	26	123	17	2		141	22	105	14	1		121
Vegetable oils	10	116	12	3		130	18	210	21	5		236

Pea	2	3	0,1	n.d.a.	3	6	9	0,4	n.d.a.	9
Vegetables, excl. tomatoes	85	10	1	6	17	85	10	1	6	17
Fruit, excl.citrus	56	56	6	9	72	46	46	5	12	63
Garden berries	31	49	1	9	59	31	49	1	5	55
Tomato	13	0,3	0,1	38	39	13	0,3	0,1	38	39
Crop production total		597	59	81	736		727	70	83	879
Eggs	13	49	4	3	2	56				
Milk	0	0	0		0	0				
Beef*	0	0	0		0	0				
Pork	27	131	11	16	26	184				
Poultry	30	87	7	19	9	122				
Mutton	0	0	0		0	0				
Reindeer and game	3				35	35				
Animal production total		267	23	38	72	398				
All		864	81	119	72	1134		727	70	83	879

n.d.a. = no data available

However, the impact is not as marked as it looks at first sight. The GHG emissions were quantified for the primary production. The total annual GHG emissions for Finnish consumption are about 11000 kg CO_2 *per capita*, of which the share from food is 24% or about 2600 kg[9]. The figure includes also the emissions associated with imported items that are produced abroad for Finnish consumption. The about 1700 kg CO_2 equivalents from agriculture comprise 73% of the GHG emissions associated with food. The impact of the dietary choice on total personal GHG emissions is, therefore, much more moderate and depending on the diet option, ranges from about 2.6 to 7.5% reduction in the emissions due to Finnish consumption. The impact on the total GHG emissions of the Finnish economy is even less, 2.2 –6.6% (see Table 3). This is because the emissions associated with the Finnish export industry comprise about 42% of the total GHG emissions of the Finnish economy[9], and these are not included in the GHG emissions associated with Finnish consumption.

The relative contributions of cultivated soils, fertilizer manufacture, agricultural energy consumption and animals to the GHG emissions from primary production, food production, total GHG emissions of Finnish consumption and total emissions of the Finnish economy are shown in Table 4. Depending on the dietary option, the soil comprises 62 to 82% of the emissions from primary production, the fertilizers 7 –8%, agricultural energy consumption 8 –11% and livestock metabolism and dung about 6 –24%. However, the relative shares of the agricultural GHG emissions are effectively diluted when compared with the total emissions or even with the emissions associated with food consumption.

Table 3. *The GHG emissions for the four dietary options, reduction of emissions compared with present day average food consumption (kg CO2 equiv. per capita per annum), the percentage impact of the four dietary options reducing the GHG emissions of primary food production, of food production and total GHG emissions. BAU - current average food consumption; NUH - nutritionally balanced diet based on dietary recommendations; REX- diet with no milk products and with no beef or mutton; VEG - vegan diet.*

	BAU	NUH	REX	VEG
GHG emissions of primary production, kg CO2 equiv.	1692	1421	1134	879
Reduction of the GHG emissions, kg CO2 equiv.		270	558	812
Reduction compared to GHG emissions of agriculture, %		16	33	48
Reduction compared to GHG emissions of food consumption, %		10.8	22.9	34.2
Reduction compared to total GHG emissions of consumption, %		2.6	5.2	7.5
Reduction compared to total GHG emissions of Finnish economy, %		2.2	4.5	6.6

Table 4. *The relative contribution of the soil, fertilizers, energy consumption and livestock on GHG emissions from agriculture, food consumption, total consumption and the Finnish economy for the four dietary options. BAU - current average food consumption; NUH - nutritionally balanced diet based on dietary recommendations; REX- diet with no milk products and with no beef or mutton; VEG - vegan diet.*

Share from the GHG of agriculture, %				
	BAU	NUH	REX	VEG
Soil	61.7	66.2	76.1	82.6
Fertilizers	6.8	6.9	7.2	7.9
Energy consumption	7.4	8.5	10.5	9.5
Livestock	24.1	18.4	6,3	0
Share from the GHG of food consumption, %				
Soil	40.6	37.5	35.4	30.6
Fertilizers	4.5	3.9	3.3	2.9
Energy consumption	4.9	4.8	4.9	3.5
Livestock	15.9	10.4	2.9	0
Share from total GHG emissions of consumption, %				
Soil	9.7	8.9	8.4	7.3
Fertilizers	1.1	0.9	8.4	0.7
Energy consumption	1.2	1.2	1.2	0.8
Livestock	3.8	2.5	0.7	0
Share from total GHG emissions of Finnish economy, %				
Soil	8.3	7.6	7.3	6.6
Fertilizers	0.9	0.8	0.7	0.6
Energy consumption	1	1	1	0.8
Livestock	3.2	2.1	0.6	0

The impact of organic production on the GHG emissions is exemplified using current average food consumption (BAU). The results show that compared with conventional production, the GHG emissions for organic production are nearly 20% higher (see Table 5).

Table 5. GHG emissions for current average food consumption (BAU) assuming the food was organically produced, kg CO2 equivalents per capita per annum; n.d.a. = no data available on energy consumption

	Consumption, kg/cap/y	Soil	Energy	Animals	total
Wheat	48	115	5.6		120
Rye	16	38	1.45		39
Barley	1	2	0.1		2
Oat	4	16	0.58		17
Potato	70	15	0.83		16
Sugar *	31	213	2.31		215
Vegetable oils*	5	89	1.65		91
Pea*	1	2	n.d.a.		2
Vegetables, excl. tomatoes*	42	7	3.55		10
Fruit, excl.citrus*	34	49	7.81		57
Garden berries*	7	16	1.95		18
Tomato*	11	0,4	37.01		37
Crop production total		563	63		626
Eggs	9	51	3	1	55
Milk	395	507	33	268	809
Beef	18	101	9	64	175
Pork	34	198	31	32	262
Poultry*	16	65	12	5	82
Mutton	0.4	6	n.d.a.	1	8
Animal production total		929	89	372	1391
All		1492	152	372	2017

*estimation is based on the average 10% and 23% more energy consumption in plant cultivation resp. animal husbandry

Reliability of the results: The conversion factors for N_2O and CH_4 are internationally accepted values33, and the calculations for farm land requirements are based on the long-term national averages of yield and production levels, which are the best available data. The primary energy consumption and the CH_4, CO_2 and N_2O emissions associated with fertilizer manufacture and transports were deduced from the data of a single study[37] assuming consumption of 3.6 MJ primary energy per kWh and emissions equivalent to 250 g CO_2 per kwh[7]. The obtained emission factor 2.28 kg CO_2 equivalents kg^{-1} total fertilizer (inclusive phosphorus and potassium) is very close to the value of 1.98 kg CO_2 equivalents kg^{-1} N-fertilizer based on the LCA data from Yara (Frank, pers.com 2009). Thus, the results regarding CO_2 equivalents associated with fertilizer manufacture appear also reliable and express the relative differences between the dietary options fairly accurately. Data on agricultural energy consumption are somewhat less accurate. Since no data were available for several of especially the organic production lines (see Tables 2 and 5), the missing data were approximated assuming that the energy consumption in organic plant cultivation is 10% and in organic animal production 23% higher compared to conventional production; the percentages represent the average difference between organic and conventional production.

The annual GHG emissions of 1692 kg CO_2 equivalents per capita presented here for current food consumption are very close to the 1658 kg CO_2 equivalents calculated using the IPCC (Intergovernmental Panel on Climate Change, www.ipcc.ch) approach including only the GHG emissions from soils and livestock30. Adding the GHG emissions associated with fertilizer manufacture and energy consumption into the IPCC figure would result in somewhat higher emissions than obtained here. The difference is explained by the fact that, in reality the production from animal husbandry in Finland is somewhat in excess of the domestic demand[29], and this is accounted for in the IPCC calculations, which are based on actual animal numbers, whereas the present calculations are based on the amount of food consumed.

The emissions associated with reindeer and game ruminants are very rough estimates. For lack of specific emission factors, the factors were chosen on the basis of animal size. The main purpose of including reindeer and game in the study was to draw attention to and stimulate research on this issue.

DISCUSSION

Primary production is responsible for approximately 60 –90% of GHG emissions in the food chain[7]; this is in agreement with the 73% obtained in the present study. The major source of GHG emissions during primary food production is the cultivated soil. Fertilizer manufacture represents under 10 percent, and contribution from agricultural energy consumption is of the same order of magnitude (Table 4). Therefore, regarding GHG emissions, the environmental performance of extensive organic production is poor compared with conventional production as it involves increased cultivated acreage and consequently also higher consumption of fuel energy in comparison with conventional cultivation. Similar results have been reported elsewhere[7, 38], although improving knowledge on soil carbon storage and nitrous oxide emissions could change current thinking[39]. However, there are environmental impacts other than GHG emissions, and the positive impact of organic farming on biodiversity was demonstrated in several studies[40, 41, 42]. Assessments of farming practices, including prohibition of biocide use, crop rotation, mulching and use of cover crops indicate environmental benefits from organic farming[43, 44], and organic production has been emphasized as one contributing factor in promoting sustainable agriculture within the EU[17]. Global food security is a growing challenge as the world population increases and the area of farmland *per capita* continuously shrinks. At the same time, as a consequence of improving living standards, use of animal products is increasing[45], which increases both environmental and health costs of food production. The actual capacity of organic agriculture should be seriously considered at local and national scales before advocating large-scale shifts towards more extensive organic production.

The importance of diversity of cultivated species has been lately stressed, and instead of focusing production on the three major cereals, rice, wheat and maize, there is a need to revive the local food plant species and cultivars and landrace animals in order to secure both the species and genetic diversity necessary for food production and adequate nutrition as well as to provide material for breeding new genotypes to secure adaptation to changing environments[46]. The available farmland *per capita* in Finland is about 0.43 hectares, which is enough for food self-sufficiency, inclusive of the production of animal feed based on domestic cultivars, and to secure independence from import of basic food and feed items. With increased vegetarian food consumption, national food self-sufficiency in Finland could be based on organic production[47].

Dietary choice appears to have an impact on GHG emissions. Choosing the vegan diet over the current average diet, GHG emissions from primary food production would be nearly halved. However, because food represents only about 24% of the total GHG emissions[9] and agriculture comprises about 70% of the GHG of food production, such a radical change in food consumption would mean a reduction of about 7% in the total *per capita* GHG emissions attributable to consumption. Moreover, the environmental benefits of vegan diets are not clear-cut. It has been shown that increasing the share of vegetarian products in the diet decreases nutrient surpluses and greenhouse gas and acid emissions. On the other hand, vegan diets are not optimal in terms of effect on the diversity of wild species[47]. This is because areas covered with vegetation throughout the year are especially important for maintenance of diversity of wild species in agro-environments. Grasslands, green fallows, cultivated and natural pastures secure habitat heterogeneity and provide abundant ecological niches for farmland birds, overwintering invertebrates and for game species, some of which have recently become rare or extinct[48, 49, 50]. These areas have been created by and are maintained to a large extent by dairy cattle and other grazing animals.

As regards climate change, it is the total absolute volume of GHG emitted into the atmosphere that is crucial, not the percentage reduction in personal GHG emissions. To have some impact on the total volume of GHG emissions would require large-scale changes in the average Finnish food consumption habits, and even then the impact on total emissions would only amount to a few percent. Such changes are hardly realistic because consumer attitudes towards food and consumer behaviour are not consistent;

citizens express various demands and wishes that change over time and depend on general overall trends and personal circumstance, including purchasing power. The direct impact of the changes on individual food consumption habits on the environment is, therefore, restricted and can only be gauged over a very long time span, if at all.

Sustainable food supply includes socio-cultural and ethical aspects as well as economic feasibility; it is not merely a matter of ecological sustainability and ecological sustainability is not merely a matter of GHG emissions. The basic requirement is for adequate production of food, and every nation should have the right to basic food security. Initiatives for sustainable catering have emerged in Italy, UK, Denmark and in Sweden, among other countries, featuring the use of local and organic food[51, 52]. The Finnish committee for sustainable production and consumption proposed that the use of organic and local food by catering organizations is to be increased annually by 10 –15%. However, to date, realization of the recommendation has not been followed and, at present, customers are rarely informed about the origin and production ethics of the food provided by public catering[11].

In general, the prerequisite for sustainable consumption is to introduce services to substitute for material consumption. Although food itself cannot be substituted, a lot can be done at the household level to improve sustainability of food provisioning[53]. Responsibility for sustainable food consumption cannot solely be pushed onto the consumers, and recommendations alone are not sufficient. There is a need to develop effective policy measures and instruments with the primary aim of improving overall sustainability of food provisioning[54].

Compared with individual citizens, institutional consumers and public catering represent a more homogeneous consumer group with somewhat better prerequisites for consistent behaviour. If public catering were committed to the principles of sustainable food provisioning, it could provide a more effective channel for improving sustainability in the food sector. This is done already to some extent through the sheer volume of public food purchases, but most importantly through food and sustainability education for citizens. Public catering already plays an important role in guiding nutritional behaviour among Finns, and it has contributed to increased use of vegetarian products and improved public health[35]. Similarly to nutritional education, public catering could provide a clear signal to the population regarding the kind of food that meets the sustainability criteria.

CONCLUSIONS

- The major source of GHG from food production is cultivated soil.
- Contribution from fertilizer manufacture and agricultural energy consumption is small compared to the GHG emissions from soil.
- Regarding GHG, the environmental performance of organic production is poor compared with conventional production.
- The impact of giving up animal husbandry on total GHG emissions could result, at maximum, in about 7% reduction in total emissions for all consumption.
- To have any impact on the actual volume of GHG emissions through changed food consumption would require large-scale changes among the whole population and a shared view of the extent of the necessary changes.
- Instead of stressing the impact of individual citizens 'food choices, more attention should be paid to designing effective policy instruments and to institutional consumers.
- Public catering has the potential to exert a positive influence through volume of food purchases and setting an example by implementing food and sustainability education for its own activities.
- Consumer information is important from the viewpoint of food and sustainability education, leading eventually to adopting more sustainable life styles in the coming generations.
- Environmental considerations for food production and consumption should not be restricted to GHG emissions. Rather than focusing on low carbon diets and carbon bonuses or on organic versus conventional comparisons, attention should be paid to overall sustainability of food supply.

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CARBON FOOTPRINT OF FOOD MAINTENANCE IN FINNISH HOUSEHOLDS

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ABSTRACT – This paper identifies the primary consumer actions having an effect on carbon footprint, their relative importance and their sensitivity to consumer choice concerning food maintenance. Food maintenance (transportation, preservation and preparation of food) of a Finnish household produces annually 170 kilograms of CO_2-equivalent per individual as an average which corresponds approximately 2% of the greenhouse gas emissions of private consumption. Of transportation, preservation and preparation, we find the preservation as the most important source of greenhouse gas emissions.

INTRODUCTION AND BACKGROUND

Food comprises 20–30% of carbon foot print of consumer actions[1]. This paper identifies the primary consumer actions having an effect on carbon footprint, their relative importance and their sensitivity to consumer choice concerning food maintenance. The functional unit of study is a person belonging to a household, which in Finland includes an average of 2.1 people[2].

Let us define main factors having an effect on the carbon footprint of food after leaving the grocery. These are food transport, preservation, preparation, dishwashing and waste management. In this paper we take interest on food maintenance of a consumer from the point of view transport, preservation and preparation.

Methods and need for travel are influenced by life situation, which age has correlation with. The most intensive phase is when children are in primary school and retirement is not current. We can also note that the interval of grocery shopping trips has steadily decreased, while the proportion done by private car has increased[3].

The selection of food articles has increased, resulting in a wider variety of possibilities for preserving and preparing them. At the same time the use of convenience food has increased in Finland, having a reverse effect.[2] In Finland, milk, milk products and corn, baking, fruit and berry products are by mass the most used foodstuffs. In this sense it can be argued that the Finnish diet has become more wholesome than in the past, although the use of soft drinks has increased. In fact, they are now by mass the fourth biggest group of foodstuff[2].

Identifying the dynamic nature of household food maintenance, we discuss here only the current situation in the light of national averages. In addition, the sensitivity of these averages to individual choice is studied. The focus is in identifying the relative proportions of carbon footprint of primary consumer actions considering household food maintenance. To this end, the absolute annual values for carbon footprint of transportation, preservation and preparation are estimated using current average data. As the absolute average values are found out, it becomes a point of interest to study the effect of individual choice on these values. Thus this paper proceeds with sensitivity analysis to show the range of carbon footprint of food maintenance. Last, the food maintenance patterns are studied to show how the results can be used to compare different methods of households' food maintenance.

MATERIAL AND METHODS

Households' transportation of food was studied using The National Travel Survey[3], which discusses private Finnish transportation in 2004–2005. The survey was conducted by interviewing approximately 13 000 Finns by telephone during the years 2004–2005. It includes 5449 interviews on transportation to

grocery shop (from small size shops to big stores). The data collected includes both households, which travel directly from home to grocery shop, and households which obtain their groceries while travelling between other destinations, e.g. work and home.

The results of the survey are statistically generalizable on all Finnish people above 6 years of age. Data is classified according to residential area and mode of transportation. Residential areas are classified as follows: downtown area, block-intensive area (outside city centre), one-family house intensive area and rural area. Modes of transportation include pedestrianised, bicycling, passenger car (one passenger), passenger car (more than one passenger), bus, metro/tram and train. We should note however, that the instances of travel done by bus, metro, tram or train have proportionally little presence in the data (less than 3 percent of all trips) and therefore include considerable uncertainties.

According to the survey, an average travel distance to do grocery shopping is 4.9 kilometres. These trips are conducted at an average of 0.41 per citizen daily. Most of the trips are done by passenger cars with one or more than one passengers (46 and 17 percent, respectively). Groceries are obtained by foot in 27 percent of cases. These percentages vary when considering different residential areas. The CO_2-equivalents produced in the transportation to and from grocery shop are studied as follows. The average distance of transportation is known for different residential areas3. The emissions by passenger cars, buses and trains can be calculated using emission factors produced by Technical Research Centre of Finland[4] per kilometre of transport in the city or road. For trams and metros the emission factors per kilometre have been received from Helsinki City Transport. Helsinki[5] is the only city in Finland which currently has trams or metros. In average, four-fifths of the kilometres of travel are done by metro and one fifth by tram[6].

The energy need of food preservation can be studied in two different ways, either on micro or macro level. On micro level, we may try and suggest, what sort of refrigeration devices are needed to store typical foodstuffs, and how much space do typical foodstuffs require in a refrigeration device. Then a typical energy use per year can be solved for the foodstuffs stored by an individual, if the energy consumption of refrigeration devices is known. The energy consumption is allocated by volume to the foodstuffs stored in the refrigeration device, and as we know the type of energy, e.g. electricity used, we may solve the greenhouse gas (GHG)-emissions by using appropriate factors.

The above discussion presents the carbon footprint of preservation of food on micro level. On macro level however, the aim is to study total energy used by household for food preservation. As it is more than usual in Finland that the energy is in form of electricity, here we study only the household electricity used by refrigeration devices in total. Total household electricity for this purpose can be further divided by population of Finland to acquire electricity used for refrigeration devices per person, in average. The carbon footprint is calculated in the same manner as for micro level.

On macro level, there are data available on the annual total of electricity use of Finnish households on refrigeration devices. Then the electricity use for the annual foodstuffs preservation per person can be solved by dividing total electricity use by the population of Finland. For reliability the preservation is studied only on macro level.

Besides refrigeration devices, the energy use for food stored in room temperature can be studied. There are no statistics available for household energy consumption of food stored in room temperature; therefore it is studied only on micro level. The residential heating appliances are an important factor in forming the final greenhouse gas emissions. Here it is assumed that the room is heated with electricity, which is one of the most environment intensive forms of heating. On the other hand, electricity is needed to preserve food, or to redirect heat energy, in refrigerators, freezers and in possible combinations of the two. In Finland, the foodstuffs stored in room temperature need a heated room to sustain their temperature. The greenhouse gas emissions depend not only on the technology but also on the source of energy used. While considering the emissions caused by preservation in room temperature, it is presupposed that about 50 percent of the volume of a typical closet is usable for preservation.

The electricity use of refrigerator; low top freezer and refrigerator; tall bottom freezer and refrigerator; and chest freezer are obtained from Work Efficiency Institute.[7] In Finland, other forms of energy

are rarely used in refrigeration devices. Respectively, the energy used in residential heating is obtained from a communication published by Technical Research Centre of Finland[8].

Preparation of food needs electricity via household appliances '(e.g. stove, microwave or electric oven) production of heat energy. Other possible sources of heat include gas or firewood. More recent technologies are also available, such as convection oven. Preparation of food is a more multifaceted object of study compared to food preservation, originating from the more numerous techniques of preparation and preparation equipment in a household. Evaluating the carbon footprint beginning from the micro level requires studying the energy use of different preparation methods. After identifying the source of energy used, the typical food preparation methods should be chosen in order to form an average emission value for an average dish.

Discussing food preparation from macro level, the analysis is based on national averages, as in food preservation. In this paper the total Finnish use of household electricity when using stove or other food preparation equipment is used as a reference[9].

In order to calculate the carbon footprint of individual foodstuffs 'preparation on micro level, the energy use of different preparation equipment is needed. In this research the energy required for boiling water on a stove and keeping it boiling are evaluated, as well as for warming up a pan and keeping it in the desired warmth. In addition the electricity use of an oven is studied, both while warming up to 200 degrees of Celsius and keeping that desired warmth. Convection oven is not included in the calculation. The specific heat capacities of different foodstuffs are not included in calculations. Variation of recipes and quantities of food need variable amount of energy for a serving, which were considered in micro level calculations.

RESULTS

Considering food transport, preparation and preservation, the total carbon footprint for food maintenance in a Finnish household is 170 CO_2-equivalents, from which 50% is coming from food preservation, 27% from food transportation and 23% from food preparation. The food preservation was identified as having the largest carbon footprint of the three areas studied. This is due to excessive use of freezers, which produce largest emissions per litre stored, as well as annually.

We find that the average annual carbon footprint of *food preservation* is approximately 87 kilograms per capita. We can note that the electricity used by refrigeration devices for one person in a household equals in average the electricity use of one low top freezer and refrigerator. It can be said then, that it is likely that 25 percent of the volume of refrigeration devices is in efficient use as presupposed earlier, while studying preservation on micro level.

Furthermore, we can note that foodstuffs stored in room temperature have low GHG-emissions compared to those stored in refrigeration devices.

On macro level the annual electricity use in a household for stove and other *food preparation* is formed as previously for food preservation. It should be noted that the micro level average contains considerable uncertainty owing to two presuppositions presented. However, both annual values were 39 kg GHG-emissions per person. The annual average using micro level data is given here as an item of interest only because the macro level data verifies its magnitude.

We find that the average annual carbon footprint of *transportation* to grocery shop in Finland is approximately 47 kilograms per capita. When travelling in a car with more than one passenger, it is simply assumed that the car holds two people. This is reasonable, as the average size of a Finnish household is 2.1 people[2]. Of course, the emissions per person are smaller if more than two people travel by passenger car. The distances to grocery shop are considerable in rural areas, compared to other residential areas. The largest GHG-emissions in food maintenance transportation are produced in the rural areas as well. There are fewer alternatives in rural areas for passenger car transportation, at least in practice. However, it is possible to compensate high GHG-emissions of food maintenance transportation by other, more responsible food-related consumer actions.

In the following, three food maintenance patterns are studied for a Finnish average family of four. In the first food maintenance pattern, food maintenance is integrated into work travel and is done daily. In the second pattern food maintenance is done separately once a week by private car. Third food maintenance pattern includes three trips to a grocery per week by private car.

Let us first study the first food maintenance pattern (Maintenance pattern number 1), where food maintenance is integrated to work travel. It is possible to argue that travelling to work is done even if no food maintenance is done while doing so. Therefore the carbon footprint of food transport, if it is done while commuting, is zero. The food preservation time is about 2 –3 days, so the need for freezer capacity is reduced. Therefore a family of four is assumed to have a tall bottom freezer and refrigerator. Food preparation is more dependent on individual preferences than anything else, so the average is used here.

The second food maintenance pattern (Maintenance pattern number 2) uses a car for food transport once a week. It is known that in average one trip to a grocery by car produces 1.1 kg of CO_2-equivalents. The food preservation is needed for 5 –7 days, which means that more products are stored in a freezer. The family of four is therefore assumed to have a tall bottom freezer and refrigerator, and a chest freezer. For food preparation, again, the national average is used. Maintenance pattern number 3 includes three trips per week to grocery shop and therefore the food preservation time is 2 –3 days, as in Maintenance pattern number 1.

The difference between the Maintenance patterns number 1 and 2 is one-third because of transport and two-thirds because of preservation. The reason why transport has a substantial effect is more obvious, as the maintenance pattern number 1 uses no separate transportation for groceries. The preservation is more elaborate subject. The difference between carbon footprints of preservation in the two maintenance patterns is because of a chest freezer, which usually has a larger volume and yet approximately as large a need for electricity per litre as a regular freezer. A presupposition is made that maintenance pattern number 2 uses a chest freezer with a gross volume of 400 litres. This is possible, but it is also quite possible that there is no need for a freezer this large, in which case the difference between the maintenance patterns is smaller.

It can also be noted that the maintenance pattern number 3 produces less GHG-emissions than the maintenance pattern number 2. This is due to greater difference in carbon footprint of refrigerator devices compared to the carbon footprint of transportation by car.

For food preparation, the minimum and maximum values were based on hypothetical examples of cooking porridge (prepared for four people at a time) and cooking potatoes (prepared for one person at a time). The resulting minimum carbon footprint by eating only porridge should be regarded as the absolute minimum value for the food preparation. The maximum value of eating only potatoes could still be increased by increasing the number of food articles prepared.

DISCUSSION AND CONCLUSIONS

Sensitivity analysis can assist in showing how much consumer action considering food maintenance can affect the carbon footprint. This analysis was carried out using the carbon footprint of different possibilities for food transport, preparation and preservation. For food transport, the minimum carbon footprint is formed when going to a grocery by foot or by bike, in fact in this case the carbon footprint is zero. The maximum for food transport is formed when travelling alone to a grocery with a car, for which the carbon footprint is about 89 kg per year (average value for single passenger).

Minimum for food preservation is evaluated by the carbon footprint of a low top freezer and refrigerator and the maximum is evaluated by the carbon footprint of a tall bottom freezer, refrigerator and a chest freezer. Both for minimum and maximum the result is divided for two people. That is, two people are using the common refrigerator equipment, both in minimum and maximum case.

The total for food maintenance can be more than six times higher when minimum values are compared with maximum values. In food preservation the difference is the smallest, with four-fold difference between the minimum and maximum value. In food transport the difference is the largest, and food preparation has a ten-fold difference when the minimum and maximum values are compared.

Household should transport about 12 servings of food at a time if the average carbon footprint of transport should equal the carbon footprint of preparation of said servings. A litre preserved in a freezer annually equals approximately 17 average food preparations when comparing the carbon footprints. If preserved in refrigerator, the respective figure would be 9 times of food preparation, and in room temperature 1/3 times of food preparation. Food prepared in a microwave oven has the smallest carbon footprint.

As an average, preservation of food has about two times as large carbon footprint compared to preparation or transportation of food. Food transport has a slightly higher average than food preparation.

The largest carbon footprints considering food transport are generated in rural areas, where the distances are longer. On the other hand, food transport is more and more done by private cars in other areas as well.

Sensitivity analysis shows that the average carbon footprint of food maintenance can be affected by consumer choice, giving an annual range of 45–340 kg per person. Anyhow, it should be noted that the sensitivity analysis did not include food choices, only choices concerning food maintenance. In addition the values used have considerable uncertainties. However, the order of magnitude of the absolute values presented for minimum and maximum values, and the proportions of different elements of food maintenance are reliable. The average values are well-founded on previous research.

To further introduce the use of carbon footprints of food maintenance, two maintenance patterns were studied. The analysis was revealing, showing that a very simple case of change of transportation habits in obtaining food can have a notable effect on how much freezer space is needed. Consequently, obtaining food more rarely is followed by increased need of refrigeration equipment, which in turn can have a larger effect on the carbon footprint than the more frequent grocery shopping. The consideration of maintenance patterns revealed that all the elements of food maintenance discussed here should be included in the analysis, if one is to reduce the total carbon footprint of food maintenance. Considering these findings, the discussion should not be limited on transportation distances.

From a point of view of a consumer, results achieved advocate shorter transportation distances, lesser need for freezer appliances and non-energy intensive food preparation methods. This could mean dispensing with the chest freezer and increasing the use of microwave oven in food preparation.

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CONSUMERS' PERCEPTIONS OF SUSTAINABLY PRODUCED FOOD - A FOCUS GROUP STUDY

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ABSTRACT – The purpose of this study is to provide information on consumers' perceptions of sustainably produced food products and the main product attributes that influence consumer's buying behaviour in the case of organic, Fair Trade and locally produced food. The paper draws on data from four focus groups. The results provide empirical insight into the motivating as well as the restricting factors which influence consumers' purchasing behaviour in the case of sustainably produced food and introduce the emerging key themes associated with the attributes of sustainably produced food products.

INTRODUCTION AND BACKGROUND

Prior research concerning consumer perceptions of sustainably produced food is somewhat limited. By sustainably produced food we mean in this paper organic food, locally produced food and food that is produced according to the principles of Fair Trade.

According to the European Commission Directorate General for Agriculture and Rural Development of the European Commission, organic food is food that is grown without most artificial fertilizers or pesticides in a way that emphasizes crop rotation, makes the most of natural fertilizers and ensures that the life of the soil is maintained. Animals are fed with organic feed and kept in ways which minimize the need for medicines and other chemical treatments.[1] In Finland the recent discussion about organic food production has often related to its environmental impacts. However, organic farming is still evolving. Its development is connected to general agricultural transformation, which seems to be continuous.[2]

The European Fair Trade Association (EFTA) defines Fair Trade as a trading partnership which is based on dialogue, transparency and respect. This partnership seeks greater equity in international trade and contributes to sustainable development by securing the rights of and offering better trading conditions to producers and workers especially in the developing countries.[3]

The concept of local food is quite ambiguous. It can be shortly described as local food systems or short food chains where the food is produced near the consumer.[4] In Finland local food has a specific regional economic aspect. From the Finnish public policy ś viewpoint the goal is to develop profitable rural entrepreneurship by the way of local food.[5] A report produced by Defra[6] claims that there is a clear cause and effect relationship for food miles for environmental, social and economic burdens associated with transport. Hence, locally produced and consumed food may have a positive contribution to sustainable consumption. However, local food is a rather recent and marginal phenomenon in present Finnish agricultural context. Local food ś share of the total agricultural output is as yet very small.[7]

Research has been done, among others, on consumer perceptions of organic food and farm animal welfare[8], consumer motivations in purchasing organic food[9], consumer ś willingness to pay for Fair Trade coffee[10], consumer preference for organic, eco-labeled and conventional apples[11] as well as on consumer perceptions of local, national and imported foods in the United Kingdom[12].

However, most of these studies focus on a specific case product, such as coffee or apples, or only on one of the areas of sustainably produced food. Moreover, previous studies of product attributes or perceptions of food products have mostly focused on specific product attributes such as safety or nutritional value[13] thus leaving out all the other possible product attributes.

So far, however, there has been little discussion about consumer perceptions of all of the three sustainably produced foods; organic, Fair Trade and local food together. The purpose of this study is to pro-

vide information on Finnish consumers 'perceptions of sustainably produced food products and the main product attributes that influence consumer ś buying behaviour in the case of organic, Fair Trade and locally produced food.

No specific case product was chosen, since we did not want to narrow the focus down to specific products. However, during all the focus group discussions specific products from each of the sustainably produced food types were brought up by the consumers. These products will be further presented in the Results-chapter of this paper.

The results of this research provide empirical insight into the motivating as well as the restricting factors which influence consumers 'purchasing behaviour in the case of sustainably produced food and introduce the emerging key themes associated with the attributes of sustainably produced food products.

In this study we examine consumer perceptions of food produced according to the principles of Fair Trade as well as locally and organically produced food. These three groups of sustainably produced food were chosen, since sustainably issues have been associated with them, as pointed out in the aforementioned definitions of these three sustainably produced food types. In addition, all of the three groups are claimed to contribute to sustainable development with a variety of ways.

Perceptions and attributes

Perception is the process by which one selects, organizes and interprets the physical sensations in order to make sense of them.[14] In this study 'perception "is used as a synonym for conception which refers to the views and opinions consumers have on sustainably produced food; what it means in their opinion and what attributes are associated with it.

Consumers perceive products as sets of attributes which determine the products performance and its utility. When making the purchase decision consumers do not necessarily purchase the product itself but its characteristics or attributes. It can be assumed that consumers have rather detailed specifications of the products or services they want and need. They then try to meet these specifications with the actual product attributes.[15]

Quality attributes and attribute consequences

Seeing products as a set of attributes is quite useful for defining product quality. Quality can be used to refer to the set of attributes product possesses. The overall mix of attributes can then be divided into subcategories such as safety attributes, value attributes and nutrition attributes.[16]

Product attributes act as quality cues for the consumer.[17] Consumer choice usually involves a set of alternatives, each described by attributes. The attributes can be either concrete product attributes, such as taste, smell or price, or abstract attributes, such as safety or trustworthiness.[18] Often consumers have certain expectations about the product which are based on the product attributes, in other words, quality cues. When the product is used it produces a quality experience which can deviate from the expected quality causing either satisfaction or dissatisfaction with the product.[19] Quality expectations and experiences contribute to the formation of product perceptions in the consumer ś mind, thus, influencing consumer choice.

Product attributes or quality cues have value to the consumer because of the consequences they are perceived to bring about. These consequences are further divided into functional and psychosocial consequences. Functional consequences refer to how the product actually performs and psychosocial consequences refer to how it feels to use the product and how other people act towards us because of our consumer behaviour. Attributes do not have consequences as such, but the consequences occur when the consumer buys and uses the product. [20]

When making purchase decisions consumers focus on the consequences which the purchase of a product brings about. These consequences can be seen as benefits when they are positive. Negative consequences can be referred to as risks. In general, consumers choose actions that produce benefits and minimize risks.[21]

In previous research carried out into consumer perceptions of organic food Harper and Makatouni[8] and Davies, Titterington and Cochrane[22] found that consumers mainly buy organic food because of health reasons. In addition, animal welfare, safety and environmental aspects also motivate them to purchase organic whereas the high price and limited availability were perceived as restricting factors. Taste was not mentioned in these studies as a motivating attribute.

In previous research on Fair Trade food consumption consumers, in general, perceive Fair Trade products as being a socially responsible choice[23]. However, they are also perceived to be expensive.[24] In the case of consumer perceptions of locally produced food and its attributes, the importance of credence attributes, such as trust and environmental benefits, play an important role in food choice, but then again, consumers are not necessarily willing to pay the higher price of locally produced food.[25]

MATERIAL AND METHODS

As there are relatively few previous studies on consumer food choice in the context of sustainably produced food products, a qualitative focus group approach was used in this study. Focus groups can be considered as a compromise between the strengths of participant observation and individual interviewing[26]. Moreover, focus groups are commonly used in generating impressions of products or other objects of interests.[27] In this study, our purpose was to generate impressions of sustainably produced food products and emerging product attributes affecting the consumer food choice in Finland. Synergistic effects, richness of the data and flexibility are some of the advantages associated with focus groups.[27]

Four focus groups were held in November 2008, with a total of 19 Finnish consumers in Jyväskylä and in Heinola. Focus group members were recruited from an eco-shop (Group 1), a local food market (Group 2), a corner shop (Group 3) and two supermarkets (Group 4). Most of the focus group members seemed to have at least moderate habit of buying organic, local and fair trade food, especially those consumers who were recruited from an eco-shop and a local food market. It is obvious that people interested in sustainably produced food are also more willing to participate in the focus groups covering these topics. In spite of small group sizes (3–4) in Jyväskylä, it was not difficult to sustain a discussion, because of highly involved participants. There were more female (n=12) than male (n=7) across the groups, but this was not seen as problematic, as females tend to carry out the household shopping.[28] Average age of the respondents was 44 years, ranging from 18 to 78 years. Average household size was 2.3 persons and the majority of the respondents lived in an urban area. The discussion protocol was designed to explore participants 'views and experiences associated with sustainably produced food products, their views on the importance of locality and origin of the food and their views on the factors that influence their buying behaviour. Participants were also asked to tell their suggestions for increasing the demand and supply of sustainably produced food.

Each group was moderated by the same interviewer to ensure consistency in interviewing style. Additional assistance was provided by a note taker and technical assistant. Each group lasted for 90 minutes, and was digitally recorded and later transcribed. The aim of the project, assurances of anonymity and confidentiality was explained to the participants. Brief introductions were made by each of the participants, moderator and assistants.

Analysis

The recorded focus group data was transcribed and the transcripts were analysed by using qualitative thematic content analysis.

First the transcripts were reduced so that all the data irrelevant to this research and its research questions was left out and expressions which were relevant to the research were coded by using different color codes. For this study the units of analysis were sentences and entities of thoughts containing several sentences.

Next the expressions coded from the data were grouped into three categories. These categories are: health and safety attributes, value attributes and credence attributes. After this the product attributes belonging to each of these categories were identified. In the health and safety category belong abstract

attributes associated with health and safety such as cleanness, traceability and safety. The only concrete attribute in this category is healthiness (i.e. causing or not causing concrete, diagnosable health problems such as allergic symptoms).

Value attributes category contains concrete attributes such as taste, price, appearance and abstract attributes such as traditionality and nostalgia. The credence attributes category contains product attributes which are abstract and cannot be determined even after the purchase or consumption of the product. Credence attributes category contains attributes such as animal welfare, environmental benefits, social issues, trust and health (i.e. the general feeling of a food being good for you without any concrete, medical evidence). During this phase of the analysis a classification of quality attributes for food products by Hooker and Caswell[16] was used to classify the expressions from the data concerning consumer perceptions of organic food, locally produced food and Fair Trade food as well as the attributes associated with these sustainably produced food types.

Next the key themes in all three aforementioned categories were identified based on the consumers 'product attribute perceptions of the three different types of sustainably produced food. These key themes will be further discussed in the following chapter.

RESULTS

Although no specific case products were chosen, there were certain products which were systematically brought up by the consumers during the focus group discussions. During the discussions the Fair Trade products which were most talked about were coffee, bananas, tea and chocolate. Organic products which were the most talked about were tomatoes, cucumbers, carrots flour, meat, eggs and milk. The locally produced food products that were mentioned most often were bread, fish, vegetables and self-picked berries and mushrooms.

General consumer perceptions

In general, consumer perceptions of organic food and locally produced food were positive whereas the perceptions of Fair Trade products were rather negative. Fair Trade was seen as a "brand which is created by grocery store chains just to get money from the consumers". It was also perceived to be unreliable and "not as fair as it's said to be". These perceptions prove rather explicitly that the Fair Trade criteria and the whole concept remain somewhat vague and unclear to consumers.

In addition to the positive perceptions of locally produced food and organic food, there were some questions raised about the definition of locally produced food and locally produced food was perceived to be a synonym for Finnish food. In this sense the concept of local food is problematic, since some food companies are trading both nationally and locally in Finland. It is, therefore, sometimes difficult to make a difference between local and non-local food in the case of same products.[5]

Moreover, the perceived added value of organic food was called into question when some of the consumers stated that the conventional products are enough and there is no need to buy organic.

Key themes

Based on the theme analysis of the product attributes of the three sustainably produced food types in the three attribute categories, nine key themes emerged. Themes found in the health and safety attribute category were: cleanness, traceability and physical effects. The themes which were based on value attributes category were: sacrifices, quality and traditions. In the third, credence attribute category, the themes which emerged were: good conscience, trust and intangible wellbeing.

C*leanness* theme (health and safety category) was based on concrete product attributes such as purity. Consumers perceived that sustainably produced food types do not contain pesticide residues, food additives or other potentially harmful chemical residues. One of the focus group participants felt that cleanness is the reason for good taste and said: *"I have noticed that organic carrots taste better. It might*

be that the there is the taste of chemical fertilizers in the conventional carrots and not in the organic ones."

The second theme was *traceability* (health and safety) and it is based on safety and the knowledge of food origin. The theme was associated with both organic and locally produced food in such a way that both food types were perceived as being safe whereas knowledge of food origin was only associated with locally produced food.

The third theme is named *physical effects* (health and safety), since it is based on the concrete health attribute that is the diagnosed health impacts such as the absence of physical, lactose intolerance symptoms when drinking organically produced milk instead of conventionally produced milk. The theme, in the case where conventional foods cause allergic symptoms, was connected to organic food and locally produced food.

Sacrifices theme (value attributes category) was based on price and time, since consumers perceived sustainably produced food products as expensive and their purchasing as time consuming. This theme can be associated with all the sustainably produced food types

The fifth theme is *quality* (value attributes) and it was based on concrete product attributes, that is, taste, freshness, appearance and quality defects. The theme can be associated with all the sustainably produced food types. Positive *quality* attributes, such as good taste and freshness were associated with organic and locally produced food whereas bad taste, unpleasant appearance and quality defects were associated with Fair Trade food products.

The sixth theme is *traditions* (value attributes) and it is based on the abstract product attributes such as nostalgia, simplicity and customs. Organic food products and locally produced food were perceived to contain attributes such as traditionality, simplicity and nostalgia (i.e. some of the food attributes, such as good taste, bring back memories from one's childhood). One of the focus group participants stated that: *"Almost everyone has childhood memories of what a tomato, a cucumber, peas or potatoes tasted like. When you manage to find that same taste from somewhere, you just have to go and get it."*

Good conscience (credence attributes category) theme was based on animal welfare, social issues and environmental issues attributes. The theme was connected with all three types of sustainably produced food. Organic food was perceived to promote animal welfare and environmental benefits (i.e. less fertilizers, pesticides and preservatives used than in conventional products). Locally produced food was associated only with positive attributes such as environmental benefits (i.e. shorter transportations than with conventional or imported food), whereas Fair Trade products were associated with social issues (i.e. helping the ones in need) and they were often also purchased to ease ones guilty conscience.

Environmental and animal welfare issues are placed in the credence attribute category, since, despite the plethora of environmental labels and information campaigns which aim to educate the consumers, the content of green claims and eco labels continues to remain unclear and vague to the consumers. In addition, the environmental impacts of products as well as animal welfare issues are not clearly visible to the consumers during the purchase event and, therefore, remain abstract and a matter of trusting the information given by the food producer or manufacturer.[29, 30]

The eighth theme is *trust* (credence), which can be seen also as a product attribute. Fair Trade food products were seen as questionable, since it was doubted is the idea of Fair Trade really as fair as it is said to be and to whom it is fair. One of the focus group participants commented on Fair Trade:

I have been boycotting Fair Trade products because I feel that they really are not as fair as they are said to be. […] A big grocery store has managed to create a good brand of Fair Trade. […] I would like to know how it is fair and to whom.

In terms of organic products, *trust* contained both positive and negative attributes. Consumers feel that it is difficult to be sure if can one trust that organic products truly differ from or are healthier than the conventional products. Locally produced food was perceived to be a healthy choice.

The ninth theme was named *intangible wellbeing* (credence) and it is based on health attributes which cannot be medically diagnosed, but are solely based on consumer's impressions of something being "good for oneself". The theme was associated with locally produced and organic food.

DISCUSSION AND CONCLUSIONS

The purpose of this study was to provide information on Finnish consumers 'perceptions of sustainably produced food products and the main product attributes that influence consumer s buying behaviour in the case of organic, Fair Trade and locally produced food. This was done by introducing the emerging key themes associated with the attributes of sustainably produced food products.

This study produced results which, to some extent, corroborate the findings of the previous work in this field. In contrast to earlier findings, however, the themes under health and safety attribute category, were not the most important themes to the consumers when considering all the three sustainably produced food types. In addition, a rather unanticipated finding was that consumer perceptions of organic food, locally produced food and Fair Trade food products differ substantially from each other.

The results of this study indicate that *cleanness* and *quality* are the themes which motivate consumers to purchase organic, Fair Trade or locally produced food whereas the *sacrifices* theme is seen as a restricting factor. However, the significance of *good conscience*, *trust*, *traceability*, *traditions* and *physical effects* is undeniable when determining the motivating and restricting factors which influence consumers 'purchasing behaviour.

On the one hand, Finnish consumers do not purchase organic, Fair Trade or locally produced food only because of their concrete attributes, but great emphasis is put on the abstract attributes such as animal welfare, environmental issues, trust and nostalgia.

On the other hand, concrete attributes such as taste and price have a very important role in consumers 'minds when making the decision weather to purchase sustainably produced or conventional food. In fact, overall product quality, including taste, freshness and appearance, seems to be the most significant motivating factor for consumers to buy organic or locally produced food, since these food products are perceived to be superior in taste when compared with conventionally produced food.

The most significant restricting factor to purchasing seems to be the price of the products in all three types of sustainably produced food. However, the results of this study indicate that consumers are willing to pay the price premium of sustainably produced food, since delicious taste is an attribute which brings such benefits to the consumer that tasty products, such as organic tomatoes, are perceived to be worth their higher price.

In terms of the consequences that the product attributes are perceived to bring about to the consumer, the positive attributes can be seen as benefits and the negative attributes as risks.

Regarding organic food there are perceived benefits in all three attribute categories under the following themes: cleanness, traceability, physical effects, quality, traditions, good conscience, trust and intangible wellbeing. The only risks are connected to the sacrifices theme due to the high price of organic products as well to the intangible wellbeing theme.

The same benefits apply to locally produced food and the only perceived risk is connected with the high price of the products. However, according to previous studies a further challenge for local food in Finland is also the complexity of the local network. From the optimistic view point, the farmers solve most of these network problems by their own activity. On the other hand, public policy could be helpful on condition that farmers are left with reasonable space for self-governance.[7]

In case of Fair Trade products the risks are more numerous than the benefits, since Fair Trade products, since rather negative themes are mentioned in association with all three attribute categories. The risks linked to Fair Trade products were financial sacrifices, mistrust, inferior quality in the form of bad taste and unpleasant appearance. However, their benefits are perceived to be cleanness and the possibility to help the ones in need that is the good conscience theme.

Marketing implications

The findings of this study suggest that although consumers seem to have positive perceptions and appreciations particularly of organic and locally produced food, purchasing these products is perceived to be troublesome and requiring a great deal of time. Consumers feel that they do not have the time to go

through the trouble of finding information about sustainably produced food or to go to many stores in search of certain products.

Consumers are, therefore, inclined to purchase the same, conventional products that they are used to purchasing, since this makes grocery shopping easy and convenient. Based on the theme analysis it is possible to conclude that in addition to the differences in consumer perceptions, there are also differences in the quality attributes which consumers associated with organic, locally produced and Fair Trade food products. Positive attributes were mainly associated with organic and locally produced food whereas Fair Trade products were associated with more negative attributes.

Furthermore, consumers do not perceive sustainably produced food as an unambiguous concept and there are significant differences in perceptions as well as product attributes. For example the results of this study suggest that consumers do not have enough information about Fair Trade food products and do not trust them as much as they trust organic or locally produced food.

The findings of this study suggest that when planning the marketing of sustainably produced food, marketers should possibly take into account the fact that consumers 'perceptions of and the product attributes associated with the different types of sustainably produced food may differ significantly. Moreover, the findings of this study also suggest that when planning the promotion of sustainably produced food emphasis should indeed be put on promoting the abstract attributes of the products, but the most important concrete attribute, taste, should not be left out. These findings are significant especially for the Finnish food trade system and its competitiveness, because it has been estimated that in the future the retail chains are growing stronger due to internationalization and centralization.[31]

Further research

This study has its limitations. The results must be considered as an outcome of the Finnish cultural and socioeconomic context. Thus, comparative focus groups in different contexts dealing with sustainably produced food could be conducted. In addition, this study only focuses on product attributes and perceptions, while further research could be undertaken to explore consumers 'attitudes towards sustainably produced food. Moreover, future research could broaden the perspective from consumer attitudes towards the attitudes of food marketers, manufacturers and producers. This would enable to study the means to create sustainably produced food networks.

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ENVIRONMENTAL IMPACTS OF A LUNCH PLATE – CHALLENGES IN INTERPRETING THE LCA RESULTS

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ABSTRACT – The challenges of the project were to reveal and interpret complex and contrasting environmental issues associated with food by consumers, in order to build up more comprehensive understanding on LCA results as measures of sustainability.

This approach was linked to the specific example of lunch plates. Expertise from various scientific fields was used to identify the key environmental issues; food chain stakeholders to provide appropriate environmental data for LCA, consumer researchers to link that with the food consumption framework, and teaching experts to introduce pedagogic aspects into the lunch plate presentation.

Regarding differences in the environmental impacts, animal-based food versus vegetable food was assumed to represent a basic contrasting alternative in LCA results for a lunch plate. Other aspects dealt with included domestic versus imported food, home cooking versus ready-to-eat products and lunchroom kitchen products, seasonal diet versus non-seasonal diet, and cultivated versus wild raw materials.

The basic issue arising from the investigation is that lunch is a nutritional whole, for which changeability of components is restricted, and changes of components are environmentally sensitive. We assessed the functional components of whole food systems and measured combinations of single LCA impacts. In such a context, environmental contrasts should be sufficiently generic to concretize key impacts, and not be confounded by missing data or variability of practices. On the other hand, one can claim that only process-based (i.e. trademark based) LCA data are valid for every-day choices that consumers make in the markets. We already know that for a comprehensive view, hybridizing LCA with the input-output approach is needed. Failures and successes in the interpretation of the LCA impacts are presented.

The project was entitled 'Environmental impacts arising from consumer choice among daily foodstuffs – and associated communication', funded by the Ministry of the Environment and Food Enterprises.

INTRODUCTION AND BACKGROUND

The role of food production-consumption processes as a source of environmental impacts ranges from 20–30%[1]. In addition to the extent of the impact, the frequency of decision-making concerning food is high; we make a food choice every day whereas it is perhaps only once a month that we take a flight or a little more frequently purchase electronics.

"The Consumer is king" is a common slogan. Food is, however, the most regulated area of the economy, and in Europe and many other countries, is also the most highly subsidized. Many of the environmental decisions made by society are made at the level of government, especially regarding environmental issues. Citizens make decisions through political processes as to how much of the cost of the external impact of the food chain will be represented in the price of a product. This easily creates conflict between economically rational and environmentally responsible decisions made by an individual consumer.

Social and cultural involvement in the use of natural resources was previously much stronger than today. No doubt, environmentally destructive interventions have been made in the past, such as clear felling forest, but local cultivation and fishing practices have been often based on sustainable principles that have been passed down from father to son and mother to daughter.

The issue of seasonality has been evident and has survived up to the present in the value attached to the first early potatoes and the first early strawberries. However, even these old customs have become somehow eroded as attempts are made to enhance marketing through inducing the season to arrive prematurely. Such actions can sometimes be questioned in terms of environmental impacts. Greenhouses are used for producing the first early strawberries and early plantlets, and irrigation is used to prevent frost damage. For this reason, some of the joy associated with eating such early-season produce is reduced for some present-day consumers, even though the products are reasonably priced and easily available.

Consumption of domestic products has been favoured for many different reasons. Moreover, assumptions concerning putative environmental impacts have been used to argue on behalf of a preference for domestic products. Unfortunately, in some cases, this has been done in the absence of data in support of such reasoning.

We should be able to establish a basic context and a unit for a more comprehensive approach to assessing the relationships between food consumption and environmental impacts. A substantial challenge is to assess the accumulated values associated with different categories of environmental impact as was done by the Eco-benchmark project, which produced a tool for this[2].

Individual impacts of specific food items do not necessarily provide a representative background for comparisons to be made. Papers discussing environmental impacts of various dietary patterns have been published[3, 4, 5, 6, 7, 8] but very little has been published on more general consumer behaviour in relation to an environmental approach to food production, even though the linkage between consumption, obesity and global warming has been discussed[9].

A suggestion has also been made to use a quality corrected functional unit (QCFU) [10]. In principle the QCFU accounts for all the nutritional values of food. This method has been outlined in the scientific literature, but does not, at least yet, meet with widespread international approval.

MATERIAL AND METHODS

The impacts of food portion components were assessed through the food chain. ISO 14040 and 14044 standards represented the sources of general principles and the framework for LCA applications. The developmental framework for the assessments is described in a methodological review article[11]. Specific methods for LCA, with results of environmental impacts for separate food items, will be published separately.

In this project, a standard nutritional portion for a lunch plate was regarded as a functional unit for calculating the environmental impactsv. Thus the nutritional function of eating began from a firm starting point. The lunch plate model includes the principle of dividing the plate into three parts; half of the plate comprises vegetables, one quarter the protein source and the remaining quarter comprises the carbohydrate source. The plate is completed with a portion of bread and milk. The composition of the dishes took into account the intake of energy (740 cal), fat (25 –35%), protein (10 –20%) and carbohydrates (50 –60%) in relation to the total energy intake represented by a portion. The serving sizes for different food items were adjusted according to Finnish nutrition recommendations[12, 13] for some lunch plates, fat content tended to rise too high, but balance was restored by adjusting the amount of bread. The quantity of bread was quite high and varied among the plates (30 –100g). The amount of vegetable spread (70% fat) on the bread was 10% of the quantity of bread. For some plates the spread was left out if the ready-made salad accompanying the ready meals contained a fatty dressing. Serving size of salads was 150g for each plate.

Two example portions from the complete array of lunch plates were selected to be representative for calculation of environmental impacts. An animal-based lunch portion was a ham casserole, including: 350g of ham casserole, 150g fresh vegetable salad, 80g whole wheat bread, 8g of vegetable oil spread and 200g of fat free milk. A plant-based portion was a beetroot patty with barley: 160g beetroot patty, 170g of boiled pearl barley, 150g Chinese cabbage and blackcurrant salad, 70g of whole wheat bread, 7 g vegetable oil spread and 200g of fat-free milk. Even though bread was included in both lunch portions, its envi-

ronmental impacts were not included in the assessment. The relationships were expressed in relative values only to stress the importance of making choices.

Regarding differences in the environmental impacts, animal-based food versus vegetables was assumed to represent a basic contrasting alternative in LCA results for a lunch plate. This difference was considered inevitable.

Expertise from various scientific fields was used to identify the key environmental issues, the first of which concerned the impact on water. In Finland, agriculture is responsible for approximately 52% of nitrogen and 60% of phosphorous emissions that cause eutrophication of waters, which is a serious problem in Finland[14] due to the natural characteristics of the inland waters and the Baltic Sea.

Assessment of the impacts on global warming occurs at a time when the carbon footprint model is commonly used, global climate change representing a current, major problem.

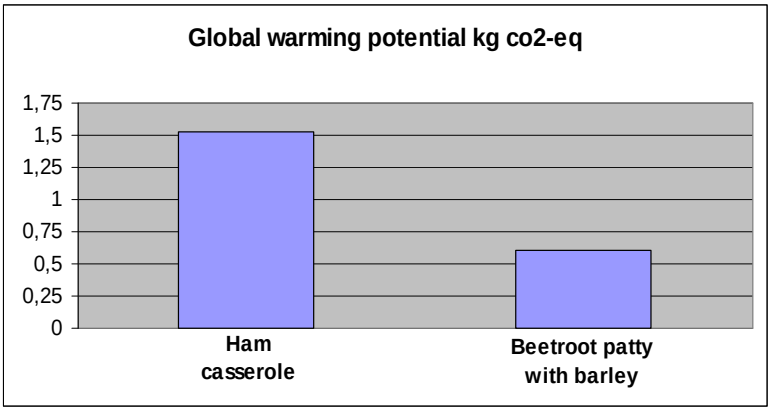
Considering the carbon footprint or other LCA-based impact assessments, two different approaches can be taken: 1) to learn and optimize a production process and 2) to steer consumers towards sustainable choices in their food purchasing. For the first we need specific process-based data, for the second we would need representative data to allow the critical differences to be revealed, without adversely affecting consumption. The aim here is to provide consumers with appropriate data on which to make choices in their consumption patterns.

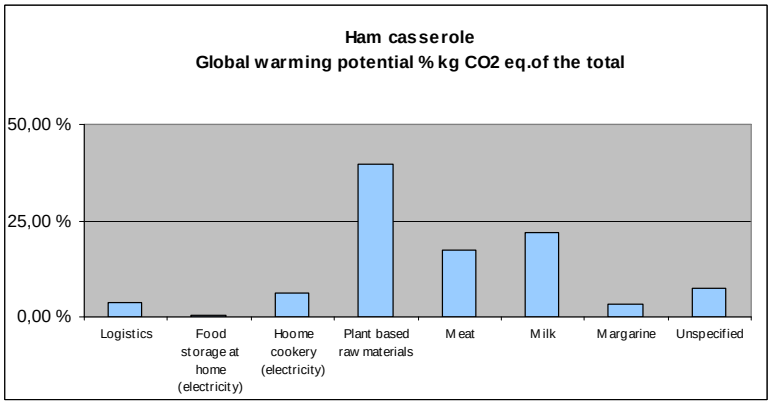
School lunches are an excellent context for experiential education on food consumption[15]; discussing food downstream of a production chain and upstream creates a new educational package. Teaching experts have been used to introduce pedagogic aspects into the lunch plate presentation. Thus the project focused on consumption throughout the school system[16], especially in connection with a ready-planned follow-up project to with assessing the potential for procurement of public catering to enhance sustainability.

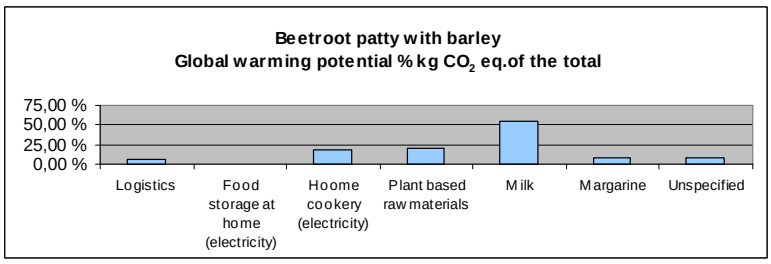
Comparing home-cooking with ready-to-eat products and the lunchroom kitchen represents a new opening in LCA. The main factors involved are raw materials for meals, and energy and water use in preparation of the meals. Regarding raw materials, it is essential to consider material efficiency as well as food items from which the meals are prepared. Losses from pre-processing vegetables, for example, could be as high as 25 –70% [17] depending on the season and raw material quality. Energy use is probably a factor that differentiates results of different production places and methods because quantities and equipment differ among homes and factories. Water use is not so crucial because waste water from most of the component processes goes to operationally effective sewage plants. In the following comparisons home cooked food portions are used as an example. Home-based activities have been presented in more detail elsewhere[18].

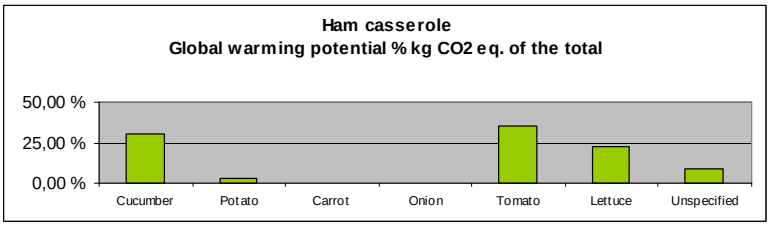
RESULTS

When comparing the two dietary regimes, representing a plant-based lunch portion and an animal-based portion, it becomes very clear that regarding global warming potential, the animal-based portion has much higher impact that the plant based one. In this case the impact of the animal-based portion is nearly three times higher (Figure 1 a): ham casserole 1.53 kg CO_2 –eq, beetroot patty with barley 0.61 kg CO_2 –eq.









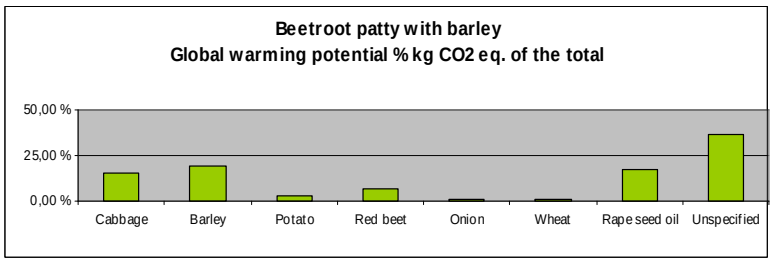


Figure 1. *Global warming potential: from above a) the two lunch portions in relation to the mean, b) proportionate profile of impacts for the ham casserole portion, c) proportionate profile of impacts for the beetroot patty portion, d) proportionate impacts attributable to the plant raw materials in the ham casserole, e) proportionate impacts attributable to the plant raw materials in the beetroot patty.*

For a portion of ham casserole the highest single impact (36% of the total impact) originates from the combined plant-based materials in the portion. Investigation of the plant raw materials reveals that a major impact (96% of the total impact from plant-based materials) comes from fresh greenhouse vegetables. In the ham casserole, meat and milk together represent about 40% of the total global warming potential.

In the plant-based portion, the global warming potential impact of milk (two decilitres per portion) is highest (over 50% of the total). For the plant-based materials, the highest impacts originate from white cabbage, barley and rapeseed oil. But these impacts are one tenth of the impacts of plant-based materials in the ham casserole portion.

The ham casserole with a fresh vegetable salad is a typical lunch portion like the beetroot patty. In this combination, not only the animal-based raw material of the portion, but also the choice of plant based material for an additional salad component causes the enhanced potential for a global climate change.

For both lunch portions, raw materials had more significant impact in terms of global warming than the food preparation activities associated with home cooking.

In terms of eutrophication, the relationship between the two lunch portion alternatives follows the same trend as for global warming; the potential eutrophication impact of an animal-based product diet is 40% higher than the impact of the beetroot patty. In absolute values: ham casserole $1.03E^{-03}$ kg PO_4-eq, beetroot patty $0.58E^{-04}$ kg PO_4-eq.

In ham casserole the highest impacts are caused by the ham and milk. Impacts of these were higher than the impact of the sum of all animal raw materials.

In the beetroot patty, milk had the highest impact in terms of eutrophication potential; it was about twice that of plant-based raw materials added together.

The eutrophication impacts of plant-based materials are similar for ham casserole and beetroot patty as those for global warming impacts. Potato has the highest impact of a single product in both portions. However, fresh greenhouse vegetables represent a major impact; about 60% of total eutrophication impacts arising from consumption of plant materials.

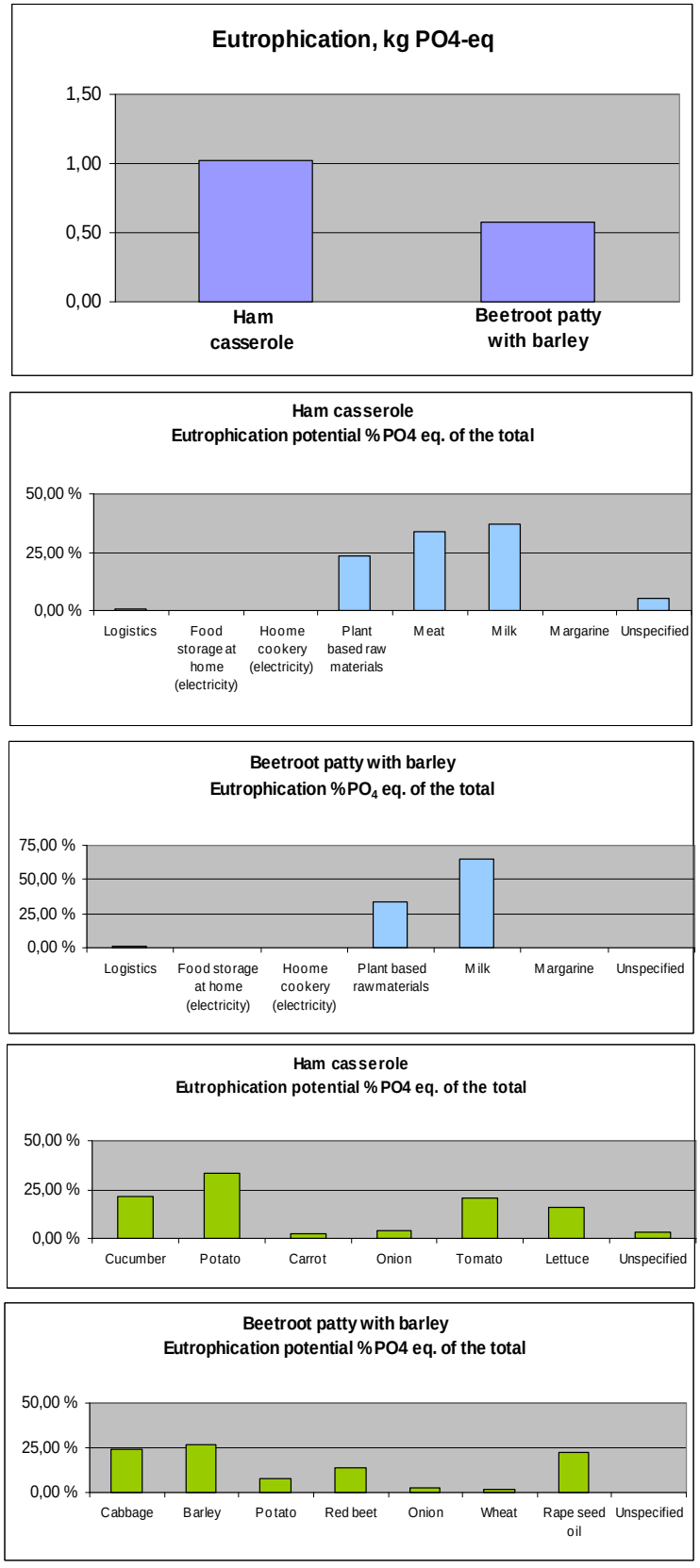


Figure 2. *Eutrophication potential: from above a) the two lunch portions in relation to the mean, b) proportionate profile of impacts for the ham casserole portion, c) proportionate profile of impacts for the beetroot patty portion, d) proportionate impacts for the plant raw materials in ham casserole, e) proportionate impacts for the plant raw materials in beetroot patty.*

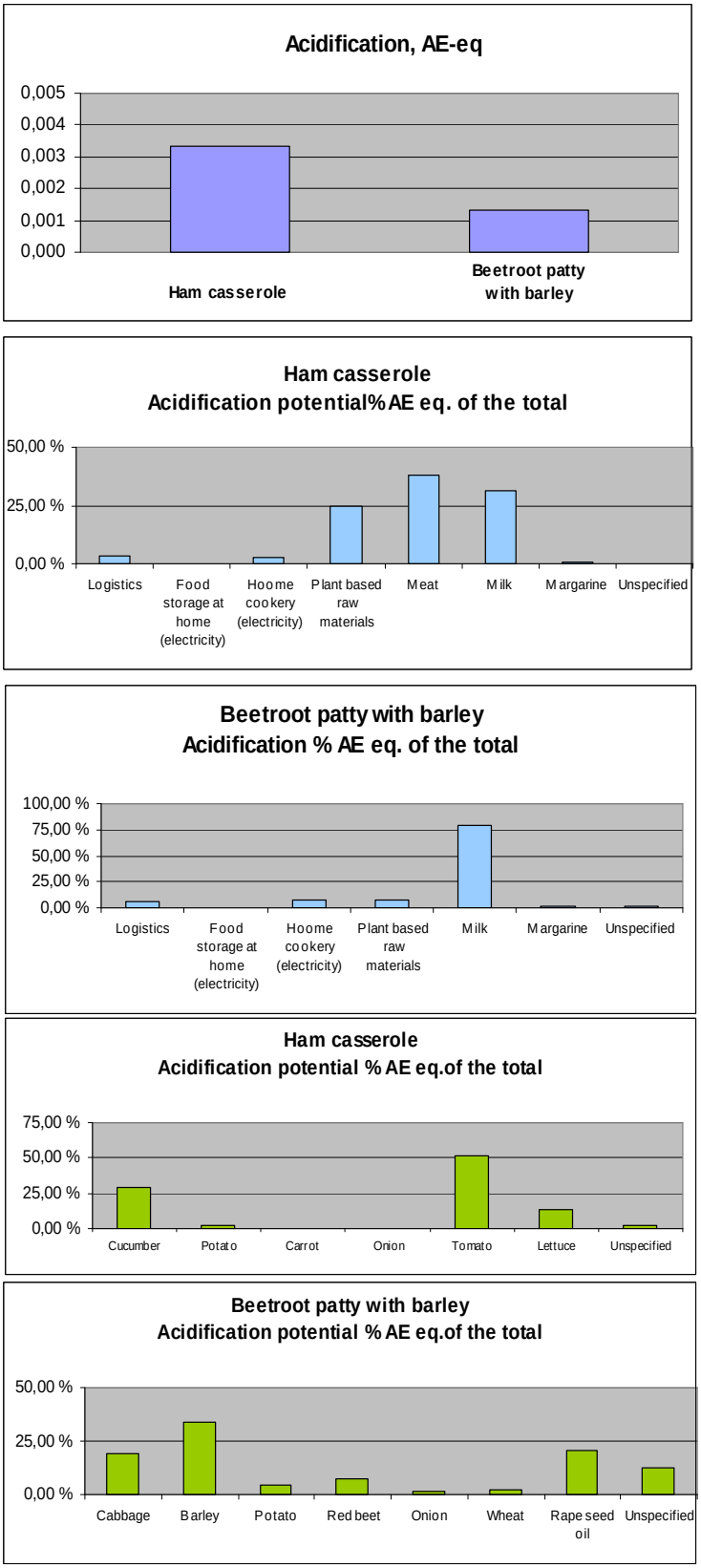


Figure 3. *Acidification potential: from above a) the two lunch portions in relation to the mean, b) proportionate profile of impacts for the ham casserole portion, c) proportionate profile of impacts for the beetroot patty portion, d) proportionate impacts for the plant raw materials in the ham casserole, e) proportionate impacts for the plant raw materials in the beetroot patty.*

For the acidification impact, the animal-based portion was almost three times higher than that for the animal-based beetroot patty. In absolute values: ham casserole 3.33E^{-03}kg AE-eq, beetroot patty 1.31E^{-03} AE-eq.

The acidification impact of meat is highest, followed by milk and the plant-based raw materials in total. In a beetroot patty, the production chain for milk only has a major impact on acidification.

When looking at the plant-based components of the portions separately, the fresh greenhouse vegetables, especially tomato, play a major role.

DISCUSSION AND CONCLUSIONS

The basic issue rising in the interpretation of environmental impacts of food, is the fact that lunch is a nutritional whole, in which changeability of components is restricted as a compensating the energy and protein content with another product. In terms of balanced nutrition, it is not feasible to cut a beef to a half without major change in other components of the portion. We actually play with functional whole of human food systems and measure combination of single LCA impacts.

For consumers, environmental contrasts should be described generic enough to concretize key environmental impacts of consumption. This should not be disturbed by variability of data or even missing of data concerning available alternatives. We already know that for a comprehensive view the input-output approach[19] would be helpful as a support to the LCA approach. While waiting for the hybrids of input-output and LCA approaches, variable failures and successes in the interpretation of the LCA impacts in the context of overall food systems will be a reality.

On the other hand, one can claim that only process based (i.e. trade mark based) LCA data is exact and applicable to use in purchasing alternative trademarks of a certain product. This is important for markets of ecodesign, but results presented in this study do not provide proper information for that purpose. Most possible we need a two step approach; first to learn the principal order and logics of various food impacts and then to focus on specificities of competing products with the same function in our food system.

Many seasonal products in our climate have been introduced to greenhouses and made season free. But at a same time a production system has been created, that is causing high emissions to our environment, some greenhouse vegetables being a regrettable example.

We did not have examples of cultivated versus wild raw materials. For wild raw material, harvesting and transferring the products are critical. However if we compensate greenhouse products with wild berries, for instance, we can be reasonably sure to be in safe side in terms of changing environmental impacts.

How we fit this to school context? Choices for food are personal, thus one option to introduce this information to practice is to build up self-efficacy of the children to make the decision, and gradually embed the LCA in their personal strategy of nutrition and welfare[20]. The collaboration of all stakeholders in school context and innovative approach to school curriculum are needed for that.

To conclude the results from the view of consumers, it become clear that consumers really have an impact, and the impact is complex to manage on a knowledge level, but perhaps easier when linked in context of culture and understanding of a living environment. For global warming, animal based products are critical. Thus consuming of animal based raw material should be restricted to a modest level. But, it is most misleading to think that in animal based food component of a portion is the only source of pollution, if we add greenhouse vegetables into an additional salad. For fresh products, following a natural seasonality would be advantageous in terns of an environmental welfare.

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APPLICATION OF A LUNCH PLATE MODEL FOR COMMUNICATION OF THE ENVIRONMENTAL IMPACTS OF CONSUMER FOOD CHOICES

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ABSTRACT – The aim of this multidisciplinary study was to develop a communication practice that would help people to understand how the environmental impacts of food may vary depending on its content and, in so doing, boost consumer opportunities to make sustainable choices in the future. Finnish pupils in the upper classes of elementary school were selected as the target group and the communication environment is elementary school. Teachers of biology, geographical and home economics have participated in the development of the model.

Lunch plate models are commonly used for teaching consumers how to make healthy food choices. It includes the principle of dividing a plate into three parts; half of the plate consists of vegetables, one quarter of protein and one quarter of carbohydrate. The portion is completed with bread and milk. People are well acquainted with the visualisation of the portion. We used the general model as the basis for developing our environmental communication model because we wanted to ensure that our message on the environmental impacts of foodstuffs did not obscure the benefits of a balanced and healthy diet.

Diverse lunch plates and their environmental impacts are expressed. Six criteria were used to design the food portions: 1) equal amounts of energy were recommended in preparing lunch for our target group, 2) shares of energy from proteins, fats and carbohydrates closely matched official recommendations, 3) diverse foodstuffs with wide-ranging environmental impacts on global warming and eutrophication, in particular, were used, 4) relevant information on environmental impacts using the LCA approach was achievable, 5) the target group was familiar with the servings offered, and 6) equal servings could be eaten in the school dining room and at home as a home-made meal or a ready-meal.

This work was carried out as part of a ConsEnv project on the environmental impacts of consumer choices and the communication of them to the consumer, and was funded by Finland's Ministry of the Environment and food enterprises.

INTRODUCTION AND BACKGROUND

The research project behind this paper was based upon previous LCA research projects, the development of the eco benchmark[1] and research on national input-output statistics.[2] The impacts of food portion components were assessed through the food chain. In addition, impacts of household activities linked to food consumption and the impacts of various food processing methods: home preparation, catering and industrial processes for ready-made food were studied. The final aim was to aid consumers in making environmentally responsible choices regarding their food consumption in the future. Thus school became the prioritised target of the research to inform future consumers on the benefits of a sustainable food chain within the context of the education system.

This paper is part of a multidisciplinary project that combines the LCA approach with studies on consumer behaviour. In addition, nutritional aspects of food and some general communicative aspects have also been taken into consideration within this framework.

In this paper, the nutritional logic employed in formulating the lunch plates was used as a functional unit of the LCA of food choices, and a tentative picture of best communication practice for integrating the environmental and nutritional aspects of sustainable education into elementary school is described. Regarding environmental issues, communication practice also covers impacts other than those

included in LCA calculations. The key idea is to introduce the lunch plate as the functional unit of LCA, combining it with background material to make LCA results more comprehensible and meaningful in the context of the multiple environmental impacts not included in the LCA presented here, too.

Environmental impacts of food

The environmental impacts of foodstuffs are widely researched using a product-oriented life cycle assessment (LCA) approach. It is applied to a range of individual food raw materials[3, 4, 5, 6] and processed food[6,7, 8]. In addition, in some studies, LCA is applied at a dietary level[9, 10, 11, 12, 13, 14]. In Finland, LCAs of cultivated rainbow trout[15], cheese, potato flour, oat flakes and creamy potato gratin[16], beer[17], cucumber[18] and broiler chicken[19] have been published in recent years.

There are different sub-approaches within LCA, and the results are dependent upon methodological choices[20, 21, 22, 23, 24]. Despite methodological differences, previous research attests that animal based products are more of a burden to the environment than plant based products and diets. In the plant-based product category, rice and greenhouse vegetables are the exception. These conclusions are valid for the material flow-based impact categories that are commonly included in LCA studies, i.e. climate change, eutrophication, acidification and smog formation.

One woefully neglected dimension of environmental impact research is the well-known fact that environmental impacts are the unwanted consequences of some wanted activity, such as the consumption or use of a product or service or activity in general. Accordingly, environmental impacts must to be understood in relation to the "main purpose "of the activity. In food consumption this issue is especially important as eating is an activity vital to human life. We simply cannot afford to stop eating whether there are environmental impacts or not. And we cannot even choose freely from amongst different foods, but nutritional aspects have to be taken into account. Consequently, nutritional considerations had somehow to be linked to an environmental impact assessment of food.

In the LCA approach, this problem becomes evident when setting the functional unit of a certain study. The most used functional units in food LCA studies are mass or volume based units (kg, litre etc.)[20] or economic values. A suggestion for integrating the qualitative aspects of food into LCA considerations has been defined as the quality corrected functional unit (QCFU).[20] In principle the QCFU takes into account all the nutritional values of food. This method does not, at least yet, have wide international approval. One solution is to use a diet or a portion as a functional unit. Baroni et al.[13] analysed three weekly well-balanced diets. The diets had been planned by a qualified dietarian. The diets were omnivorous, vegetarian and vegan ones. In addition, a further factor used in the comparison was the production method, i.e. organic vs. conventional farming. In her study, Carlsson-Kanyama[25] compared the greenhouse gas emissions of four different meals with similar amounts of proteins and energy. Meals were differentiated according to the following factors: vegetarian vs. mixed and domestic vs. exotic.

Nutritional recommendations for food

Nutritional recommendations have long been presented and popularised as pictures or figures of actual foodstuffs. The food circle was introduced in the 1950s, the food triangle in the 1970s. The latest addition from the 1990s[26] is the plate model showing the recommended amounts of different foodstuffs on a plate in three sections (Figure 1). All three models are used in Finland's current national nutritional recommendations from 2005.[27]

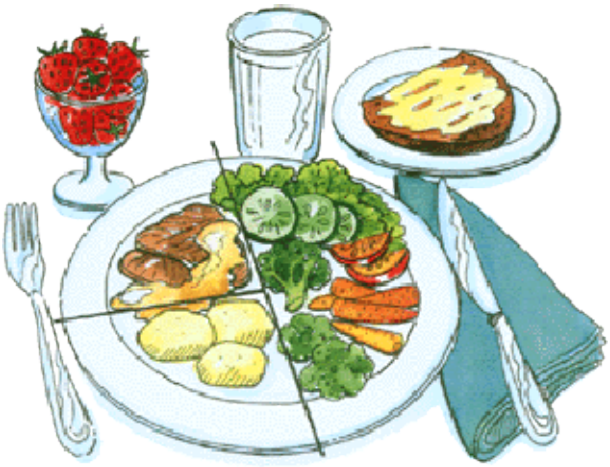

Figure 1. The plate model.[28]

In Finland as in other countries, the plate model is commonly used in nutritional education in schools and in advisor organisations. The plate model demonstrates the principle of dividing a plate into three parts; half of the plate consists of vegetables, one quarter consists of a source of protein and one quarter consists of carbohydrate, and it is completed with a portion of bread and milk. We chose this general model as the basis for the development of our environmental communication model. In other words, the lunch plate was selected as the functional unit for the LCA.

Communication

In addition to scientific discussion, the environmental impacts of food are also vigorously debated in the media. General discussion is based, on the one hand, on images and, on the other hand, on scientific research. As long as the media is the main source of information, there is a risk that information is simplified, short-lived and even sensational. However, environmental issues are severe, complex and sometimes contradictory, and understanding them requires time and intelligent effort. In addition, research methods are not, as previously mentioned, unequivocal. Discussion on climate change is overwhelming right now, but sole consideration of one impact category is not enough.

Information can affect people's behaviour as a consumer and a citizen, but the impact of simplified information is questionable as it may have a negative effect on understanding environmental impacts as a whole. There is a clear need for the proper penetration of environmental education related to the environmental impacts of products and consumption. This need has been taken into account in the curriculum[29] that is applied in Finnish elementary schools. Furthermore, municipalities and sometimes individual schools have their own curriculum for planning the school's educational focus. Targets on education in sustainable development and consumption are represented in curricula at every level, but the extent of its realisation diverges. Seldom are special funds allocated for developing sustainable education in schools.[30] Given this, and regarding the development of tools for sustainable education, cooperation between researchers and elementary school teachers is highly reasonable and fruitful.

In this project, we wanted to combine environmental and health messages to promote sustainable food education and sustainable food consumption, and to ensure that our message on the environmental impacts of food did not detract from the importance of balanced and healthy eating. Familiarity is a key concept in this study in terms of communication and education.

MATERIAL AND METHODS

Environmental impacts measured

The impacts of the lunch plates were assessed throughout the food chain from the inputs of primary production to the preparation of meals. Impact assessment focused on global warming potential and eutrophication given that, for Finnish food production, these LCA impact categories are the most significant ones. ISO 14040 and 14044 standards provided the general principles and the framework for the LCA applications. The developmental framework for the assessments is described in a methodological review article 31 Specific methods of LCA along with the results of the environmental impacts of individual food items will be published separately.

Communication in a context of familiarity

Pupils in the upper classes of Finnish elementary school were selected as the target group for communication practice. The target group is special in that, particularly at this age, consumption patterns can be reformed through interacting with the information received and intensive life style seeking. So, accurate information is supposed to enhance their ability to make sustainable choices as consumers in the future.

In compliance with contemporary consumer studies, nutritional and environmental communication must relate to the everyday life, skills and practices of the consumer to be successful. Scientific research speaks a different language to that of the layperson, in this case, the pupils. Therefore, the results of the research must be translated into a language the layperson, or the pupils, can relate to. Furthermore, the messages should reflect items and practices familiar to the consumer. Changes in behaviour must relate to practices.[32] To seek the most suitable ways to communicate the environmental impacts of food choices to pupils, we sought cooperation with teachers, and collaborated with teaching representatives from the disciplines of biology, geography, home economics, sport and health education.

Development of communication practice

Communication practice has been developed through a creative process and interaction between researchers involved in food companies, teaching representatives and the Finnish Ministry of Education. Every participant has contributed their own experience and special expertise which has enabled fruitful interaction between, on the one hand, a more theoretical practice and, on the other hand, more practical expertise from different subjects and field of activities. In fact, the development of communication practice is an on-going process.

Formulation of the lunch plates

The lunch plate model is the focus of the communication practice. An interest analysis was performed to determine the individual foods for the plates. Interest groups and their principal interests are displayed in Figure 2.

Table 1. Interest groups involved in the development of the communication practice and the principal interests of the groups.

Interest group	Main interest
Research group	Main environmental impacts will be represented, as well as familiarity with the key recipes for the food portions
Involved companies	Volume products are involved
Elementary school teachers and administration	Fit well into the curriculum; linking nutritional and environmental aspects of food
Pupils	Interesting and intelligible message

The research group in conjunction with other interest groups (the development group) defined six criteria for designing the food portions. The criteria consist of two criteria for the nutritional value of a portion, three criteria for the environmental impacts of food and one (or two) criterion for suitability to the target group.

Nutrition criteria

Defining and ensuring a nutritional value for the lunch plates, and their comparability as balanced and healthy servings, it was decided that each plate should consist of an equal amount of energy. As the target group are pupils in the upper classes of elementary school, it was agreed that the amount of energy in the plates should be 740 kcal, which is the recommended amount for pupils of 13–15 years of age as stipulated by Finland's National Nutrition Council[33]. According to the recommendations, the lunch aimed to fulfil one third of the average daily energy intake. This means that servings in this project are bigger than the portions recommended by the GDA (Guideline Daily Amount) system which is based on 2 000 kcal per day. Recommendations for the average daily food intake of teenagers aged 13–15 years is from 2170 kcal to 2700 kcal according to age and gender.

Regarding nutrition, another requirement was directed at shares of energy from proteins, fats and carbohydrates. These should follow national recommendations, according to which total energy intake from protein should be 10–20%, from fat 25–35% and from carbohydrates 50–60%.

Environmental criteria

In order to foster greater knowledge of the environmental impacts of food, it is important to understand from where, i.e. from what kind of food and at which stages of the life cycle, the impacts are born. This understanding is the foundation for applying the information in other contexts. However we wanted to express the results per lunch, not per individual food items in the lunches. This was for nutritional and health reasons as previously stated. To promote a more profound knowledge of the environmental impacts of food amongst the pupils, it was agreed that the different foods on the plates should vary greatly in terms of their environmental impacts, particularly on global warming and eutrophication. In other words, we wanted to educate pupils about the scale of the environmental impacts. This was facilitated by the provision of several different lunch plates (see Table 2).

Furthermore, the different stages of life cycles are not as crucial for consumers as they are for manufacturers and their eco-design work. Consumers are only able to influence the production process through their food choices, and that decision covers the production phase as a whole. Accordingly, LCA results per stages of production are not essential but rather confusing. In place of this, it was decided to take different kinds of production methods into consideration by including the home-made version, the ready-meal version and the school dining room version of similar servings in the study. This underlies the meaning of consumer choice and may clarify the environmental impacts of foodstuffs at a system level as well.

One important practical requirement was the availability of LCA data for the food on the plates. LCA of domestic products was carried out using the supply chain integrated LCA approach.[34] According to this approach, central data on the life cycle of a product should be based on empirical investigation of the real processes. That is why food companies, for example, were essential partners in this project. The food production chain or web is very complex and, correspondingly, the acquisition of real chain data is multidimensional. A description of the data acquisition method, and LCA method, would be significant but it is beyond the remit of this paper, and it will be done in another context.

Data on imported raw materials and final products was gathered from literature and public databases. The supply of relevant data was a limiting factor.

Suitability criterion

In order to reach the recipient, the messages should be composed of items that are sufficiently familiar to them[32] in various contexts. Accordingly, it was considered important that food and servings should be familiar to the target group. One aspect of this is the requirement for different production and preparation methods of foods, in other words, the requirement that similar servings could be eaten in the school dining room or at home as home-made meal or ready-meal. All these scenarios are familiar to the target group. Pupils 'likes and preferences were, as far as possible, taken into account by considering apparent school food favourites and, more generally, market leaders.

The composition of recipes for the main dish used several sources of information. Ready-meal recipes came from participating food companies and school dining room recipes from one school kitchen in a medium-sized Finnish municipality. This kitchen is a central kitchen which assembles components of meals for several serving places in other schools and nursery schools.

Regarding home-made foods, several cookbooks or existing recipes were used but as a rule they needed modifications (due to nutritional requirements). The recipes included some of the ingredients as pieces. The conversion of weights is based on Sääksjärvi (2004)[35] as well as the assessments of waste/wastage in home-made servings. The nutritional information comes from the national food composition database FINELI[36] which is maintained by the National Institute for Health and Welfare.

RESULTS

Lunch plate repertoire

The lunch plate repertoire of home-made lunches, ready-meal lunches and school dining room lunches by main dish is shown in Table 3.

The servings are based on omnivorous (meat and fish represented), vegetarian and vegan diets because it is well known that big differences exist in the environmental impacts of the main protein sources and other basic ingredients in these diets. Starch as side dish or component of the main dish comes from potato (mashed potato), pasta, rice or barley depending on the recipe.

Salads vary from grated cabbage or carrot to lettuce with tomato and cucumber depending on the composition of the main dish. The complementary bread is either dark rye bread or light whole wheat bread depending on the composition of the main dish. The amount of vegetable spread (70% fat) on the bread is 10% of the quantity of bread. In some platefuls the spread was omitted if the ready-made salad accompanying the ready meals contained a fatty dressing. The drink is 2 decilitres of either fat-free milk or water.

The serving sizes are adjusted according to the nutritional recommendations described in a previous chapter.

Table 3. The study's lunch plate repertoire by main dish.

Home-made servings	Ready-meal servings	School dining room servings
Macaroni casseroles		
minced meat-macaroni casserole and minced chicken meat-macaroni casserole	minced meat-macaroni casserole and chicken-pasta casserole	minced meat-macaroni casserole and vegetable-macaroni casserole
Potato based casseroles		
ham casserole, chicken casserole, rainbow trout casserole and vegetable casserole	ham casserole, chicken casserole, rainbow trout casserole and vegetable casserole	ham casserole, rainbow trout casserole and vegetable casserole
Chicken sauces		
chicken sauce with wholemeal rice and chicken sauce with wholemeal pasta	chicken in cream sauce with rice	chicken sauce with wholemeal rice and chicken sauce with wholemeal pasta
Sausage meals		
frankfurter and mashed potatoes		
Porridge meals		
barley porridge with berry fool	barley porridge with berry fool	barley porridge with berry fool
Vegetable patty meals		
beetroot patty with barley, soy bean patty with mashed potatoes (vegetarian.), soy bean patty with mashed potatoes (ovo-lactoveget.) and broad bean patty with mashed potatoes		beetroot patty with mashed potatoes

Tentative picture of best communication practice

We understood that the intended communication environment, i.e. the upper classes of elementary school, and the target group posed certain challenges for communication practice and materials. Although they may actively seek information on things they are interested in, teenagers tend to be black and white in their thinking, and are often easily distracted. Therefore the material should awaken both curiosity and intelligent vigour. The educational material should provide sufficient visual interest to capture the pupils 'attention, and it is good if it stimulates thought on sustainable issues. After all, it should offer a comprehensive view of the environmental impacts of food choices in conjunction with the nutritional function of food. Additionally, interactivity is a very important goal as learning by doing is a useful pedagogical method for many kinds of learners. These features pave the way for the practical development of educational material, but we are just scratching the surface in terms of visualising the material and making it interactive.

Expression of environmental impacts of servings

Final LCA results are not ready yet, but an outline of ways to representing the results can be offered. The impact categories of global warming potential and eutrophication (nutrient enrichment) were chosen and illustrated separately, plate by plate (Figure 2). In addition, the total LCA figures for each plate are expressed in relation to daily greenhouse gas (Figure 3) and eutrophical (Figure 4) emissions per person in Finland (i.e. normalisation) to make the LCA results more understandable. The idea is similar to the Fin-

nish Eco-benchmark[37], unless the Finnish Eco-benchmark includes more impact categories and aggregation of the impact categories.

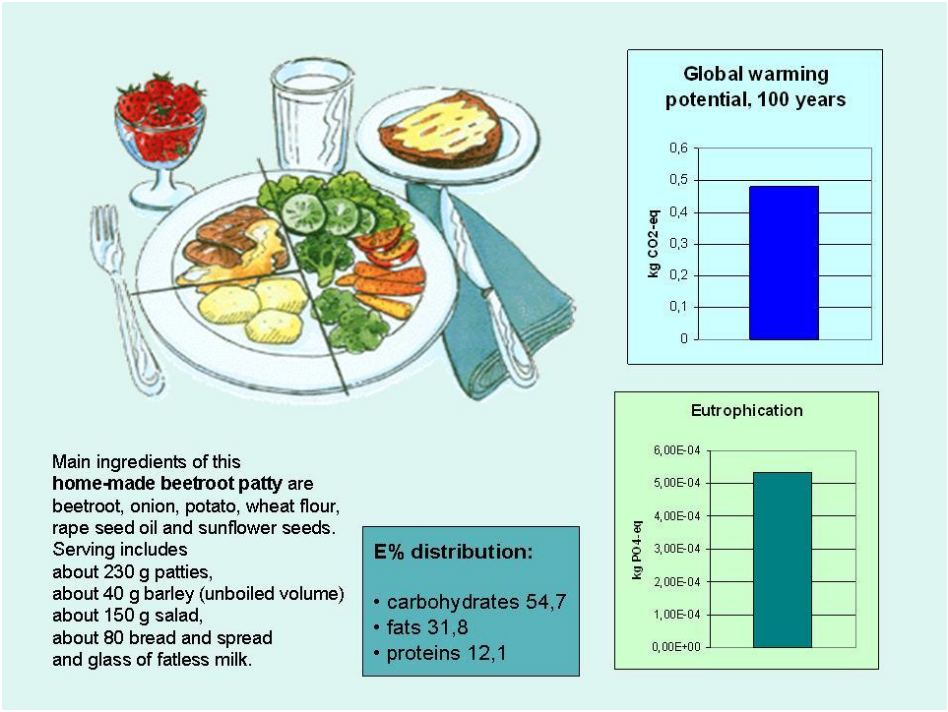

Figure 2. *Rough draft model to illustrate the impacts of servings (with beetroot patty as the main dish). Note that figures are not final as there are still some initial data missing in the background calculations. Figures must not be used as the result of the LCA study or E%-distribution of the meal.*

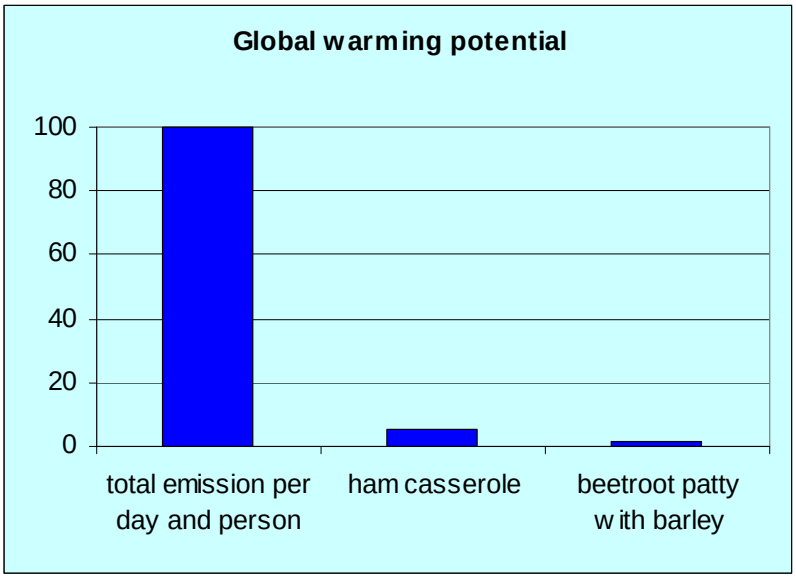

Figure 3. *Rough draft model to illustrate the potential climate impact of servings (with ham casserole and beetroot patty as the main dishes) in relation to consumption based potential climate impact per person in Finland. Environmental impacts are very preliminary and, as yet, inadequate.*

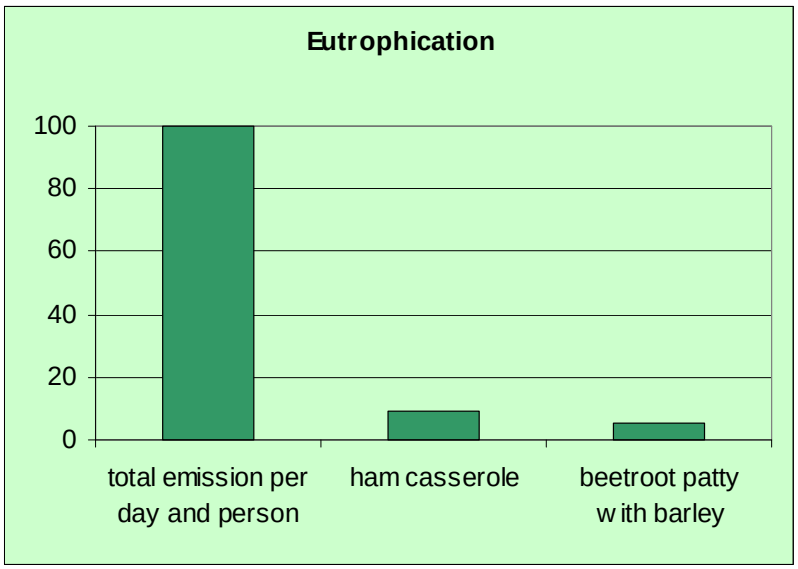

Figure 4. *Rough draft model to illustrate the potential eutrophication of servings (with ham casserole and beetroot patty as the main dishes) in relation to daily consumer-based potential eutrophication per person in Finland. Environmental impacts are very preliminary and, as yet, inadequate.*

Background material for the lunch plate model offers the opportunity to raise particular questions that might be interesting for the target group or which, for some other reason, are worth highlighting. For example, it is very common to consider packaging and transportation as very important elements in the environmental impacts of food, though this is not a consideration according to LCA studies. Demonstrating this could be interesting and informative for pupils.

DISCUSSION AND CONCLUSIONS

We are very conscious of the limitations of LCA in relation to impact categories, for example. In the background material to be prepared for teachers and pupils, we will cover other environmental impacts other than those included in the LCA, aiming to draw a more complete picture of the environmental impacts of food. In considering animal-based products, for example, there are many other relevant issues. Beef is well known to have a high impact on global warming and eutrophication, but in Finland cattle have, in the past, created biotopes for many currently threatened species by pasturing, and pasturing could still sustain these species. In comparison to the cultivation of grains, fallows have less nutritional leakages, which may be significant in area-based considerations and emission control. These kinds of questions are a fruitful basis upon which to develop pupils 'multidimensional thinking and move them away from more rigid thought patterns.

Regarding consumer actions, the LCA based on real chain data also has limitations because there are a range of processes to act out in relation to cooking, for example. However, consumers only are able to influence their own patterns. So, consumer actions are worth highlighting.

LCA of a range of lunch plates representing home-made, ready-made and school dining room servings offer a new dimension for discussions on environmental impacts related to global warming and eutrophication. The first preliminary results provide a sliver of opportunity for a new and interesting interpretation of the impact of consumer food choices in relation to animal based versus vegetarian based food, which is supported by the formulation of the whole serving.[38]

Regarding communication practice (as a pedagogical model), this study was a pilot, which concentrated more on LCA practices than on the most ambitious and far reaching development of a pedagogical model. The study provides a solid basis for further development by setting out its principles and establishing a cooperative network.

Communication practice using the lunch plate model may be highly exploitable in teaching sustainability in schools as well as in education as a whole. It fits in well with the elementary school curriculum. It fits in well with integrated subjects such as "Responsibility for the environment, well-being and a sustainable future". Classes in integrated subjects vary on a weekly basis but their aim is to explore different subject matter and different ways of learning.

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ETHICS VS. LAW IN THE FOOD BUSINESS

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ABSTRACT – Food business involves many ethical questions. Legislators should not leave all these questions for markets to decide. Legislators should take their role in guiding the food business, having sustainability as goal. This includes environmental and social issues. Legislators need to look ahead and focus on where the food business should go in the future. The simplest way is to guide production and consumption through taxation, making certain production, products, and diets cheaper.

INTRODUCTION

Business ethics, responsible business, and sustainability are popular words these days. Also the food business is using various ethical guidelines to make itself act in a sustainable manner, or at least to look sustainable to consumers. Besides legal entities, businesses are also seen as moral actors.[1]

A recent Finnish study by Forsman-Hugg et al.[2] has provided us with seven different measurable dimensions of responsible food business. These are: product safety, nutrition, environment, occupational welfare, animal welfare, local market presence, and economic responsibility. The report sets measurable goals for companies for the next five years. Many of the seven dimensions are simultaneously areas of law: food law, consumer law, environmental law, employment law, and also company law. Legislation affects every stage and every stakeholder of food business.

Another recent Finnish study by the Ministry of Agriculture[3] has identified problems with food law experienced by small and medium-sized companies. We will use this information as evidence on how food companies see the role of legislators.

RESEARCH QUESTIONS

The aim of this paper is to discuss responsible food consumption from a legal point of view: What is the relationship between business ethics and food law? What does the food business expect from legislators? What role should legislators take in making the food business more responsible in the future? We try to answer the questions by looking at current concepts of responsible food business and comparing them to existing laws.

ETHICS VS. LAW

Here we aim to discuss the seven dimensions of responsible food business as described by Forsman-Hugg et al. 2009 from a legal point of view. The starting point of their research was that responsibility is something more than following legislation. Criteria and measures for responsibility were drafted for companies. These criteria and measures could also be used by legislators when developing new legislation.

'Food safety' is the most obvious target of food business responsibility, and also of food law. There are plenty of regulations on both biological and chemical safety of foods. Hygiene rules and rules on additives, pesticide residues, etc. have been in place for decades. The HACCP (Hazard Analysis and Critical Control Points) system is included in European law. It is also stated in the General Food Regulation[4], that operators themselves carry the primary responsibility for food safety. In-house control and operator responsibility are legal principles. This means that responsibility of the food business on food safety is not merely about competition, benchmarking and branding: it is actually required by the law. In connection to allergies, the responsibility report states that following legislation simply is not enough. We could see this as an advice to legislators: more stringent labelling rules are needed.

'Nutrition' is the second one of the seven elements discussed in the responsibility report. It means that besides being safe, food should also be healthy, or at least the consumer should be able to build a healthy diet based on adequate information. On the information issue, legislation is more abundant than on the nutritional qualities of the products as such. The regulation on fortification[5] sets the limits for vitamins and minerals added to foods, whereas the regulation on nutrition and health claims[6] merely states the requirements for claims and does not regulated the attributes of the products themselves. According to the novel food regulation[7], the nutritional quality of novel foods is assessed before allowing them to enter the market. The novel food is compared to the equivalent novel foods already in the market, and the nutritional quality as such is not evaluated.

Here we need to discuss who is responsible for unhealthy eating habits causing for example the metabolic syndrome. We have to say that primarily the consumers themselves. There is no way of stopping free people from eating too much. However, legislators and companies can offer healthier foods, smaller portions, information and guidance, etc.

The most important issues in the 'Environment' dimension of the study by Forsman-Hugg et al. are the climate effects of food production, and the effects on eutrophication. The former is mainly measured by the amount of green house gases emitted in the food chain. Environmental laws and international agreements exist on these issues. In the responsibility report, it was noted that mere legislation is not enough, if it is not implemented in practice. Interestingly, responsibility is thus seen not necessarily as exceeding the norms, but also as following the existing laws. Following the laws is not here seen as a self-evident starting point. This might also be interpreted to mean that governments should impose stronger control on the implementation of environmental laws.

The fourth element, 'occupational well-being,' is a more general issue than just a question food business. However, there are some features to food production such as working in cold temperatures that are not common to all other lines of business. Employment laws are general in the meaning that they apply to all employees equally. There are precise regulations for example on occupational safety, equality of workers, and holidays. These issues are controlled by authorities through check-ups on location. However, the laws do not and cannot guarantee that employees like their work or feel appreciated. This leaves plenty of room for business ethics. If raw materials are imported from third-world countries, Finnish or European employment law does not apply where raw material is produced. If local legislation is non-existent, the lack of business law leaves the whole stage for business ethics.

'Animal well-being' is the fifth element of responsibility. Of course, this does not affect foodstuffs such as bread or vegetables. We are of the view that both business law and business ethics need to develop in this area. According to Eurogroup for Animals, the Common Agricultural Policy needs to be changed radically to make it animal welfare friendly.[8] Although regulations are not considered very strict, they are still not followed scrupulously. Requirements on animal well-being needs to be based on scientific information on animal behaviour. The issue of how much meat we can eat is another question. It has more to do with the environment than with animal rights.

'Local market presence' is the next element. It includes questions such as where food is produced, cultural connections of food, and the continuance of food production. Agriculture and food production are wider issues than just eating: they are a part of our culture. As regards locality, EU legislation exists on Protected Designation of Origin (PDO), Protected Geographical Indication (PGI) and Traditional Speciality Guaranteed (TSG). These protected geographical statuses add value to local specialties and traditional products. Of course, subsidies to agriculture also affect local market presence. The goals of the EU common agricultural policy (CAP) are to provide farmers with a reasonable standard of living, consumers with quality food at fair prices, and to preserve rural heritage. CAP has received lots of criticism and is under constant reform.

What still remains is the seventh element, which is the 'economic responsibility.' Business ethics has limited space here, because there are detailed laws on taxes, accounting, auditing, financial instruments (both equity and loan), insolvency, etc. Good auditing practice is also a legal concept, and stock market laws stipulate the provision of information to investors. In our opinion, the most important busi-

ness ethics issue here is the question of profit. Who takes the consumer's money: the farmers, the food industry, or the retail chains?

Now we turn to the Finnish Ministry of Agriculture report 2009, which identified problems with food law from entrepreneur's point of view. Many of the entrepreneurial expectations do not relate to the substance of food law: many suggestions are procedural and relate to how requirements are implemented in practice. Typical demands of 'better regulation' are listed: laws should be understandable and authorities should inform regulation targets better. The substance of food law as such is rarely contested. This is probably due to the fact that Finland cannot change laws as such. EU member states can only decide on food control, and EU controls even this control. Discussion on the relationship between law and ethics thus belongs to the European level. Still, some interesting notions can be found in the Finnish report.

The first demand in the report is that food law and its execution should be more flexible and clear. Requirements set by legislation are considered problematic and difficult to comprehend. The main suggestion is that legislation and control should be related to the risk posed by an activity to human health. Laws are plainly seen as too strict and complicated for small businesses that only sell to small groups of customers or only seasonally. For example, hygiene requirements are said not to take into account locally produced and marketed food that is not transported or stored.

As regards food safety, more particularly hygiene and its relationship to law, we seem to have a difference between large and small food companies. Large companies that took part in the study by Forsman-Hugg et al., were seemingly willing to build responsibility schemes above the law, whereas small companies struggle with fulfilling the legal requirements, and consider them overly demanding. It is already stated in EU regulations that food control should be risk-based. Still, European food law might not adequately distinguish between large and small companies, which is one of the challenges for the European Commission in the future.

As mentioned above, large part of the Finnish Ministry report discusses the quality of food control. The entrepreneurs as regulation targets see themselves as customers, deserving a high-quality product (the law). There are European laws and national laws for example on animal feed, animal medicine, animal welfare, and organic production, where subject matters of laws sometimes overlap. It is noted that control systems set by food system actors themselves overlap and complement the legal requirements. The first conclusion is that food law and control should be seen as a whole. Secondly, it should take into account the requirements and control systems that food chain actors set on themselves. Different control schemes should work together in order to avoid duplication of work.

DISCUSSION

When discussing law, we must remember that legislation is void without implementation and control. For example in China, legislation on foodstuffs is modern and plentiful, but control of this legislation is inadequate[9]. Also in Europe, the authorities are putting further effort on both in-house control and administrative control. Also self-regulation needs to be implemented in practice, not just on paper.

The spaces for business law and business ethics complement each other. Where business law is abundant, business ethics has more limited space. Business ethics as science developed in the US, where freedom and liberalism are core values and markets are not regulated as intensively as in Europe.[10,11] The relationship between business law and business ethics differs in every country due to history and culture. In Europe, the scope for business ethics is smaller than in the US. Because of the economic crisis and the reasons behind it, the trend is towards stricter control. When operating in developing countries, business ethics is just as important for European as for American companies. This is because the legal systems in many third world countries are under-developed as regards for example employment law and environmental law.

The food industry sees legislation as a starting point, on which to build responsibility. It is stated that responsible food business is something more than just doing what is legal. What should legislators derive from this? Legislation is unnecessary because the companies would do everything anyway? Or: legislation is insufficient as even the regulation targets themselves think it is not enough? This would be

to admit that business ethics has developed because legislation has been too slow and ineffective in reacting to real problems in the society. Or maybe legislators should think that legislation is at the right level when setting the minimum standard and leaving room for improvements for more responsible companies? Smaller food companies seem to be in trouble with laws as they are now[12].

We think governments as legislators and parties of international agreements should consider what they want the food business to look like in the future, and strive towards that goal. In our opinion, the goal should be responsible food business. If food business is not considered ethical in every respect by the legislator, various alternatives should be considered. One cannot regulate something that cannot be measured. The CSR (corporate social responsibility) measures developed by the food industry can also be used by legislators when setting targets for food business. Businesses use measures for their reasons, and legislators for their reasons.

Instead of binding legislation, the food industry favours reliance to business ethics and self-regulation. They want to build responsibility themselves and not be forced by governments. The reasons for this are obvious: law is coercive, whereas ethics is based on freedom. Ethics is seen as a strategic asset, whereas law is seen as a hindrance. Recognising that food law will probably not be abolished, entrepreneurs want law to be understandable and expect authorities to give advice as regards law. In addition, the industry would like to see more flexible (put straight: less strict) norms, particularly as regards smaller entrepreneurs.

It is, however, for legislators to consider and decide what kind of instrument is necessary and in right proportion to the problem addressed. If self-regulation is considered adequate, it should be a conscious decision made by law-makers, not a result of industry persuasion, or lack of resources for high-quality law-making. Legislation has its benefits: Legislation is made in a democratic procedure, it is clearly binding on its targets, and it is enforceable by courts. Legislation as a product of democracy also has its downside: it represents the view of the majority, not always the perfect compromise. A judge will have to make an either-or decision and can not make a perfect compromise, either. For example, if 55% of *voters* think certain animal treatment is ethical, it is the law. On the other hand, if 45% of *consumers* think certain animal treatment is unethical, this forces businesses to treat animals better. And from another point of view, if five meat company directors are of the view that certain animal treatment is unethical, it might stop this kind of treatment altogether. Here we see that people have different roles where they take stand to ethical questions. In the law-and-community perspective, also law forms in communities, where a person can be a part of several communities[13].

As there are problems with legislation (hard law), there are also problems with soft law such as administrative guidelines or self-regulation. Makers of soft law can merely state the fact that soft law is not binding, and thus avoid legal questions such as legal competence, legal coherence, legal interpretation, quality control of regulations, or the legal rights of regulation targets[14,15].

In Europe, legislation is given both at the EU level and at member state level. Although EU law covers more and more areas and space, a Member State can still regulate food business in creative ways. Comprehensive approaches to shaping the food industry could also be used in Finland. The main instruments at use are normative guidance, tax guidance, and information guidance.[16] This means that for example, a government can pass a law forbidding the sale of soda and sweet in schools, or forbidding the advertising of soda and sweets. Or it can make soda and sweets more expensive by putting new taxes on them (Denmark is currently planning to do exactly this). Or the government can merely persuade consumers by means of information campaigns saying that soda and sweets make you fat and your teeth disgusting.

The relationship between business ethics (food company self-regulation) and business law (EU regulation or national laws) can consist of many different strategies for the legislator, depending on the situation of business ethics in the field. Business ethics could be seen as a constant negotiation and dispute settlement procedure between a company and its stakeholders, and business law as a tool for settling conflicts that have not been or cannot be adequately settled through this discourse.

Firstly, and perhaps the most commonly, reverting to law could be seen as a last option in cases where the civil society has not resolved a certain problem due to lack of motivation. This means that law

is needed where the food industry lacks incentives to address a certain ethical problem. This is often the case where consumers are not interested of the issue. For example, obesity is largely a nutrition problem that has not been resolved by the food industry and the consumers. The food industry has created healthy products, and gives nutrition declarations. However, the food industry will never abolish certain unhealthy product types altogether, if consumers want them. It will sell as much food as possible. The legislator could force certain nutritional criteria for foods, which would be the strongest alternative. Healthy foods could also carry lighter taxes than fatty, salty foods. This has been suggested in many countries.

Another example of a situation where markets have not resolved an ethical problem is the meat-eating, which places a huge burden to the environment. The meat industry will not stop selling meat, if consumers want to eat meat. The legislator could affect meat consumption for example by forcing public establishments such as schools and hospitals to offer vegetable meals for example once a week. This has already been suggested in Finland. The legislator could also raise the taxes on meat. In the future, meat may become a luxury item that only rich people can afford, as scarcity of water and soil will show in the prices. However, the legislators could act to restraint meat consumption even before this happens.

Third example of a situation where legislation could be used as a last option is the animal-wellbeing issue. Laws on animal well-being are not at a particularly high level. European law could be used as an example for the world.

So far, we have discussed business law as a tool for correcting the wrongs that have been dismissed by business ethics. Secondly, in cases where business ethics has done a great job, legislation could merely decide not to act, or follow the self-regulation guidelines and set the agreed voluntary standards as a legal minimum for all the companies. Where a good business ethics practice has developed, this could be turned into law. Examples of these are the GDA (guideline daily amount) declaration, allergen lists in labelling, etc. The benefits of turning soft law requirements into hard law include legal certainty and clarity from the viewpoints of regulation targets, implementing authorities, and courts.

Thirdly, legislation could strive to be ahead of business ethics, either by setting the minimum standard or by harmonising the issue altogether. This means legislators could try to detect new issues even before the civil society starts to react. Business ethics tends to depend on consumer attitudes on certain periods of time. Legislators could think ahead and force the businesses to act ethical before the consumer movement forces them to do so. This sounds optimistic taking into account that preparation of legislation is inadequately resourced as it is, and has been accused of producing low quality laws.

The possible attitudes of the law-maker towards business law as described above differ in timing: options one and two mean that legislators follow the development of business ethics at a certain question, and either to pass more stringent legislation, not to act, or turn soft law into hard law. Option three would mean that legislators created (forced) responsibility independently of the market trends.

We have to notice that food crisis can happen even if operators follow legislation plus their own good practices, because they leave room for human error. Therefore, a food crisis does not necessarily mean that legislation or self-regulation is inadequate.

It is important to continue discussion on who should shape food consumption in the future: consumers, companies, or legislators. We are of the view that all stakeholders in the food system should work together to benefit the whole society and environment. Business law and business ethics are both needed. They are not competing against each other, but instead they have the same goal: responsible food business also in the future.

A recent Finnish study by Kirveennummi et al.[17] has looked into the future and provided us with four different scenarios of food consumption in 2030. The role of regulation and law is an important part of each scenario. The future of food consumption will partly depend on the role that law-makers will take. Food business will probably not be responsible without regulation.

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INNOVATIVE EDUCATION FOR A SUSTAINABLE FUTURE: SOUTHERN PERSPECTIVE

EXPLORING RISK RELATED TO FUTURE CLIMATES THROUGH ROLE-PLAYING GAMES: THE AFRICAN CATCHMENT GAME

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ABSTRACT – Risk is the result of two interacting components: hazard and vulnerability. Climatic hazards are related to extrinsic factors such as drought or severe storms. Vulnerability is the result of intrinsic factors that often arise from the socio-political-economic context. The interplay of risk and vulnerability is difficult to predict. Although computer models have been widely used to forecast climate related risk, albeit with considerable uncertainty, they can never capture sufficiently the vulnerability of human systems to these hazards. Role-playing games can be used more realistically to simulate possible outcomes of different climate change scenarios, and allow players to reflect on their significance. The authors have developed the African Catchment Game to simulate a water scarce African country. Risk can be modelled mechanistically by changing the nature of the annual rainfall input. Vulnerability can in part be modelled by changing the starting parameters (such as access to land and resources) and, secondly, through the unpredictable response of players to game dynamics. Players' reflections demonstrate that through the game they become more aware of the concept of risk and the complex response of individuals and societies that determine their vulnerability to climatic hazards. This paper reflects on the potential for developing the game further as a tool for participatory learning around climate change, based on the authors' experience of playing the game with participants from South Africa.

INTRODUCTION AND BACKGROUND

There are now strong indications that global climate change is a future reality[1], while climatic variability and extreme weather events are self-evident at the present time. The IPCC[1] predicted that climate variability and climate related extreme events would become more prevalent, putting increasing stress on the world's ecosystems and human population. According to Thomalla et al.[2], climate related events accounted for 90% of people killed by disasters between 1970 and 1999; these numbers could well increase in the future.

Southern Africa's climate is presently characterised by great variability, with drought and flood cycles. Although the IPCC[1] reported in 2002 that no clear trends had as yet been identified for the southern hemisphere, and, in 2006, Thomalla and co authors warned that there is much uncertainty around climate change, especially at the local scale[2], Hoerling[3] indicated a probable increased drying over southern Africa, linked to sea surface temperature changes. In 2000, Kiker[4] reported predictions of a warming of 1–3°, a general reduction in regional rainfall of 5–10% and a possible reduced frequency but greater intensity of summer convective storms, with an increased flood risk. Concomitant changes are expected in terms of streamflow, agricultural production, fire risk and disease prevalence.[4] Other South African researchers have predicted that the biggest economic impacts would be on the existence value of biodiversity, the subsistence value of ecosystems, tourism and health[5].

It is clear that the human population of Africa is already exposed to a high level of climate-related risk, which is likely to increase in the future if climate change predictions are correct. Development policies for the region must therefore take account of these risks and their impacts on society.

Pyle, in his study of severe storms in the Eastern Cape of South Africa, saw risk as being made up of two components – hazard and vulnerability[6]. Hazard is the external element of risk to which an individual or society is exposed – severe weather events, drought, disease vectors. Vulnerability is a measure of the degree to which the individual or society is protected (or not) from the hazard. This relates to fac-

tors such as economic wellbeing and stability, demographic structure, institutional stability and strength of public infrastructure, global interconnectivity and dependence on natural resources.[7] Some authors distinguish physical from social vulnerability[7, 8], physical vulnerability being a measure of exposure to a hazard and social vulnerability being a measure of resilience to withstand that hazard.

Assessment of future climatic hazards[6] or physical vulnerability[7, 8] normally takes a positivist approach, based on physical science. Assessment of social vulnerability needs to take a different, more constructivist approach that takes account of the complex, dynamic and individualistic response of people.

Vulnerability and the human response to climate change vary with geography and with scale [8, 2]. Researchers working at the village scale in Kenya and Tanzania, distinguished short term coping from longer-term adaptation[8]. They stressed the place-specific and individualistic nature of coping strategies and concluded that climate change adaptation policies should focus on empowerment before the event rather than intervention after the event. Such policies must encourage dynamism through diversification and flexibility. Interconnectivity at all scales is an important aspect of vulnerability. Other researchers have stated the need to facilitate urban-rural linkages, or links between humid areas and drylands[9].

Vulnerability is clearly an example of the outcome of a complex adaptive system[10]. Eriksen et al. express this succinctly as "A complex mesh of interactive processes creates an ever-evolving distribution of vulnerability, differentiated within the community, as households fail to identify, or succeed in identifying and implementing, effective responses to environmental stress, within a socio-economic and political context that is itself constantly changing." They go on to say "Describing and explaining this dynamism represents one of the main challenges of developing the theoretical framework of vulnerability" (Eriksen et al. 2005, p. 302) [8].

While real-world case studies such as used by Eriksen et al.[8] are essential to meet this challenge, role-playing simulation games provide an alternative way of giving both students, researchers and policy makers an experience of vulnerability that can help them understand its complex nature. In this paper we look at the African Catchment Game as a means to expedite understanding of climate related risk. We start by demonstrating how the game models the interaction between external hazards and internally determined vulnerability, before analysing one game run that was used specifically to engage South African students through active learning with the nature of climate risk and the possible longer term impacts of climate change. We conclude by reflecting on whether or not this game could be used to explore risk scenarios relating to future climate change.

THE AFRICAN CATCHMENT GAME

The African Catchment Game is a role-playing simulation that is underpinned by the social constructivist approach to learning[11, 12]. Through this approach game participants experience for themselves what it is like to be vulnerable to environmental and societal challenges within a complex system. The pedagogical approach adopted requires the players to connect their game experience to their pre-existing knowledge and understanding of the process that the game models. This is done through reflection in pre and post game questionnaires and focus group debriefing.

The game simulates a small Africa country that consists of urban and rural sectors that are presided over by a government. The urban sector includes industrialists, labour, a banker, buyer, seller and trader. The government resides in the urban sector and comprises a president and two ministers. The rural sector in our game consists of two commercial farms and a number of smallholder farms.

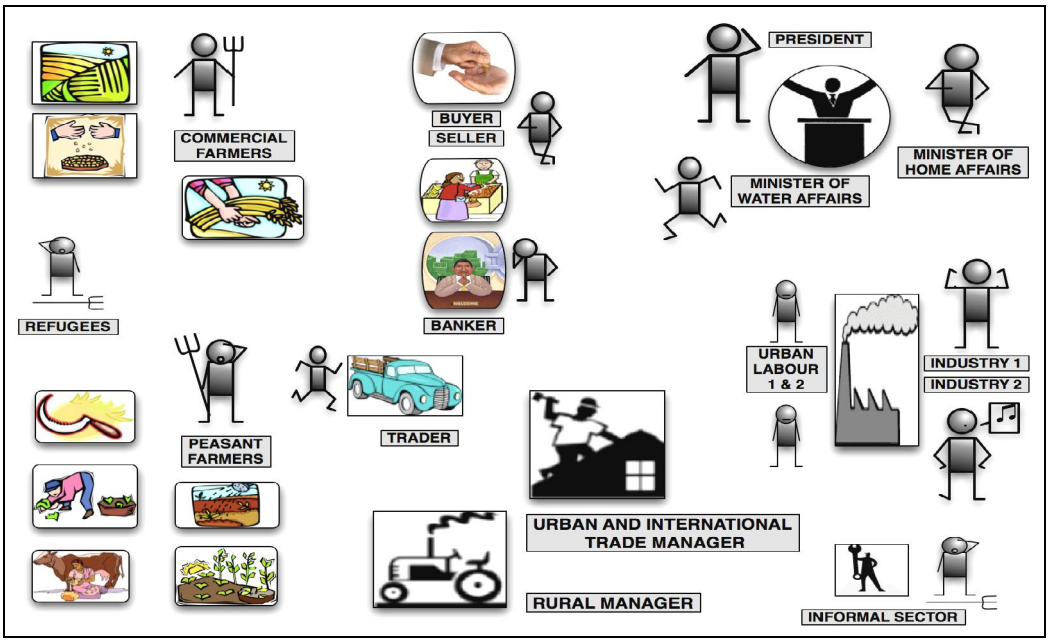

Figure 6. Players' roles and layout of the room[13].

The room is divided into two sections, separated by the trading sector (Figure 1). No one is allowed to pass between sectors without some form of transport, which at the start of the game is restricted to the trader, one member of the government and one commercial farmer.

At the start of the game each player is given a number of assets and liabilities, some of which have an element of chance in their distribution between players, and has a family of variable size. For example, a smallholder farmer has three fields and a garden (all of which are used to grow the staple food - rice) and may have a bull or cows (Figure 2).

Cows are used for ploughing fields and provide fertilizer in the form of manure, calves grow up into either bulls or cows; excess stock can be sold. A commercial farmer has nine fields, some of which have irrigation infrastructure (water pumps), and either a tractor or a light truck for transporting farm produce. At the start of the game one field on each farm is planted with sugar cane. The commercial farmers are in debt to the bank for the tractor and vehicle. Family size for each farm is determined by chance cards and can vary from two adults and three children to six adults and four children.

Figure 7. A small holder farm, three fields and garden planted with rice, two field irrigated (see green water tokens), two bulls. Family size is three adults and four children.

The game runs through a series of hourly cycles (normally five). The main aim for the players is to make sure that all family members receive enough food (in the form of rice) and water to survive each year of the game cycle.

Rice is grown in the fields, water for domestic consumption, irrigation and industry is provided by a reservoir. The rains and availability of water in the reservoir determine productivity. Each is the outcome of chance. There are three rainy seasons in the lower catchment (the farming area). These simulate early growth, middle growth and flowering of rice. Each season has a four in six chance of drought, a one in six chance of good rains and a one in six chance of floods. The reservoir lies in the upper catchment and receives more rainfall, with a four in six chance of good rain and a two in six chance of drought.

The game is thus able to simulate climatic hazards in the form of drought and floods. A further hazard is pests. These are farm specific and increase during wet years according to chance cards. Each year more children are born, and some people die, normally as a result of insufficient food or water.

What can a farmer do with his or her produce? First it must be used to feed the family - ten maunds per adult and five per child. In a good year a smallholder with no additional investments can produce 139 mounds of rice, enough to feed a family of six adults and four children with a significant surplus. The rice can be sold to other families, to the urban sector, or for export. It can be stored in a granary (if available). Some must be kept back for planting.

In a bad year the same farm will only produce 55 maunds of rice, which can only feed four children and three adults. In order to survive, and prevent a death (which adds a further burden of an expensive funeral) the farmer has to develop a coping strategy. This may rely on immediate actions, such as using social networks or asking for government aid, or on longer term adaptations such as investing in irrigation, buying a granary to store surplus crops, buying pesticide, buying fertilizer, diversifying into cattle. A bank loan can supply cash to get an enterprise underway.

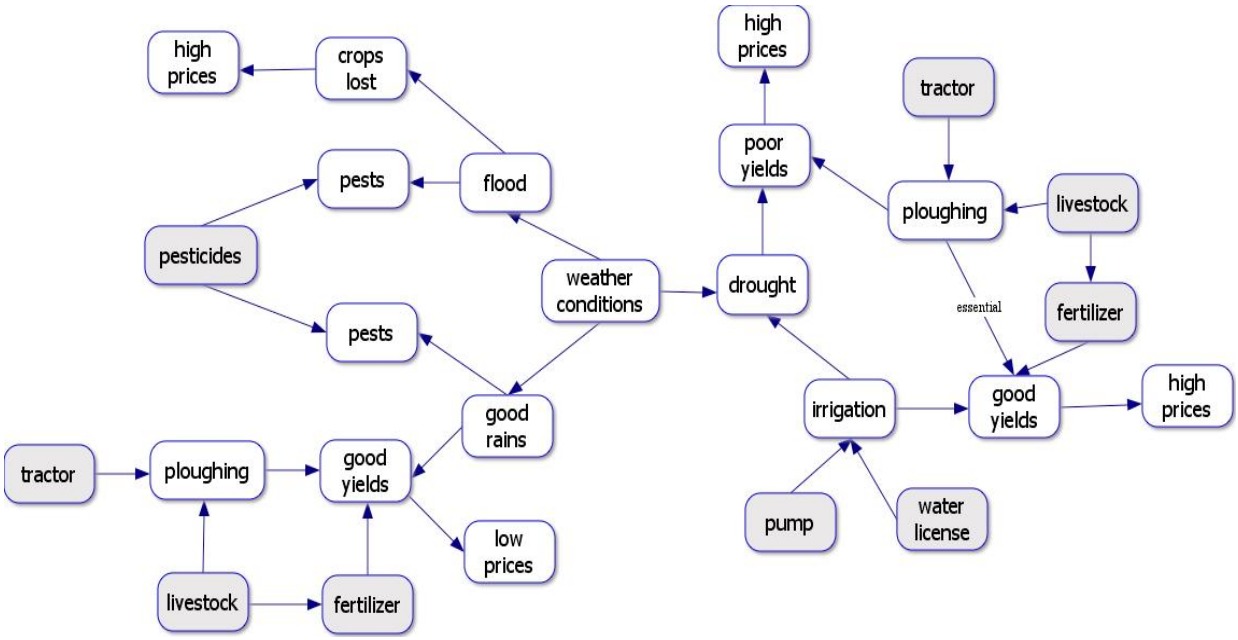

Figure 8. Outcomes of variable weather conditions and farmers' possible response options (grey boxes).

The various ways in which a farmer can mitigate against the outcomes of variable weather conditions (hazards) is illustrated in Figure 3. Small holders 'gardens provide a safety net because they are protected to a large extent from weather events, but this was not so for commercial farmers. Investing in water pumps and buying water every year can afford drought protection, but there is no protection available against floods.

The game is therefore able to simulate the complexities of risk associated with climatic variability and, by extension, with climatic change. Climate related hazards are simulated through the use of chance cards, whereas social vulnerability depends on both the initial entitlements and the development of individual coping strategies. By asking players to reflect on what they learnt, we can analyse the game dynamics.[14]

We have played this game with participants from South Africa, the USA, Sweden and Finland. Every game has been different, depending on the combination of chance and the actions of individual players, but the learning process was found to be similar. In this paper we present the outcomes of a game played with final year undergraduates students from Rhodes University in February 2009. Through their three-year curriculum the students had already been exposed to ideas around climate variability and climate change, and had been encouraged to think holistically about the societal response.

In this particular game we assessed their learning about climate-related risk through a questionnaire and reflection exercise. Students were asked the following questions.

- What was your role in the game?

Given this role:

- What were the main climate-related risks that affected you and how did they affect your livelihood?
- What factors affected your vulnerability to these risks?
- Did you do anything to decrease your vulnerability and, if so, what? Was it effective?
- How would you expect climate change to affect both the risk and your vulnerability?

As a more general post-game reflection exercise they were asked:

- What have you learnt about environment and development in Africa through playing the African Catchment Game? Relate this learning to specific activities or incidents in the game.

The questionnaire answers and reflections of the 31 students were analysed using a qualitative content analysis. Eight key themes relating to coping mechanisms were identified after an initial reading of their responses: investment in farm infrastructure, cash income, bank loans, social handouts, employment, diversification, social networks, rural-urban linkages. Two other themes that emerged as having an important influence on game outcomes were governance and chance events. Each student response was then categorised according to these themes.

In the analysis that follows we focus on the responses of players from the rural area – the two commercial and seven small holder farms, as it is farm productivity that is affected most directly by climate related hazards. The analysis of responses of urban players will focus on governance and urban-rural linkages.

GAME OUTCOMES

The sequence of weather events and pests for each game year of the February 2009 game run is given in Table 1. The probability of having either a drought or flood was high and there were no good years. Pests were also a problem, exacerbated on those farms that chose to plant high yield rice. Some protection against pests is afforded by applying pesticides.

The farmers 'responses to these hazards are outlined below. These are considered with respect to the themes identified above.

Investment in farm infrastructure

There was limited investment in farm infrastructure due to a general shortage of cash income in the rural area. At the start of the game only the commercial farms had irrigation infrastructure; by the end of the game two more farms had invested in irrigation. Inability to purchase water limited the extent of irrigation in some years, despite having pumps. One farm bought granary (for grain storage), another water tank and another bicycle (for access to the urban area).

Table 1. Rains and pests.

Year	Season R=good rain D = drought F = flood			Final crop state before pests & without irrigation	Pests (no. of farms affected)
	1	2	3		
1	D	D	D	Low	0
2	F	F	R	Low	5
3	R	R	D	Medium	4
4	R	D	F	Low	6
5	F	D	R	Low	2

Cash income

Cash in the game is required to purchase short-term needs – rice for consumption, water for domestic use and irrigation – and to invest in farm inputs that can reduce longer-term vulnerability. The main sources of cash income were sales of rice, cattle and water. Income from rice sales was generally low due to the poor weather conditions, but cattle were more reliable because the game rules made them less vulnerable to weather. No one reported receiving cash for labour. Low incomes in the rural areas were seen to be an impediment to farm investments.

Bank loans

Two farms reported taking out bank loans to help solve short-term problems, one to buy a water tank and one to purchase seed. Commercial farmers were heavily indebted from the start of the game; this left little spare cash for further investment in their farms and made planning ahead difficult.

Social handouts

Only one farm reported receiving a handout from government.

Employment

All smallholder farms had excess labour and commercial farms started with a labour shortage. Employment could also be found in the urban area. Five out of the six farms reported labour issues. A shortage of employment opportunities was caused by the poor urban economy, refugees adding to labour pool. Issues included low wages and inability of commercial farmers to pay wages.

Diversification

A number of farmers mentioned the importance of diversification as a means of reducing vulnerability. Four farms mentioned the importance of cattle as these were used to plough fields, provided cash income and fertiliser, and were required for funerals. Three farms specifically mentioned diversity as being important in reducing vulnerability

Social networks

All but one farm mentioned social networks as being important. Six farms mentioned exchange of favours or barter and three the importance of friendly relationships. Two farms received outside investment and the formation of partnerships. Most social networking was done within the rural area whereas the lack of interaction with the urban area or a lack of knowledge of what was happening in urban areas was noted by three farms. Knowledge of the markets was important to optimise profits. One commercial

farmer noted the negative impacts of a poor urban economy as this limited the availability of industrial farm inputs.

Rural-urban linkages

Rural-urban linkages are an important part of the game as urban families rely on farm produce for food and the agro-industrialist supplies farmers with agro-chemical inputs and processes farm outputs (sugar cane). Industry can manufacture farm infrastructure such as water pumps, granaries, water tanks and bicycles. A thriving industry also provides employment. The government is also located in the urban area. Its policies (or lack of) influence the direction that a game takes.

The poor crops arising from frequent drought and floods resulted in food shortages and high prices in the urban sector. Low farm profits meant that farmers were often unable to repay bank loans and lacked necessary cash to buy farm inputs. This impacted negatively on industry; the agro-chemical industry went bankrupt early in the game. As a result, there was little demand for labour in the urban areas, reducing employment opportunities for rural families as well as those in urban areas. Thus as the population grew, so did unemployment.

The most successful people in the urban areas were the banker, buyer and trader. Other players saw this trio as being in a position of power from which they could exploit others. The banker and buyer worked closely together and with the farmers. The buyer brought granaries to store grain so that he could benefit from market fluctuations, but was disadvantaged when the export price dropped markedly. The trader had the advantage of mobility between sectors and played the market to his advantage, but he could never afford the bribe needed to get a trading license for export. The seller was not successful. This was possibly due to a lack of market for farm inputs, but also due to poor communication with the farmers, a black market that was operating, and competition from the buyer, who usurped his role.

Governance

The government was weak and did little to mitigate adverse effects of weather hazards. The President noted that he was a puppet of the other two ministers and there was a lack of consultation and information within the government. The lack of transparency led to corruption within the government and a seeming lack of concern for the country at large. When HIV/AIDS spread through the game the Minister of Home Affairs decided it was cheaper to allow people to die, despite the cost of funerals, than to provide anti-retrovirals or feed unproductive people. The Minister of Water Affairs admitted that he had no interaction with farmers; he gave the government free water and thereafter was not overly concerned by what happened as long as he survived. The domestic water was sold to a consortium in the rural area, who charged high prices, made a quick profit, and caused much suffering in the rural areas.

The government had no effective policy for raising income through taxation and was always in debt due to a bank loan taken out to build the dam. The reservoir water was one of the main sources of government income; this income was reduced during droughts. As a result it was difficult to import food to make up for production deficits due to lack of money. Being in constant debt, the government was open to corruption.

The President noted that the variable climate made planning difficult. The Minister of Home Affairs said that drought and floods in rural areas caused "chaos" in urban areas due to people looking for jobs. This was exacerbated by a lack of information as to what was happening in the rural area. Other players also commented on the poor communication between urban and rural areas. It was interesting that the government thought that disasters were less of a problem to the government than were ongoing shortages because external agencies take over and provide aid.

Later in the game the urban sector was taken over by an NGO manager who encouraged cooperation in place of competition and corruption. This turned the urban area around, improved industrial production and increased employment opportunities. Positive spin-offs for the rural areas were not noted, but would have undoubtedly been felt, especially if the game had continued longer.

The importance of chance

Whether or not a farm or other enterprise was successful was often the result of some chance event - not only the initial entitlements, the run of drought, rain of flood events and pests, but also bad luck or "lucky breaks". Theft of a major asset such as a cow could break a farm, whereas in the case of one farm "one lucky break got the ball rolling" when the refugee decided to invest his surplus income in the farm.

DISCUSSION AND CONCLUSIONS

The above responses indicate how farmers attempted to reduce their vulnerability in the face of variability. One player commented that "One of the main points taken away from the game is that, as a Third World farmer, it is hard to come up with a game plan as the variables are always changing". Successful farmers were those who managed to accumulate cash that could be used to invest in strategies to further increase their income or protect themselves against shortages. Without cash, farmers were highly vulnerable to any hazards. Neighbourly goodwill was their only remaining resource, making social networks important.

Games are simplifications of the real world, but to the players the problems faced in trying to survive and prosper in difficult circumstances are genuine[15]. Through participatory learning, the game described here provided players with insight into what it is like to live with climatic hazards. It also highlighted a number of factors that affected either an individual's or society's vulnerability to these hazards. Individual farmers adopted a range of coping mechanisms as described above and illustrated in Figure 4. These are similar to those identified for example by Eriksen et al.[8] and Vincent[7], indicating that the imaginary world of the game did reflect a microcosm of the real world.

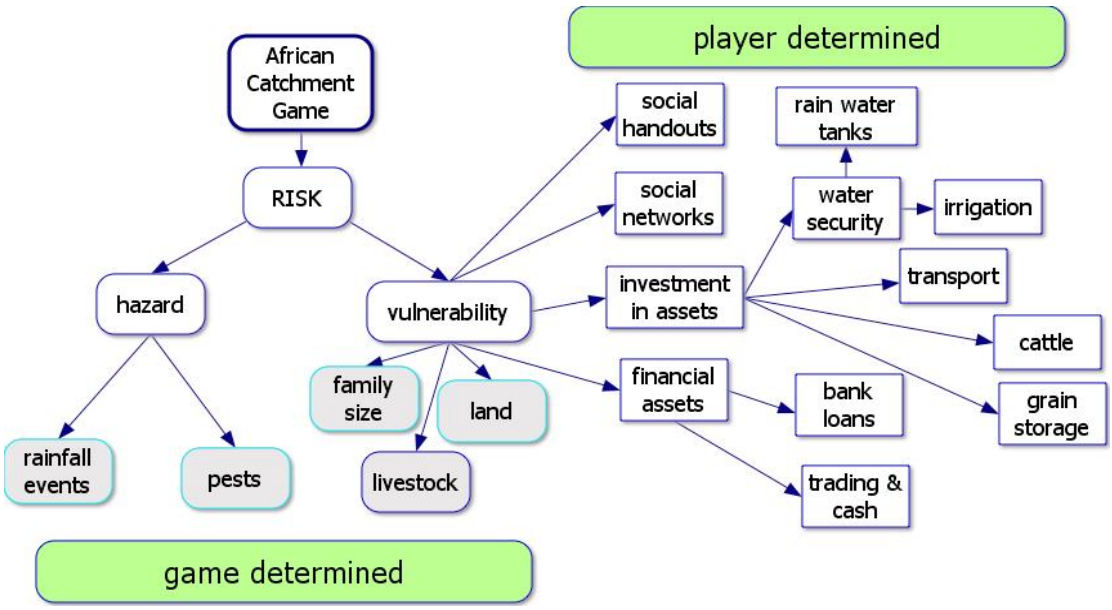

Figure 9. Hazards and vulnerability as experienced in the African Catchment Game. Grey boxes indicate inputs determined by game parameters, rectangular boxes indicate coping mechanisms and adaptations that are determined by the players.

Chance events – good and bad – were seen to be important in changing the fate of an individual family. Participants were also able to see the importance of the higher-level structures that allow or impede the flow of goods and information. In this game a lack of government policy, poor information flows and corruption negated against either urban or rural development. In the rural areas strong social networks provided a safety net, but in the urban areas players were more self-seeking. It was only after the NGO stepped in that cooperation led to a more stable structure.

How can this game, and the participatory learning that it promotes, be used as a tool for looking at climate change scenarios? We have already changed the game significantly from that first developed by

Graham Chapman[15, 16] for the Indian context. In order to better model twenty-first century South Africa we have changed the distribution of farm sizes to create two farming classes – commercial and smallholder – and have introduced cattle. HIV/AIDS has also been added.

Other changes have also been made to target certain aspects of climate change within particular contexts. We have changed the hazard component by altering the probability of rain and drought and added floods as an additional hazard. In recent games we have added a reservoir to supply water for irrigation, industry and households, which affects the vulnerability of players and the role of water managers and other policy makers in the game.

The outcome of a game can be analysed at two levels. The first is at the level of the player who, through a debriefing immediately after the game and a post-game exercise is able to reflect subjectively on his or her experience within the game. This can be contextualised within the player's personal experience of the real world or relevant academic literature. This level of analysis is aimed at increasing an individual's level of awareness and may lead to more empathetic decision-making. The second level is to objectively analyse the game dynamics on a more holistic or 'global' level through examining game managers' records of inputs and transactions and compiling player's individual reflections. The material presented above, like that discussed by Fraenkel and Fox[12], takes a holistic approach and may present conclusions of relevance to policy makers.

To date we have played the African Catchment Game only with University students, within the context of a theoretical curriculum on Africa. Other role playing games have been used with some success as a negotiating tool with local water users[17, 18], but we have not as yet used the African Catchment Game with local policy makers. This is an important next step if indeed we as educators believe in the power of simulation games in facilitating effective policy making for an uncertain future.

The African Catchment Game captures the dynamism and complexity of vulnerability to climate change as identified by Eriksen et al.[8]. It also captures the time and place-based singularity of vulnerability, as all games are different. This means that it is difficult to draw generalities from one game. Games cannot be used as positivist experiments, as the outcomes are so game specific and depend as much on the responses of the actors as on externally imposed inputs. Their value lies in their experiential and constructivist nature that can contribute to meeting the challenge thrown down by Eriksen et al.[8] of describing and explaining the dynamism that must be incorporated into the theoretical framework of vulnerability.

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SWAMPFIRE: A HIV/AIDS SIMULATION FOR ENABLING LEARNING ABOUT RISK AND VULNERABILITY

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ABSTRACT – South Africa has the highest number of HIV-infected people (including children), AIDS-related deaths and orphans in the world[1]. South Africa's HIV/AIDS pandemic is having a substantial impact on the country's overall social and economic development. Issues of health, well-being, risk and vulnerability need to be integrated into all levels of education and training. Pedagogically, the challenge is to identify and implement effective teaching strategies which promote understanding of the disease and active and responsible citizenship. This is particularly important given the diversity and complexity of the social landscape in South Africa.

This paper critically analyses how Swampfire, a role-playing simulation that models the transmission of HIV/AIDS in a community, was piloted with pre-service teachers in the Education Department at Rhodes University, South Africa. The design and implementation of a learner-centred pedagogical approach (of which Swampfire is one pedagogical activity) is explained. The findings were that the game enabled the players to visualize and understand the spread of HIV/AIDS and the risks associated with the behaviours simulated in the game. In spite of creating a safe space for learning about vulnerability, Swampfire did not illuminate the social processes associated with class, gender and race that shape the way HIV/AIDS spreads in a developing context. As part of an ongoing process of game development, an activity was added to the game to promote learning about vulnerability. This was workshopped with the 2009 pre-service teachers at Rhodes University and was recently trialled at the 2009 International Summer School, Tampere University, Finland.

INTRODUCTION AND BACKGROUND

This paper explores the use of Swampfire, a role-playing simulation, as a pedagogical tool for promoting learning about the transmission of HIV/AIDS with pre-service teachers in the Education Department at Rhodes University, Grahamstown. We identify the fundamental challenges by outlining the historical, social and economic context in which we teach. We discuss the role of education, most especially teacher education, in dealing with these issues. We explain how we have integrated HIV/AIDS education into a teacher education programme using a learner-centred pedagogical approach. We explain how Swampfire is used as a pedagogical tool "to gain a better understanding of the potential consequences of present and future decisions "[2].

Since the transition to democracy in 1994, South African society has been in a significant process of transformation. Guided by the South African Constitution, which emphasises the right to a free basic education, health care, a healthy environment, human rights, freedom, social justice and equality, South Africa has begun implementing a new agenda of sustainable development[3]. As is the case in many developing countries, there are a range of interlinked socio-ecological, socio-economic, socio-political and educational issues and risks that affect development and quality of life in the Eastern Cape and South Africa more broadly. Issues include: health and well-being, biodiversity loss, poverty, youth unemployment, governance and municipal services including sanitation and water[3]. In seeking to address these issues, the situation in South Africa, unlike that in other developing contexts, is exacerbated by the legacy of an unequal and divided past which still has an effect today.

In the rapidly changing social, economic, political and natural landscape of South Africa, large sectors of society are affected by high levels of risk and vulnerability[4]. In 2007, there were 47.9 million people in South Africa of which 4.5 million were officially unemployed[5]. The Eastern Cape Province, in which Rhodes University is located, is the second largest province of South Africa, with a population of 6 million people, 66% of whom reside in the rural areas. It is also the poorest province in South Africa with 40% of households without access to water; 43% of households without electricity, and 69% of households without sanitation[5]. In Grahamstown the town in which Rhodes University is located, rough estimates of the unemployment rate are between 60 –70%[3]. Malnutrition and food insecurity, problems associated with poverty, are manifest amongst the poor in Grahamstown and surrounding rural areas. The serious issues of poverty and unemployment are, however, overshadowed by issues of health, well-being, vulnerability and risk associated with the far greater challenge of HIV/AIDS.

South Africa has one of the fastest growing HIV/AIDS pandemics. According to a recent UNAIDS report[1], globally the adult HIV prevalence rate since 2000 has stabilised at roughly 0.8%. South Africa's adult HIV prevalence rate is 18.1% (the 4th highest in the world after Swaziland, Botswana and Lesotho, three of South Africa's neighbouring states). In spite of a downward trend in HIV-prevalence estimates in some countries, the number of infected people globally continues to grow. With some 5.7 million people infected, South Africa has the largest number of HIV-infected people in the world[6] .

South Africa still has to deal with the consequences of a large-scale conversion from HIV to AIDS in its largest and most economically productive sectors of the population (aged 20 –44 years). This means that HIV/AIDS will have far-reaching consequences (many of which are still unknown) well beyond the health sector[7]. HIV/AIDS has been termed a 'long-wave crisis' that has many waves within it. The first wave is the HIV infection, the second is opportunistic infections that arise because of the suppressed immune system, and the third (followed by a three to eight year lag) consists of AIDS illnesses and death. The fourth and final wave consists of the impact on households, communities and nations[8]. This is the wave with the most unpredictable effects and which South Africa will face for decades to come.

The findings of the South African annual antenatal clinic survey shows that the peak incidence of HIV/AIDS occurs in young people aged 15 –24 years. The prevalence amongst this age cohort is much higher amongst females (15.5%) than males (4.8%).

The report concludes that "South Africa has an opportunity to reverse the course of the HIV/AIDS pandemic over the next decade by focusing prevention efforts on young people in this target age-group so that sustained behaviour change can be achieved "[9].

As AIDS causes a rise in sick adults and orphaned children, the burden of care is shifted to other family or community members. The Eastern Cape has the highest rate of orphanhood (24%) in South Africa. The HIV prevalence amongst children of 2 –18 years of age is around 5.6%. In 2003, 3% (371,000) of children had no parents[5]. Furthermore, there are 390 000 teachers in RSA, of which 12.7% are estimated to be HIV positive (55% of those affected are in the younger age bracket). The highest HIV incidence is found amongst African female educators in rural areas[5].

Given the risks and challenges that we face amidst the environmental crisis in which we find ourselves at present, Futures Education especially Educating for a Sustainable Future is mandatory. In South Africa which has among the largest number of HIV/AIDS infected people in the world, issues of health, well-being, risk and vulnerability are the greatest futures challenges we face. Education is seen as providing the tools which young people can use to deal with HIV/AIDS. According to HEAIDS[10]-strategic framework, 2006 –2009, "education is at the core of one of the biggest challenges facing humanity: winning the fight against HIV/AIDS ". Issues of health, well-being, risk and vulnerability need to be integrated into all levels of education and training. Through education it may be possible to reverse the course of the pandemic. However, in South Africa, unlike many other countries where there has been a downward trend in HIV-prevalence estimates during the past 7 years, the trend is upward[1]. This raises questions about the efficacy of the education that has been provided until now and the type of education that is needed if we are to have an effect on the HIV/AIDS pandemic. HEAIDS[9] argues for education which focuses preventive efforts on young people in the 15 –24 year old group so that sustained behaviour change can be achieved.

Pedagogically, the challenge is to identify and implement effective teaching strategies which promote understanding of HIV/AIDS and active and responsible citizenship. This is particularly important given the diversity and complexity of the social landscape in South Africa. It is to be expected that there are great variations in people's understanding of, and attitudes to, HIV/AIDS.

HIV/AIDS is a complex and contested pandemic and a difficult issue to deal with. It is at the nexus of cultural values and social identity and is intertwined with issues of poverty, gender, stigma and discrimination and is bound up with one's roles and responsibilities both as an individual and a member of a family and community and citizen in a democratic state.

The Faculty of Education at Rhodes University provides professional development training to some 1000 teachers per annum, many of whom are from the rural Eastern Cape. Courses have been developed for the Faculty's teacher education programmes that respond to the issues and risks that affect the health and well-being of people and the environment. Through her experience of interacting with teachers (both pre-service and in-service) in various HIV/AIDS modules since 2005, Dr Wilmot has become aware of high levels of anxiety and confusion on the one hand and apathy on the other, about HIV/AIDS. Teachers 'responses to HIV/AIDS vary from silence and denial, indifference and apathy to an acknowledgement and willingness to participate in advocacy campaigns. Different perceptions on how one becomes infected and how the virus spreads abound and these must be taken into account when teaching HIV/AIDS. The pedagogical challenge is thus to identify and implement strategies which create a safe space (without intruding on the teachers 'personal space) in which myths, stereotyping and misperceptions about HIV/AIDS can be confronted and dealt with. Strategies must be non-threatening; they

must facilitate a questioning and interrogation of one's decisions and actions, without the fear of disclosure or potential stigmatism. They also need to challenge denialism, a value that is all too often associated with the pandemic.

The focus of this paper is Swampfire, a role-playing simulation game that was one of the pedagogical tools used to promote learning of how HIV/AIDS spreads in a community, in a module implemented in the Post-Graduate Certificate in Education (PGCE) programme for pre-service teachers in 2008. The module was put forward by the Rhodes Education Faculty [1] for evaluation in the project: "Piloting a HIV Module in teacher education faculties in the Higher Education Institutions in South Africa", an initiative of Higher Education South Africa's HIV/AIDS programme (HEAIDS[9]), that was funded by the European Union under the auspices of the European Programme for Reconstruction and Development in partnership with the national Department of Education. The aim of the project is to develop teacher educators' understanding of the pandemic and equip them with the skills and values seen as necessary to promote effective learning amongst students and teachers in their institutions. The design principles and active learning pedagogical approach are described in the next section.

MATERIAL AND METHODS

As the coordinator of the Post Graduate Certificate in Education which provides an entry into the teaching profession, Dr Wilmot was aware that HIV/AIDS education was uneven and underdeveloped within and across the various teaching subjects. In 2005 she designed and implemented a module on HIV/AIDS education which is taught in Educational Studies, one of the three major subjects of the PGCE. Feedback from the student evaluations of the module has guided its ongoing development. Table 1 is a summary of the 2008 module. It shows how the design decisions in terms of both what was taught (the content) and how it was taught (the pedagogical approach) were shaped by the intended learning outcomes of the module. By the end of the module it was hoped that pre-service teachers would:

- Acquire an understanding of the biomedical facts about HIV/AIDS
- Become critically aware of their attitudes and values, and be sensitive to and open-minded about the attitudes and values of others who may be infected and affected by HIV/AIDS
- Understand the issue of social identity and stigma and the gendered nature of the pandemic
- Engage in experiential learning through a visit to an HIV/AIDS centre and participate actively in two simulation games
- Understand the physical, emotional, economic and social impact of the HIV/AIDS pandemic on teachers, learners and their communities
- Understand the changing role of an educator in an age of HIV/AIDS
- Evaluate subject specific resources (school text books) for teaching and learning about the pandemic
- Develop their ideas on how to deal with and respond to the HIV/AIDS pandemic both personally and professionally
- Be aware of their rights and responsibilities as members of civil society and a professional community

We identified the content of the module through a set of questions which needed to be addressed in order to demonstrate the learning outcomes. These are shown in Table 1.

Table 1. HIV/AIDS Education: 2008 Module Outline.

	FOCUS AND KEY QUESTIONS	PEDAGOGICAL ACTIVITY
Day 1	INTRODUCTION & ORIENTATION TO HIV/AIDS EDUCATION What do we know about HIV/AIDS? What do we need to know? What are out rights and responsibilities as teachers and members of civil society? Why should we know our HIV status?	Poetry reading Diagnostic Self-test Discussion Visit to an HIV/AIDS Centre
Day 2	BIOMEDICAL FACTS ABOUT HIV/AID How is HIV transmitted? How do you know if you are HIV-positive? What are the stages of the disease? How can HIV/AIDS be treated? How can it be prevented? What are the limitations of the biomedical approach to HIV/AIDS education? What are the gender and cultural issues associated with HIV/AIDS? How do we counteract and deal with stigma? How should we deal with HIV/AIDS personally and professionally? What is national policy on HIV/AIDS?	Lecture by a medical doctor Discussion Critical engagement with various stimulus materials and texts Discussion Debate Reflective writing activity
Day 3	APPROACHES TO TEACHING AND LEARNING ABOUT HIV/AIDS What pedagogical approaches and strategies are appropriate for HIV/AIDS education within the context of discipline-based teaching? How does HIV/AIDS education link to Sex Education and issues of sexuality? What sort of questions should we be asking in our classrooms?	Video viewing of enactments of HIV/AIDS lessons in various South African classrooms Discussion of strategies observed
Day 4	INFUSING HIV/AIDS INTO THE CURRICULUM What opportunities are available for infusing HIV/AID education into subject teaching?	Curriculum analysis and group discussions
Day 5	LEARNING SUPPORT MATERIALS EVALUATION What resources and learning support materials (LSM) are available and appropriate for HIV/AIDS education in the specific school subjects? How do we generate criteria for evaluating LSMs? How can we develop appropriate resources for teaching and learning about HIV/AIDS in our specific subject area?	Workshop to develop criteria for Learning Support Materials evaluation LSMs evaluation: Group activity and discussion
Day 6	ROLE-PLAYING SIMULATIONS TO TEACH AND LEARN ABOUT HIV/AIDS	'Find the carrier' and 'Swampfire' role playing simulations

The module consisted of 6 sessions of 2 hours each. Design decisions were guided by a model of teacher professional development[11] based on the following principles:

Constructivist epistemology: Students were actively engaged in the construction of knowledge. They were engaged in a variety of activities and experiences in which their ideas and practices were acknowledged, built on and challenged, modified and transformed. Learning processes were recursive as

opposed to linear and included: initiating the learning situation through an external stimulus (reading poetry written by AIDS orphans); orienting or tuning into the topic (visiting an HIV/AIDS Centre and holding discussions with the Director of the centre); eliciting prior knowledge (writing a self-test); building on prior knowledge (presentation by and discussion with a medical doctor); providing opportunities for engaging students in applying their learning to classroom practice (curriculum analysis and learning support material evaluation), and reflecting on learning (journal writing activity).

Constructivist pedagogy: The pedagogical approach was a process-based, action-centred and learner-centred approach with key activities/actions being purposively designed with high levels of interaction, discussion and debate. This pedagogical approach embraces the notion of active and visible learners constructing their own knowledge, and an active but invisible teacher, whose role it is to facilitate rather than direct learning[11]. It emphasises a non-authoritarian classroom environment, and the importance of activity and skills as a basis for knowing and knowledge. Learner-centeredness is also seen as an enabling mechanism for "bringing to the surface the local, hidden, silenced knowledge and realities of learners".[11] The consequence of this would be a surfacing of cultural knowledge that has been suppressed and which would challenge Eurocentric hegemony[12]. The attraction of this pedagogy, which is informed by a progressive educational discourse of human rights and social justice, was its emancipationist and democratic ideology[13]. The South African curriculum's adoption of learner-centeredness needs to be seen as part of a much larger national political vision and social project that has as its goals social reconstruction, equity and social justice. It is evident in the prevailing discourse of human rights and social and environmental justice, and a sustained emphasis on active and responsible citizenship through the development of critical and independent thinking, problem solving and decision-making. The decision to model this pedagogical approach in the HIV/AIDS module was purposively done so that the pre-service teachers could gain first- hand experience of an approach that they are required to implement in their own teaching, and one which they may not have been exposed to in their own schooling.

Individual and social learning processes: Activities were designed to promote both individual and social learning processes. A balance between group work and individual learning was maintained. The role of the lecturer was that of learning mediator, scaffolder and guide who used and modelled different pedagogical strategies. These included: experiential learning activities, for example, role-playing simulations, interactive workshops, and 'traditional' expository teaching.

Situated learning: The module took into account that HIV/AIDS education is contextual and complex. Pedagogical activities were thus sensitive to class, gender and race issues that underpin HIV/AIDS. Activities were intended to sensitise the students to historical inequalities and social injustices, and would strive to achieve the broader goals of social equity.

Reflectivity and reflexivity: All the activities were reviewed in an ongoing manner. Monitoring the module reflexively was regarded as necessary as it would enable change and improvement. Feedback obtained from the students was used to inform the future design of the module.

An innovation in the 2008 HIV/AIDS module of the Post-Graduate Certificate in Education (PGCE) programme was Swampfire, a role-playing simulation that models the transmission of HIV/AIDS through a community and illustrates how peer pressure can influence social behaviour and it also creates an awareness of the very real possibility of contracting HIV/AIDS. The original Swampfire game, developed in Kenya, has been implemented by Prof Roddy Fox and more recently by Ms Linda Fraenkel, colleagues in the Rhodes University Geography Department.

The value of simulations, a pedagogical strategy which models and replicates the real world and through which one can raise empathy for other people's situations, is well documented[14, 15, 16]. For Dr Wilmot, the attraction of Swampfire (and hence the decision to include it in the HIV/AIDS module for pre-service teachers) lay in its low level of complexity of equipment and rules and the play time it required (an hour).

The 2008 PGCE students were briefed on the rules of the Swampfire simulation. The game was then played following the rules and procedures shown in Table 2.

Table 2. Swampfire.

SWAMPFIRE
Rules Swampfire is a game developed in Kenya. You can play it with up to 30 people and it can serve as an icebreaker and as a means to show how networks of people spread AIDS. It also illustrates how peer pressure can influence behaviour.
First Phase Every person receives a card. 20 cards tell you to follow the instructions. 10 cards tell you that you do not have to follow the instructions. A percentage of the cards, roughly 20%, are identified by the game manager to be infected with HIV/AIDS. 4 of the 30 people are given a washing-up glove (indicating a condom). 8 cards require participants to shake hands and/or greet 1 person and collect their autographs on their card. 8 cards require participants to shake hands and/or greet 2 people and collect their autographs on their card. 14 cards require participants to shake hands and/or greet 3 people and collect their autographs on their card.
Second Phase After everyone has collected their respective number of autographs, you call the people initially infected with HIV/AIDS to come to the front and inform them the participants that they have HIV/AIDS. Then you call forward the people who signed the cards of the HIV/AIDS carriers, but you send back those who wore the glove. Next you repeat this with those people who signed the cards of the second group. Then try and establish who did not follow the instructions.
Discussion If you use a programme such as *Inspiration* or *OmniGiraffe* you can track the diffusion of HIV/AIDS on a Mind Map. Discuss the issues surrounding using condoms, peer pressure (did you shake hands when you did not have to?) And what would happen if you alter the prevalence of HIV/AIDS. Swampfire can be played after playing Find the Carrier to model the impact of changing the percentages of AIDS and condom usage. Source: Adapted from Fox[17]

After the game was played, a focus group discussion (the debriefing session) was held. The PCGE students were asked to reflect on what had been modelled through the game and what they had learned from it.

RESULTS

Feedback from the 2008 PGCE student indicated that Swampfire is well suited to developing participants' understanding of:

- how HIV/AIDS spreads through a community;
- the influence of peer pressure on how one makes choices and decisions;
- how the decisions one makes impacts on one's own and others' health, and
- the power of experiential learning in promoting understanding and empathy.

Swampfire created a space in which the students could examine the implications of the behavioural choices they made. It required the PGCE students to act out a set of instructions. As Taylor[12] contends, in acting out the instructions they were given, the teachers had to accept a new identity, step inside someone else's shoes, and act and respond as appropriately as they were able. The PGCE students had to move from 'outsiders' to 'insiders,' making choices for which there were consequences. In having to confront the consequences of their actions (some of which were neither intended nor anticipated in the instructions), Swampfire brought home to them how easily HIV/AIDS spreads. Being a spatial simulation which shows the networks of HIV diffusion within the game community, Swampfire enabled the PGCE students to visualize how the virus spreads through a real community in ways that are invidious and invisible. The spatial orientation of the simulation - evident in the construction of a mind map to illustrate the movement of the virus through a community - makes players face the reality of the virus and understand the implications of their behaviours and actions. It illustrates and brings home the idea that people who seem perfectly healthy pass on the virus without knowing it through semen, vaginal fluids, blood, and breast milk. This helps to make the pandemic which is largely invisible, visible. Swampfire enabled conversations about contentious issues, for example, how stigma and discrimination contribute to the spread of the pandemic, could take place. The PGCE students realised why it is important to know ones HIV status. Swampfire also opened up a space in which the PGCE students could explore gender issues and the spread of HIV, and how socio-economic and cultural factors make women and girls more vulnerable to HIV. For those who had not previously participated in a simulation, Swampfire provided an experiential learning opportunity which the teachers could replicate in their classrooms. In requiring as it does a low level of equipment and a limited amount of time to play as well as a set of straightforward rules, Swampfire is well suited to the majority of schools in South Africa.

With insights sharpened through the 2008 pilot game run, Dr Wilmot realised that in spite of the learning that was enabled by Swampfire, the game per se did not deal with underlying the socio-political and economic factors that shape how HIV/AIDS spreads through a community in a developing world. The game was strengthened by adding a post-game activity which involved reading and interpreting a case study set in a rural context where a migrant labour system is still a reality for many families. The case study would provide a structure and focus for engaging more meaningfully in issue of risk and vulnerability that started to emerge as a result of playing the game. The case study was seen as providing a further space for engaging the PGCE students in discussions on risk and vulnerability and understanding how these are shaped by gender, race and class. In this way the personal learning that had taken place through playing the game would be extended to learning at the level of society. It was hoped that this would stimulate a critical awareness of the dynamic interface between agency and structure in a developing context.

In May 2009 the extended version of the game was workshopped with the 2009 PGCE students at Rhodes University.

Data on the learning enabled by the game was obtained through a pre- and post-game questionnaire and informal discussions with the PGCE students. The analysis revealed the following:

"I learnt about the issue of power dynamics as well as access to information as factors which influence choice. Access to information and resources play a vital part in people's lifestyles."

"The game has opened my eyes to how quickly the disease can spread. Now I understand how dangerous it's not to know your status because you could infect so many people."

"The game has allowed me to visually see the impact HIV/AIDS can have on a society or population, especially in a developing world context. The game also personalized the problem of HIV/AIDS and highlights that it is everyone's problem, not just those who have contracted the virus."

"I knew that HIV/AIDS can spread quickly among people and have learned that many do not have a choice when it comes to protecting themselves especially married woman in rural areas."

DISCUSSION AND CONCLUSIONS

This paper identified the fundamental challenges to a sustainable and healthy future in South Africa. We discussed the role of education and especially teacher education in dealing with these issues. We explained how we have integrated HIV/AIDS education into a teacher education programme using a variety of innovative and learner-centred pedagogical strategies. We discussed how Swampfire, a relatively simple and straightforward simulation, was used as a pedagogical tool to promote teachers' learning about the spread of HIV/AIDS and how the decisions people make can speed up or reduce the spread of HIV/AIDS. Swampfire is a pedagogical tool "to gain a better understanding of the potential consequences of present and future decisions"[2]. In a country such as South Africa, which has the highest rate of HIV/AIDS in the world and where prevalence rates show an upward trend, Swampfire offers exciting possibilities for education for a sustainable future.

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GLOBALISATION OF CONSUMPTION

THE FUTURE OF THE GLOBALISATION OF CONSUMPTION: GLOCALISATION, GROBALISATION, EASTERNISATION?

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ABSTRACT – A new phase in the academic discussion on globalisation started in the beginning of the 1990s. Earlier mostly historians like Fernand Braudel and some social scientists like Immanuel Wallerstein had described the process of acceleration of capital movements, movements of people and transfer of consumer goods between countries and continents. However, they did not exactly name the process as globalisation. Since the early 1990s, the discussion expanded and scholars started to offer definitions to the phenomenon. The British sociologist Roland Robertson introduced the concept of glocalisation. By this he meant the integration of the global and the local. Later, only few years ago, the American sociologist George Ritzer characterised the present stage of globalisation as grobalisation. By that he means a process driven by three forces: capitalism, McDonadisation, and Americanisation. Ritzer emphasised the grobalisation as an antithesis of glocalisation. However, there is a recent point of view presented by the British sociologist Colin Campbell. He writes about the Easternisation of the West. In this paper, the perspectives presented by Robertson, Ritzer and Campbell are examined and some conclusions concerning the future development of consumer societies are suggested.

INTRODUCTION

There has been a widening discussion on globalisation and its aspects starting in the late-1960s and the early 1970s and strengthening since the beginning of the 1990s. The scholars who have participated the debate have emphasized a variety of factors behind and involved in the process of globalisation. Especially, the theme has been discussed by some historians and social scientists before the present upsurge of the globalisation debate. Two important early scholars and theorist of the global order are the French historian Fernand Braudel and the American historical sociologist Immanuel Wallerstein.

Fernand Braudel examined the history of the interaction between the West and other areas of the world after the Age of Discovery 'in his work *Civilization and Capitalism: 15th-18th Centuries*[1, 2, 3]. Braudel emphasised the growing interdependence between Europe and the rest of the world and the influences of the European capitalist economy as central factors behind the hegemony of successive European great powers Spain, France and England. In the first part of his work Braudel[1] concentrated on the slowly changing conditions of everyday life of ordinary people. The second part[3] examines the development of market economy, social hierarchies, civilizations and states. The third volume[2] is concerned to the rise and fall of specific world-economies.

Immanuel Wallerstein criticised the dominance of modernisation theory in explaining the historical development of nations. He presented his world-system theory starting in the early 1970s[4, 5, 6]. Instead of comparing the societies, he examined them as parts of a systematic pattern of relations. Wallerstein saw world as divided to centres and peripheries, where the dependence of the peripheries on the centres was growing.

Braudel and Wallerstein were among the pioneers of globalisation studies. Today glo-balisation has been widely discussed by practitioners and academic people coming from very different backgrounds. Consumption and consumers are often at the centre of debates and choice has been the 'consumerist mantra 'also in the discussions concerning globalisation[7]. Yes indeed, consumers, consumption and consumer culture are nowadays sure at the centre of debates concerning freedom identity and social justice in the world[8]. However, the contemporary consumer research literature has lately presented a much more diverse picture of consumption than which was dominating a couple of decades ago. In this paper

I'll present the basic front lines of the globalisation debate as a background of the examination of three theoretical standpoints towards globalisation. Firstly, the idea of glocalisation popularised by the British sociologist Roland Robertson is scrutinised. Secondly, the basic features of grobalisation are presented. This concept was introduced by the American sociologist George Ritzer to bring together his views of globalisation as McDonaldisation and Americanisation. Thirly, I examine the British sociologist Colin Campbell powerful idea of Easternisation of the West. I consider shortly examples from the Finland to test the empirical content of the concepts introduced by Robertson, Ritzer and Campbell in the context of a small country that went through a very rapid and strong structural change during the post-war decades. Finally, some conclusions are made on the consequences and possible future of global transition taking place in the contemporary world.

BACKGROUND

Braudel and Wallerstein are examples of original investigators of world history who challenged the dominating modernisation paradigm during the 1970s and the 1980s. After the collapse of the Iron Curtain in 1989 a new phase in the discussion upon globalisation started. Many interesting new insights were offered. In the discussion the prevailing interpretation especially in the public media stressed simply the free flow of goods and services, capital, labour and information. The importance of information has grown all the time, and the famous sociologist Manuel Castells presented a convincing description and analysis on 'informational capitalism' in his three volume work The Information Age [9, 10, 11]. However, a variety of different insights was highlighted in the academic debate. In the field of international politics David Held and Anthony McGrew[12] have divided the advocates of globalisation in neoliberals, liberal internationalists and institutional reformers on the one hand and in shapers of globalisation, protectionists and radicals on the other hand.

The advocates of globalisation see many new possibilities of favourable development in the structural changes and reorganisation of production process, world markets, multinational companies and popular culture. Consumerism and freedom of choice have been presented as candidates for an economic ideology for global development especially by many mainstream economists and in public debate[13, 14]. Manuel Castells[9] emphasises the role of and possibilities created by the information technology and social networks in the profound restructuring that is taking place around the turn of the Millenium. Castells calls a 'network society' this new type of society where information technology plays an essential role. Although Castells cannot be considered as an unreserved advocate of globalisation, in his view the globalisation process allows economic and political activity to defy traditional national borders and generates new global regions and cities.

Since the 1980s liberalisation of markets and privatisation became important slogans for neoliberal economic policy started by Margaret Thatcher's administration in United Kingdom and by Ronald Reagans economic advisers in the USA and followed in many countries all over the world[15, 16]. Neoliberal politics aimed at speeding up economic growth and believing its fruits to trickle-down in developing countries when the average wealth was increasing. The basic idea was that governments should withdraw out of the way of business by deregulation and by cutting public spending[17, 18].

Critical writers emphasise the disadvantages and threats of globalisation. For example, the sociologist of consumption George Ritzer has critically pointed out the strength of cultural phenomena like McDonaldisation[19] and Americanisation[20, 21]. Imperialism, polarisation, commodification, surveillance, domination and exploitation have been emphasised especially by many radical, critical and post-Marxist debaters.[18] Some critical political economists see globalisation forcing the existing welfare systems to be homogenised and public expenditures to be cut down in the name of international competitiveness[22, 23]. This leads finally to 'the idea of the welfare state as collective risk management on behalf of its citizens' [22].

GLOBALISATION AS GLOCALISATION

The British sociologist Roland Robertson popularised the term glocalisation during the 1990s. The Japanese word *dochakuka* can be translated as global localisation and originates from business practices in

Japan[24, 25]. The issue of the relationship between the 'local' and the 'global' became more and more relevant in the discussions concerning globalisation. Several participants of these discussions emphasised a tension between the global and the local. However, Robertson's concept 'glocal' integrates the global with the local[26, 27, 20, 25].

Roland Robertson refers to the anthropologist Clifford Geertz and points out that it is necessary to take seriously into account individuals and individual experiences in the course of globalisation. He is listing four points of reference that have to be taken into consideration when discussing globalisation: societies, individuals, the world system of societies and humankind[24]. Thus, he does not contrast the local and the global but stresses the importance of seeing the local as a part of the global[25]. George Ritzer reduces the definition of glocalization successfully 'as the interpenetration of the global and the local resulting in unique outcomes in different geographic areas' and sees homogenisation and heterogenisation coexisting in the concept of glocalisation[28, 29]. This is a rather compact definition.

Robertson[25] emphasises glocalisation as a strategy of companies in seeking global markets. Thus, in the sphere of economy it is related to micromarketing or the idea of the customising, tailoring and advertising goods and services on a global basis to local markets[25]. Global brands customise their products and marketing strategies to fit in local environment. They are using local cultural symbols and signs, narratives and people to reach the local consuming public.

The essential elements of glocalisation are: Firstly, the fact that pluralism is increasing in the world and the glocalisation approach is sensitive to cultural differences. Secondly, glocalisation approach emphasises the importance of individuals and groups as creative agents. Thirdly, social processes seem to be random and taking place in relation to something else. And, finally, commodities and the media and important forces in cultural change are not seen as totally coercive.[29] These elements are important. It is not clear that globalisation means necessarily cultural homogenisation. It is likely that although the big multinational companies and the media play very important roles in the process of globalisation, they do not alone determine the direction of this process and the fate of mankind.

Early examples of glocalisation in the Finnish context are cola soft drinks and Jeans. The Coca-Cola Company's brand was introduced in Finland in 1952 during the Helsinki Olympic games. Some years later in 1956 the Coca-Cola Company made an agreement with a local company Hartwall concerning the bottling and distribution of the drink. Around the late-1950s new local cola soft drinks like Afri-Cola, Ami-Cola, King-Cola and Siff-Cola[30]. The blue jeans is another Finnish example of glocalisation. There wasn't any import of foreign brands like Levi's and Wranglers in the mid-1950s. Thus, young Finns bought American jeans from sailors in the harbors[30, 31]. The domestic production of jeans started in Finland, when Mattisen Teollisuus Oy and Vaaksa Oy started to prepare jeans[31]. The James jeans by Mattisen Teollisuus Oy became the leading domestic brand during the late-1950s.

GLOBALISATION AS GROBALISATION

The American sociologist George Ritzer[29] presents the concept of grobalisation to focus on the imperialistic ambitions of nations, big corporations and organisations. According to Ritzer grobalisation involves subprocesses, of which capitalism, Americanisation and McDonaldisation are the very core forces.[29] Ritzer means by Americanisation 'the propagation of American ideas, customs, social patterns, industry, and capital around the world'[29]. Americanisation has cultural, institutional, political and economic dimensions. Examples of it are the diffusion of American industrial model of production, marketing and finally consumption[29]. American mass media and film industry have been very effective vehicles of Americanisation. Finally, the 'new means of consumption' that Ritzer has described in another book[20] like shopping malls, credit cards, superstores, discounters and theme parks are other examples of Americanisation.

McDonaldisation is Ritzer's first idea concerning contemporary consumer society. Applying the German classic sociologist Max Weber's work on formal rationality Ritzer presents the business principles behind the fast-food restaurant chain McDonald's: these are efficiency, calculability, predictability and control[19]. There efficiency means using the optimum means to a chosen end. Calculability, for one, means

the emphasis of quantity instead of quality. Predictability means the similarity of products regardless of time and space. And control means the fact that organisations have gained the control over people little by little when technology has been brought into play.

After the Second World War the United States offered for many Europeans an important model out of poverty and misery although it was a menace from the point of view of hegemony in world politics as well. However, maybe the most significant was the emerging American consumer society as the real prototype of a society of future for nations in the old continent.[32] The image of Americans was very much rich, youthful, dynamic, practical and modern, and many French people and Europeans in general saw themselves being exactly the opposite during the early 1950s[32]. Soon, the consumer goods and the images of prosperity in the USA seduced consumers in many countries all over the globe, when American methods of production, management and marketing spread to other continents.

In Finland the Americanisation was a strong tendency related to the emerging consumer society after the Second World War. During the era of the cold war American advertising, movies, commercial popular culture, television and the whole American consumer society exemplified balancing force as an alternative model to the Soviet socialist society model. The abundance of consumer goods seduced many Finns living in the circumstances of scarcity that existed after the Second World War. Finns had the possibility to see television advertising among the first nations in Europe when the broadcasting begun in the mid-1950s[33]. Thus, advertising, American movies and commercial popular culture as a whole were important vehicles of Americanisation in Finland[34]. Fast food restaurants came to Finland during the mid-1970s when two British chains and the American firm Carrol's opened Hamburger restaurants in Helsinki. Finland's first McDonalds opened in Tampere in 1984.[35]

The strength of the American industrial system and consumption model, the marketing and advertising skills of the Americans combined with cultural production like movies and popular music, American entertaining sports and especially team games, new consumer goods like soft drinks, jeans, household appliances and big cars, and, finally, the academic training offered by the best American universities were all important vehicles of Americanisation besides the new means of consumption mentioned above[29]. However, phenomena like the above discussed glocalisation and easternisation examined in the next chapter violate the hegemony of the rather totalising concepts of grobalisation, Americanisation and McDonaldisation.

THE EASTERNISATION OF THE WEST

The third characterisation of globalisation process has been called Easternisation. In his influential book about neo-tribes the French sociologist Michel Maffesoli[36] mentions shortly the accelerating cultural influences of the East in the Western societies. He refers to lifestyles, habits of dressing, alternative medicines and various group therapies, e.g.

The British sociologist Colin Campbell in his recent study in historical cultural sociology[37] takes the idea of Easternisation of the West seriously and examines thoroughly the variety of different forms of cultural change that have taken place in the West since the late 19th century. Campbell ś main thesis is that an Eastern type of worldview is increasingly dominating the modern Western civilisation and overshadowing the traditional Western values and beliefs.[37] Campbell offers in his book convincing examples of the growing influence of Eastern ideas, cultural patterns and practices in the Western societies from relation between humankind and nature to new spiritual values and different specific lifestyles.

Colin Campbell shows that Eastern metaphysical monism has gradually come to dominate the Western dualistic materialism as a basic worldview[37]. For example, the popularity of Eastern forms of beliefs and practices like reincarnation, yoga and feng shui increased significantly in Europe and North America since the 1960s. Also, movements like vegetarianism, environmental, holistic health, and animal rights movement as well as human potential and astrology movement which aimed at ŕehabilitating the natural ’came to prominence gradually in the West[37]. Besides, neo-pagan and the New Age movements gained ground in the West[37]. The growing popularity of the Eastern food cultures is also one example of Eartern cultural influences.

The stream of Eastern influences grew stronger especially during the 1960s along with the rising tide of the counterculture movement of the 1960s. The counterculture movement manifested itself in many ways. The Beat movement or Beatniks were a group of intellectuals, who admired Afro-American jazz musicians like Charlie Parker, Miles Davis and Thelonious Monk and led a Bohemian lifestyle. The poet Allen Ginsberg and the novelist Jack Kerouac as leader figures the Beatniks questioned the traditional Bourgeois or middle-class consumerist lifestyle that was developing in the post-war USA during the 1950s. They were also interested in Asian religions like Buddhism.[37] This interest along the disdain of materialistic and consumption-centric way of life was inherited by the Hippie movement in the late 1960s. Besides the Beat movement, there were also the youth subcultures of moral protesters and juvenile delinquents[37]. All these three youth movements preceded the counterculture of the 1960s[37].

During the 1960s also the Western youth adopted the rock music as a weapon of protest against middle-class values and the emerging consumer society. Bob Dylan and the Beatles were important idols for the young people ś rebellion against previous generations and their way of life. This rebellion developed as a mass movement which had many dimensions. On one hand youth rebelled against their fathers and mothers by deserting their values and lifestyles by listening to rock music, letting their hair grow and imitating in their dressing new youth fashion and other streams of developing consumer culture promoted by advertisers and promoters of commercial youth fashion. When the growth of the American commercial youth culture was based on suburban middle-class youth, the British market of commercial youth culture was mainly based on the demand coming from the labour class youngsters. On the other hand many American youngsters joined the Hippie movement and deserted totally the consumption-oriented middle-class way of life.[38]

The 1960s counterculture culminated in the legendary Woodstock pop festival that was characterised as ‘a phenomenon, a happening, high adverture, and a near disaster ’in Life Magazine 1969.[38] The Hippies were really numerous, and they draw a lot of influences from Eastern values, religions and ways of life. Further, the Eastern worldview was spreading throughout Western societies during the 1970s and 1980s almost unopposed. The most important reason for the success of Easternisation was the fact, that in the fields of religion, political ideology, and science the Eastern worldviews were not heavily opposed[37].

Thus, the conclusion Colin Campbell makes is: metaphysical monism has really replaced dualistic materialism as a worldview within the Western world[37]. Eastern influences can easily be seen in the consumer culture besides in values, in worldview and even in science. The popularity of Asian cooking in many European countries and North America, interest in alternative medicine and popularity of Asian clothing fashions are examples of Eastern influences in the sphere of consumer culture. Also, many products and styles of popular culture like movies from China, India, Hong Kong and Taiwan, Japanese cartoons, games and rock music are nowadays conquering markets in many Western countries among youth subcultures. The cheap consumer goods coming from China and India are comparable to those of coming from Hong Kong or Japan during the 1960s except for being mostly of very good quality.

In Finland the Eastern influences came from Russia especially during the 19th century and again during the Soviet period after the Second World War. Cheap consumer goods and especially Japanese cars and electronic appliances started to flow to the Finnish market during the 1960s and 1970s. In the last two decades the influence of East Asian societies has grown very fast. Nowadays, it is easy to find Chinese and Indian or other Asian restaurants in all the largest cities and even in smaller ones. People's interest in yoga, meditation, Asian philosophy, martial art, cloth fashion, movies, popular culture in general and the way of life seems to be growing fast. The Finns also travel much to Asian countries and many Finnish firms have expanded their activities to the growing Chinese and Indian markets. Actually we need much more empirical research concerning the strengthening of Asian economic, cultural and social influences that are strengthening in Finland and other European countries all the time as a consequence of globalisation.

CONCLUDING DISCUSSION

Over ten years ago the British sociologist Paul Hirst asked good questions when considering the myths and realities of the global economy:

What if high levels of public spending on infrastructure and on social welfare are essential underpinnings of prosperity? What if the very notion of globalization is naive and a highly inaccurate picture of the international economy?[17] These questions are maybe even more relevant today during the times of a global economic crisis than they were ten years ago. Hirst saw the need for regulation and stabilisation of the global financial markets urgent but admitted that it is not possible without the willingness of the major states of the global economy to cooperate and create common rules on the system[17]. In many ways commercial interests and values have overshadowed important concerns of people for the environment, democracy, human rights, and social justice during the last ten years at least[16].

Many people agree today that the environmental, demographic, democratic, and social challenges of the world require necessarily some kind of international co-operation and collective action in deciding the rules and controlling their observance and maybe even global public goods as the Nobel Prize winner economist Joseph Stiglitz[16] has suggested. The consumption of social and public services should receive more attention both in consumer studies and in practise of the progressive globalisation process[39]. Social classes with low income are still in many countries even in Europe and the United States often cast out and missing even the basic services concerning health care, housing, clean water, education and mass media not to speak of masses of people living in the developing countries. In a world of growing inequality the rich have noticed that they must prepare themselves to the threat of the possibly violent poor by extablishing gated and guarded communities.[40] The basic needs of common people are not satisfied, if the production of public goods like water supply or health care is organised mainly by private sector and market forces. Since the 1980s the rhetoric of privatisation and market liberalisation has dominated the public discussion, although critical voices have been raised. However, it is possible that the present economic crisis changes the emphasis of the debate.

When one considers the theoretical standpoints to globalisation presented above, one thing that comes to mind, is still the rather strong tendency to see the process of globalisation as homogenising. For example, globalisation and Americanisation do not necessarily take same forms overall and are resisted in some societies more than in others. This is clearly presented recently by several studies like Brewer & Trentmann[41] and Trentmann[39]. The idea much included in the idea of globalisation, that the human affairs are evolving towards a universal pattern, underestimates the complexity of human existence[40]. Campbell's Easternisation thesis is very interesting. Collective action is natural for many Asian people. It seems quite clear and understandable that the focus in world politics and economy may be aimed at China, India and other Asian big societies simply, because so many people live in these regions. Thus, the future development of large Asian countries very much determines the destiny of the whole world.

I have referred to the Finnish case to point out that at least signals of phenomena like glocalisation, Americanisation and Easternisation can be found easily in the context of the transformation towards the consumer society. However, I agree very much with Eric Hobsbawm and other historians who have pointed out the complexity of the social transformation and the limits to globalisation.

International cooperation is needed to guide this path towards sustainable development. It is clear that in Western societies and especially in the USA where most natural resources are consumed a more sustainable model must be generated. The throwaway consumer culture is one of the largest menaces of the future development. Instead, models of leasing and hiring consumer durables should be developed. Also, an economy of cultural and social services proposed by Tibor Scitovsky[42] could be one solution if adopted broadly by people. Easternisation of Western societies may somewhat reduce the material intensity of consumption. However, it is especially important that people in Asian societies do not follow the seducing model of a throwaway consumer culture.

One can easily agree with Gabriel and Lang when they write that the existing type of consumerism has not fulfilled all promises and delivered happiness. However, it is easy, too, to join their wish that ‘it is people, after all, who consume, people who aspire and people who can make a difference’ not forgetting

the responsibility of the states, multinational companies and other organisations in the future development of the mankind and the world.

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RETAIL RESTRUCTURING AND SPATIAL DYNAMICS IN SOUTH ASIA: GLOBAL TNCS, LOCAL NEIGHBORHOODS AND THE REGULATORY CHALLENGE IN MEGACITIES

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ABSTRACT – Spurred on by the state economic liberalization in Pakistan has catalyzed the entry of global food and general merchandise retailers into metropolitan regions. This paper investigates the entry of one leading European retailer, Makro, into Karachi and examines the material process and discursive strategies that under girded its territorial embeddedness in the city's land use planning system. It endeavors to build a conceptual framework for understanding a process that paradoxically facilitated and undermined a global retailer's quest to attain organizational legitimacy, and the contestations that arose when urban residents sought a more redistributive political economy.

INTRODUCTION

In August 2007 residents from Gulshan-e-Zahoor, a low-income working class neighbourhood in the Civil Lines of Karachi, filed a public interest litigation case in the Sindh[a] High Court requesting immediate action to stop Makro's operations of its hypermarket located in close proximity. The case was lodged by the NGO Shehri[b] who acted on behalf of the residents against Makro-Habib, the owners of the hypermarket, and the Army Welfare Trust (AWT) and Ministry of Defence (MOD), the leaseholder. The NGO's claim asserted the hypermarket had been constructed on public amenity land acquired through illegal transfer and unauthorized conversion, and the construction involved violation of environmental regulations. The NGO had become a key driver in the litigation and extended its global reach to lodge a complaint with the OECD Watch, an international network of civil society organizations that promote corporate social accountability.

For several decades the five acre plot of land known as 'Webb Ground 'now integrated into the hypermarket's monolith structure had been used as an Eidgah[c] and a sports playground by neighbourhood children and even an elite private school. The complaint resulted in the issuance by the Sindh High Court of an injunction that delayed Makro's planned launch of its long-awaited Saddar-Center hypermarket, a substantial store occupying 100,000 ft.^{2} of horizontal space. Before taking up a critical examination of the case and the sociological process that under girded a local moment of urban politics, it will be useful to delineate the antecedents and theoretical context of global retailing of food and general merchandise, and its relevance to the future of the consumer society in Pakistan.

Although under-researched, retail foreign direct investment (FDI) in the context of economic globalization continues to gain good currency in academic research[1, 2, 3, 4, 5]. With the advent of retail transnational corporations (TNCs) into new 'emerging markets 'in South Asia, there is an urgent need to widen the geographical lens and incorporate countries such as Pakistan into the research agenda to further enrich our understanding and conceptualization of retail FDI's impact on host economies and societies. In the past three years metropolitan regions in Pakistan have witnessed the significant entry of global food

[a] Karachi is the capital of the southern province of Sindh.
[b] SHEHRI means literally 'city dweller .' The NGO was founded in 1988 by lawyers and other professionals concerned with issues that involve environmental degradation and land misappropriation in Karachi.
[c] An open-air mosque where Muslims gather for Eid prayers.

and general merchandise retailers Makro and Metro.[d] The TNCs operate through the concept of one-stop shopping and sell fresh food and general merchandise by relying on high turnover, low-costs and low-margins. This small but elite group of European retailers such as Tesco, Makro, Metro, and Carrefour have swept across developing countries to sell merchandise in stores that range in size from 50,000 to 200,000 ft[2]. The TNCs comparative advantage lies in a range of issues[2], which include the use of sophisticated retail procurement logistics technology and inventory management that facilitate substantial savings, achieve economies of scale, efficiency gains and reduce coordination costs. These gains 'fuel profits for investment in new stores and, through intense competition, reduce prices to consumers of essential food products'.[5]

In Pakistan the trend toward global retailing is being facilitated through joint-ventures between local capital and European investors and equity investment. Makro entered Pakistan in 2005 by establishing a joint-venture with the indigenous conglomerate, the House of Habib, and the partnership encompasses a $300 million investment with the opening of approximately 30 hypermarkets dispersed across various cities. Due to its high GDP growth rates of past decade[e], rising per capita income[f], high rate of urbanisation[g], and full economic liberalization of retail sector FDI allowing 100 percent foreign equity,[h] Pakistan is understood as a potentially attractive investment opportunity for global retailers. Currently, the retail and wholesale sector accounts for approximately 25 percent of GDP and in 2008 its growth was 9.9 percent, compared with 6.8 percent for the manufacturing sector. Researchers[6] had estimated the upper-middle and upper class strata[i] in 2002 comprised approximately 8.6 million persons who spent US $1.7 billion on food and general merchandise. This segment of the population has now more than doubled and is expected to rely on modern formats of retailing. In other words, trends indicate consumers will vote with their feet for air-conditioned shopping spaces rather than the traditional 'mom and pop' stores. A senior executive of a prominent multi-national corporation recently asserted: 'Pakistan's middle-income group comprises 35 million predominantly urban consumers who have a combined spending power of Poland'.[j]

Recent statistical surveys indicate a high market saturation score that 'reflects one of the least concentrated retail sectors in the world'.[7] With the state-owned Utility Stores Corporation being the only retail chain holding a 0.3 percent market share in Pakistan, food and general merchandise retailing pre-

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d See ATKearney's 2005 Global Retail Development Index which ranked Pakistan as a 'newcomer' assuming the No. 30 spot on the GRDI ranking of emerging market priorities for global retailers. Makro operates three large-format hypermarkets in Karachi, two in Lahore, and serves both retail and wholesale consumers. Its competitor Metro has established two stores in Lahore, one in Islamabad and in Faisalabad. Makro is involved in litigation of illegal transfer of land in Lahore for a new store and its site selection for stores in Karachi is also contested. Metro operates strictly as a wholesaler catering to hotels, restaurants and small retailers or 'Kiryana' stores. In comparison with Makro, Metro stores' selling space in Pakistan is in the mid-range format of approximately 50,000 –70,000 sq. ft. Additional European retailers such as Carrefour are also poised to enter the Pakistani market in 2010. France-based Carrefour is planning a joint-venture partnership with the Dubai-based MAF Hypermarkets, a subsidiary of Majid Al Futtaim Holdings. The expected investment of $1 billion encompasses opening seven hypermarkets across five major cities within two years. New entrants are also regional firms such as the Middle Eastern high-end grocery retailer Spinneys, which recently announced a partnership with the indigenous real-estate business group Bahria Town (Asia), a US $6 billion company.

e Between 2002 and 2007, GDP grew annually by an average 7 percent, spurred by gains in industrial and services sectors.

f GDP-Per Capita Income (dollar terms) in 2008 was US $1085 compared with US $520 in 2005. (World Bank, 2005; 2008)

g Approximately 50 percent of the population of Pakistan lives in urban areas.

h In 2008 the government announced additional incentives for foreign capital by reducing customs duty, sales tax, and withholding tax relief on the import of machinery.

i Ghani[6] used the Federal Bureau of Statistic's Household Integrated Economic Survey, 2002, to describe consumer classes in urban Pakistan.

j Interview with CEO of Unilever Corporation. July, 2008, Karachi, Pakistan. Unilever's focus is on the middle-income category of consumers, as well as the lower income and higher income strata, which exhibit different demand patterns. Unilever's CEO cites television as a powerful driver building new aspirations, for instance amongst farmers in central and southern Punjab, where successful harvests have raised disposable incomes.

sents significant opportunities for a small cohort of powerful and predominantly Western European retailers.[k]

Karachi, a key economic center, provides an interesting backdrop for exploring the role of institutional norms and socio-cultural dynamics in undermining and facilitating retail TNCs' efforts to gain organizational legitimacy by embedding in the local land-use planning system and property market.[l, 8] Based on open-ended interviews with key informants the exploration provides insights into the volatile process that surrounded the acquisition of public amenity land in a city where the opacity of land records and informal conventions spawn challenges for global retailers and urban residents alike. This case study examines critically the sociological process that under girded a local moment of urban politics when a local community exerted its collective agency to undermine briefly a global retailer's quest for attaining organizational legitimacy.

METHODS & MATERIALS

This case study is a work in progress and the author intends to carry out additional fieldwork in 2009–2010. Between June and August 2008, the author took an extensive tour of the Makro Saddar Centre store and visited the adjoining neighbourhood in the Civil Lines. The qualitative analysis is based on semi-structured and open-ended interviews with senior executives of the House of Habib and SHV Holdings, members of the civil-associational group Shehri, the judge who presided over the litigation, the Union-Nazim or local councillor, and real estate agents. Some interviews were supplemented with a questionnaire. Generalizations were made only when the comments of several informants were in conformity. Additional sources used to buttress the examination were newspaper articles, legal records, land surveys, maps, and historical documents such as minutes of meetings and written correspondence between representatives of federal and local governments, the Army Welfare Trust and the Ministry of Defence concerning sale and transfer of land. The methodology is rooted in a realist approach where the objective is to understand a specific rather than a general process that facilitates TNCs to gain organizational legitimacy in host economies and societies.

THEORETICAL BACKGROUND

From a scholarly perspective, global TNCs astoundingly rapid entry (largely unnoticed in the retail-driven global value chain literature, e.g. Gereffi et. al[9], in the past decade into emerging markets across Latin America, East Asia, Central and Eastern Europe, and now South Asia – often called the 'last frontier' for global retailing – is viewed in terms of retail modernization as a driver of economic development, for instance the stimulation of backward linkages with farmers to catalyze production and consumption through new production opportunities and technological innovations in response to demand. Economic development in this sector is also understood in terms of job creation, the generation of tax revenues for local government, and overall lower food prices and improved food standards. In the past decade, a top strata of 'élite retailers' and other major TNCs have assumed a dominant position in countries beyond their borders through mergers and acquisitions, and established global buying networks for sourcing operations[10] for commodities destined for home and markets in developing countries.

Wrigley et al.[4] have described that in 1993 there were no food and general merchandise retailers in the top-100 TNCs worldwide. But by 1999 this had changed as four firms, namely Metro (German), Royal Ahold (Dutch), Carrefour (France), and Wal-Mart (US) were clearly visible. The retailers' 'strength lies not only in stock market capitalisation and sales, but more in terms of the scale of international operations and the scope of international retailing[10]. By 2002 Carrefour was present in thirty countries outside France; Ahold in twenty-eight; Wal-mart in eleven; Tesco had entered nine markets within a period

[k] The notable exceptions are the North American Wal-Mart and Costco.

[l] TNCs achieve 'organizational legitimacy' 'through a process of evaluation by social actors (suppliers, consumers, communities, government agencies, real estate agents) 'who compare the organization's actions and practices to established norms that exist within the organization's environment'[8]. The process of gaining organizational legitimacy in host economies is more complex as the differences in the institutional environment will affect the transfer and implementation of management practices imported from elsewhere.

of just seven years between 1994 and 2001; and by 2004 Metro was deriving over 50 percent of its revenues outside Germany. In the late 1990s, Carrefour was earning three times higher margins in Argentina compared with its operations in France. In East Asia, Tesco has made a rapid entry and now accounts for 5.4% of FDI. Similar trends have been chronicled for other European retailers 'operations in Eastern European countries, for instance in the Czech Republic where foreign hypermarkets account for 23 percent of total food sales[10]. India has witnessed recently the entry of Metro in Bangalore and West Bengal, and Wal-mart in Amritsar, Punjab.

The unprecedented expansion or 'tidal wave 'of food and general merchandise retailing since the 1990s has been driven not only by saturation and intense competition in home markets[5] but also by the need to sustain growth in earnings.[11] Pressure from financial institutions has been a key factor compelling expansion to secure profits and dividends. In this context, emerging (liberalized) markets such as Pakistan 's offer salient opportunities as Western forms of 'modern 'super-store retailing and associated distribution systems have not infiltrated, and retail sales are in the hands of small retailers and informal channels. While there is scope to discuss these developments within the global value chain or GVC perspective[m], this case study is situated primarily in the discourse advanced by economic geographers. This case study endeavours to open up a new perspective in the economic geography discourse by engaging a political-economy approach[12] to study transnational retailing and the politics of land development. The economic geography perspective is grounded in an institutional framework[13], which rests on the conceptualization of TNCs as being 'territorially embedded 'in the host economy and societies 'local cultures of consumption, property markets and land-use planning systems, and supply networks and logistics[4]. These three dimensions or processes of embeddedness are fundamental to retail TNCs achieving organizational legitimacy in emerging markets 'socio-cultural and economic domains and in the overall institutional context. Wrigley et al.[4] assert correctly that even though this framework can be applied to study any TNC, for instance the conventional production-based one, it is nevertheless the 'high territorial and societal embeddedness 'of retail TNCs and their qualitatively different organization that 'defines the distinctive theoretical and organizational challenge of the retail TNC ".

Whether one accepts the economic geography approach or the conventionally benign economic development and business studies perspectives, the implications in the global expansion of food and general merchandise retailing are profound in terms of the impact not only on food systems and an emerging culture of consumption but also on urban development, an issue that has received negligible attention in the expanding literature. Studies emphasize the heterogeneous nature and structure of firms involved in global retailing and the mutually transformative capacity of both the TNCs and the places in which they embed[2]. With the exception of one case study[1], which builds an inventory of regulatory responses to global retailing in East Asia, none have endeavoured to examine the impact of global retailers on urban development.

This paper then attempts to address an existing gap in the literature by responding to a more specific issue concerning governance and the political economy of land development. In Karachi, different actors operate within an institutional field that is marked by informal conventions and discursive strategies that govern the land-use planning system. It is within a distinct institutional context that Makro sought to embed; a context that on the one hand allowed the retailer considerable leverage in assuming land rights and on the other pushed it into an unavoidable confrontation with urban residents. Central to the analysis of the case study is the concept[12] of *use value* and *exchange value*[n] that posits land[o, 14] is different from other commodities and is not value-neutral. Land does not gain or lose value in the same way as other commodities that are moveable or consumable and it is also immanently local. Land immobility

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[m] The GVC literature has examined retailing in the context of commodities produced in developing countries being sold by retailers in advanced capitalist societies. Global retailers such as Makro and Metro present a different scenario where retail outlets are situated in developing countries where commodities are both produced and sold.

[n] This concept is rooted in classic political economy or specifically Marx 's work.

[o] Polanyi[14] asserted a long time ago that land 'is only another name for nature, which is not produced by man "; and is not for sale in the market like other commodities and is therefore 'fictitious .'

and physical connection to territory or place makes competition for it a distinctly local affair. Moreover, land-use planning systems and property markets are social constructions determined by political machinations and, as this case study shows, by informal conventions. The politics of land development is centred on 'rentiers'[p] seeking *exchange value* from land and citizens seeking *use value* or the amenity value that serves them. In contrast to the global retailer Makro and the leaseholder Army Welfare Trust (AWT), for the residents of Gulshan-e-Zahoor the public amenity land used as a sports playground and an Eidgah was not perceived in material terms. Instead, it was understood as a place endowed with meaning for residents whose active engagement with it from daily use made physical survival possible for the residents.[q, 15]

The mutually transformative capacity of TNCs such as Makro and the places in which they embed is predicated on discursive strategies and material processes that under gird the overall institutional context for governance. In Karachi a loose network[r] of actors plays an important role in facilitating a process of land expropriation and commodification. This process is central for understanding not only the political-economy of TNCs 'embedding in a host economy and society's land-use planning system and real estate market, but also the related dynamic of contemporary urban relations in the production of place. Land is a central mechanism in Karachi offering state actors such as the military[s, 16, 17], corporate capital and a 'land mafia' considerable leverage in advancing their interests in real estate markets, which experienced unprecedented growth due to the upward spiral in the value of residential and commercial property in the post-September 11, 2001 era of economic boom in Pakistan.[t]

THE CASE: MAKRO IN PAKISTAN

The case study of Makro embedding in Karachi presents a compelling instance of the phenomenon of retail FDI in so called developing countries. The case endeavours to understand the process that enabled a global retailer to attain organizational legitimacy by embedding in the city's land-use planning system and real estate market. This process was facilitated first by partnering with a leading indigenous business group the House of Habib, which is one of Pakistan's oldest family-owned businesses with interests in insurance, commercial banking, traditional manufacturing of textiles and apparels, and sugar milling. The group's decision to further diversify into food and general merchandise retailing stems from the recognition that Pakistani firms engaged in manufacturing traditional products no longer enjoy the benefits of past protectionist policies, and instead confront dramatically altered conditions of competition in

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p Rentiers often coordinate the interests of corporate capital and their role is useful in the process of accumulation.

q Theories of globalization have tended toward the erasure of place. But place —land, boundaries, location, dwelling —continues to remain significant in the lives of many people. See for instance Escobar[15] for recent theorizing on place in political and economic geography and anthropology.

r These networks can comprise landowners, real estate brokers, private developers, financial institutions, media, utilities, and powerful state actors such as the military and local government that, depending on context, can facilitate overall the efforts of the network.

s The military in Pakistan is a powerful institution that has played an historical role in maintaining the continuities of government[16]. In recent research[17] on the role of the military in Pakistan, the term 'Milibus' (military business) has been advanced to underscore its influence in Pakistan's economic sector.

t A fascinating but academically under-researched phenomenon concerns the unprecedented surge in real estate investment and its socio-economic impact in cities such as Karachi following the World Trade Centre debacle in 2001. The property boom in Pakistan's metropolitan regions was catalyzed by the tragic events of 9/11. Two months after 9/11 Pakistan's foreign exchange reserves shot up by USD $4 billion as the country joined the US coalition against the 'war on terror.' The catalyst was remittances sent back by non-resident Pakistanis in the US and Europe. This time the wealth flowing into Pakistan made the urban upper-middle class a beneficiary and resulted in a surge in real estate investments where in Karachi the value of a plot of land in the coveted Defence Housing Authority increased from US $65,000 to US $1.5 million after 9/11. A consequence of the real estate boom in Karachi has been the arrival of foreign private developers from Singapore, Malaysia and the Middle East looking to invest in the city by launching multi billion dollar projects. The military has partnered in these efforts not only in terms of leasing and selling land, but also by providing infrastructure through its contractor, the National Logistics Cell (NCL). The cost of infrastructure development by the NCL for one project is estimated at US $24 million.

global markets.[u] The decision to diversify is also based upon increased consumer spending due to a rise in real per capita income in the past six years[18], a trend that has also been fuelled by liberal lending practices in consumer finance, a policy implemented under General Parvaiz Musharaff's military regime, and the unprecedented increase in remittances from Pakistanis living overseas.[v] The changes reflect the underlying shifts in the demand patterns of a growing urban middle-class with new consumption aspirations. This income stratum is also categorized by investors in retailing as those who *"shop not on a need-based basis but experience shopping with the whole family"* (Interview: August 2008).

In 2005 the House of Habib and SHV Holdings, Makro's parent company, signed a joint-venture agreement whereby the latter assumed a controlling interest of 70 percent in Makro-Habib. SHV Holdings NV has for several years distributed bottled LPG in Pakistan through its SHV Energy Pakistan subsidiary. With an annual turnover of $20.4 billion,[w] SHV Holdings is the largest private company in the Netherlands and has global interests in energy, retail, and raw-material distribution business. SHV operates currently a chain of Makro hypermarkets in 28 countries across Asia, Eastern Europe and South America. For SHV Holdings the partnership created an opportunity for Makro to enter the Pakistan market as a "first mover" with a modern distribution concept in food and general merchandise retailing. Since 2005, five Makro stores have opened in Pakistan. According to a senior executive at Makro-Habib: *"Store openings have been slower than expected mainly because getting land with clean title is a major challenge. But it is also important that we get the best locations and property because we have currently a strong advantage over our competitors."* (Interview: July 2008)

Why was the Webb Ground an important choice of location for Makro? In addition to the copious five acres of land that comprised the Webb Ground enabling Makro to implement its large-format store concept, the Civil Lines area also bestowed the global retailer a distinct geographical advantage. The Civil Lines' close proximity to the city's key thoroughfare has enabled retail and wholesale customers easy access to the hypermarket. Arguably, Makro may not have found a more suitable location than the Webb Ground in the Civil Lines area. Consequently, the events that followed Makro's construction in 2006 of a store pushed the retailer into an unavoidable confrontation with local residents, a process that catalyzed eventually public interest litigation. With a construction crew becoming a visible sight on the Webb Ground in late 2006, residents approached their local government representative or union councillor requesting he find a way to obstruct the developments as the community's lifeworld was being encroached. What the residents saw at first seemed unthreatening but by early 2007 it was evident there was extensive construction underway.

The local councillor informed the residents of the dramatic change underway, which involved the transformation of the sports field into a 100,000 ft² hypermarket. As one resident recalled: *"At first we were told a small store was being built. Later we found out a big supermarket was going to swallow nearly the whole land. This neighbourhood has used the sports playground for nearly thirty years. Our children who attend local government schools do not have access to open fields, and the sports ground is a resource for us in enabling them physical enjoyment outside the home."* (Interview: August 2008) With a population of 200,000, Gulshan-e-Zahoor embodies the physical traits that epitomize other congested low-income working class neighbourhoods in the city centre. The neighbourhood contains residential plots that comprise approximately 45 square yards of space and narrow 14-feet wide street constructions. The residents covet recreational space as there are no alternate open fields within a two km radius of the Webb Ground.

When the local counsellor urged by his constituency finally began investigating the land development plan, he learned the Ministry of Defence (MoD) had reclaimed the plot as early as 2002, and was now the leaseholder. This was an interesting development. In 2001, Pakistan began registering its first official "property boom" (see footnote [n]) that attracted international property developers to initiate an onslaught of real estate development projects in Karachi. From golf clubs to high rise residential towers and

[u] Interview with Managing Director, Habib Group (August 2008, Karachi). This was highlighted specifically for the group's textile-apparel business.

[v] In 2008, the value of workers' remittances flowing into Pakistan was US $6.4 billion.

[w] SHV's Annual Report 2007.

shopping malls, vast acres of empty land in prime residential and commercial areas were purchased or leased and earmarked for development. A substantial share of land leased for development in the Defence Housing Authority for instance belongs to the military, which is the second largest property owner after local government in Karachi. Since the military has been known to be involved in similar cases, it can be said that its speculative interest in property markets played a role in the reclamation of the Webb Ground because in 2002, the value of commercial land in Karachi had spiralled up by approximately 300 percent.

Land transfer records and minutes of meetings indicate that in the early 1970s the MoD had sold the land to the Federal Government, which transferred it to the Karachi Development Authority (KDA) and eventually placed it within the Lines Area Rehabilitation Project's (LARP) administrative ambit. In the land survey records, Webb Ground is classified as institutional land zoned for use by schools as a sports playground. Historical records dating from the pre-independence (pre 1947) era underscore the land had been allocated for educational purposes to the Karachi Grammar School (KGS), an elite private school founded in 1847. In the mid 1990s the KGS relocated to wider spaces in the southern part of the city. Despite the relocation of the elite school, the Webb Ground retained its original classification of 'institutional land' and continued to be used as a sports field by children enrolled in local public schools from the local neighbourhood.

The evidence in the historical records, government land surveys and maps of the Military Estate Officer demarcate clearly the classification of the Webb Ground plot and its zoning category. When the Army Welfare Trust (AWT) on behalf of the MoD reclaimed the land in October 2002, it did so by paying a development charge to the Karachi Cantonment Board (KCB) of US $50,000, although land records indicate the KCB had no jurisdiction over the land. However, the MoD had already commercialized the land in early 2002 by leasing it to the AWT for 90 years for a total of US $3,400. The actual value of the land at the time was approximately US $11,000,000.

In October 2003 the military cantonment board informed local government or City District Government Karachi (CDGK) the Webb Ground had been reclaimed by the MoD and reclassified for commercial development. The military's assertion rested on the premise that the MoD had always owned the plot and merely leased it to the elite KGS, which had relocated. That several government schools in the adjoining neighbourhood were also using the land for recreational purposes was a detail circumvented easily in the reclamation. What followed was a long 'paper trail' of written correspondence between the military and local government contesting violation of LARPs Master Plan. However, the conflict did not deter the military's plans when in 2006 it subleased the five-acre plot to Makro-Habib for 30 years at a rent equivalent to 1 percent of the annual turnover of the store, with a minimum of US $21,000 per annum, and US $1.2 million paid as advance rent by the lessee. In the public interest litigation case, AWT is cited for violating the head lease that states land cannot be transferred to a foreigner without permission in writing from the Federal Government. Evidently such permission was not sought. The Army Welfare Trust (AWT) is cited further for violating the Registration Act of 1908 that requires new land deeds be registered within six months, otherwise rights to land cannot be relied upon.

When Makro approached local government for the issuance of a building permit for construction, it learned the land title was disputed and until settlement no permit could be granted. However, the retailer ventured forth with construction, an oversight that was later cited as a major legal infraction in the public interest litigation. This oversight also indicates the morass of confusion that often arises due to the opacity of land titles and the regularity of informal conventions in the governance of land development in Karachi. Even though Makro had signed with the military a 'Memorandum of Understanding' that designates the latter owner of the Webb Ground, the retailer was compelled to approach local government for a building permit suggesting the underlying ambiguity over the land title.

In August 2007, residents from Gulshan-e-Zahoor collected US $500 and filed a writ in the Sindh High Court. The court heard the evidence from the local residents on how their lives and community were being affected by the construction underway. Consequently, the court ordered an injunction against Makro to stop further construction of the hypermarket on the Webb Ground pending a full investigation of the case. As Shehri was the plaintiff in the public interest litigation, Makro-Habib and AWT counter-

sued the NGO claiming harassment, although they failed to obtain an injunction from high court. Due to the court injunction, Makro's scheduled launch in August 2007 of its Saddar Centre store became a slow process, and mired the retailer in a widening conflict with the residents over claims of environmental pollution in contravention of the Pakistan Environmental Protection Act of 1997. These developments did not go unnoticed by the local media, when a journalist capitalized on the story and wrote an 'open letter' to the Governor of Sindh requesting he intervene in the 'land-scam' to support the residents of Gulshan-e-Zahoor .

For a while it seemed the residents' resistance through judicial activism was a well-placed strategy for taking control to change the contours of engagement and promote a more redistributive political economy of land development. Makro's Saddar centre branch was barely operable and even though the retailer tried in defiance of the injunction to launch a 'soft opening,' devoid of the essential utility and sewage connections the store could hardly function or serve its new client base. In November 2007 events at a national scale intervened to change the trajectory of the case. General Musharaff's declaration on November 3rd of a state of emergency that lasted until December 15th suspended the constitution of the country and dissolved the judiciary. The judge who had presided over the case and ordered the injunction was also suspended. The next court hearing that had been scheduled for November 2007 was delayed. The events enabled Makro to overlook the injunction and bypass the urban residents' claims. By December 2007, Makro's Saddar-Centre store was a flourishing hypermarket situated on the Webb Ground.

DISCUSSION

That TNCs such as Makro wield tremendous power in imposing certain ways of doing business and that these may differ across different national/institutional contexts is an issue open for further investigation. Even though this paper does not try to fully account for the outcome of the dictates of local institutional contexts and TNC's organizational imperatives, this case study does suggest that TNCs can be transformed by the discursive strategies and material processes that embody a host economy's land-use planning system. Moreover, these may generate considerable leverage for TNCs in assuming land rights in cities such as Karachi where access to and development of land is contested continuously by different actors.

Home to an estimated 20 million persons, Karachi is Pakistan's largest city and economic centre and contrasts sharply with its rural hinterland in the southern province of Sindh. Historically a city of migrants, Karachi is highly diversified in terms of culture and ethnicity. According to the 1998 population census, the largest linguistic group (Urdu speakers) in the city comprised a numerical majority of the population. Approximately 15 percent constituted Punjabi speakers, and 11 percent spoke Pashto. Migrants as a proportion of the total population were 22 percent, and of these 31 percent were of international origin.[x] Karachi's explosive urbanization is in large part tied to the ebb and flow of migrants. A major consequence of this for urban development has been an increased pressure on land and the proliferation of *katchi abadis* or irregular settlements, which today comprise approximately 50 percent of the city's population. Since the state has never enacted a definitive policy to house a growing population, public officials have often chosen to ignore the proliferation of squatters on public land.

The historical antecedents of the residents of Gulshan-e-Zahoor can be traced to the mid 1970s when approximately 10,000 squatters first occupied government-owned land reserved for a low-income housing project. Before 1947 the Civil Lines was part of colonial occupied territory. This was the military cantonment area where the British lived and worked. After 1947 and until the early 1970s, the area was owned by the MoD and used as military barracks. Between 1968 and 1972, the MoD auctioned off approximately 200 acres of land, which included the Webb Ground to the Federal Government. As elaborated in Section IV, in 1975 the Civil Lines and the sports playground were transferred to the municipal body, the Karachi Development Authority (KDA), and incorporated into its Lines Area Rehabilitation

[x] Two current flows of international migrants are from South and Southeast Asia and refugees from Afghanistan. In 2000, the National Aliens Registration Authority (NARA) estimated there were nearly 1.1 million Bangladeshi migrants living in Karachi. (Gazdar, 2006)

Project (LARP), which aimed to provide shelter for the squatters. With the continued inflow of predominantly Urdu-speaking migrants into the area and no housing project materializing, the 10,000 squatters evolved eventually into a substantial *katchi abadi* of 200,000 residents. The community was incorporated ultimately into the KDA's urban renewal project and named 'Gulshan-e-Zahoor,' which is today not only a reservoir of cheap labour for the city's industrial and services sectors, but also represents an important part of the Karachi-based Muttahida Qaumi Movement's (MQM), urban constituency.[y]

In Karachi informal conventions governing land development facilitate the interests of different actors, such as the state (military being one component), which has been able to reward constituents land rights when deemed appropriate. Research on the impact of global retailing in developing countries for instance in East Asia, has focused on environments where property markets are governed by tight regulatory conditions for land-use zoning and clear titling forcing global retailers to adopt 'agile' strategies[4], and governments to initiate new zoning laws[1]. However, land-use planning in Pakistan presents a vastly different scenario. Land is an important issue in Karachi where there is a constant struggle to acquire and develop it through formal and informal or illicit means, whereby various discursive strategies are employed to undermine the efficacy of land records and bureaucratic agency. Hasan[19] has suggested the existence of a powerful nexus between private developers, politicians and government officials to acquire vacant land especially that set aside for public amenity purposes. This nexus has enabled extensive violation of zoning regulations, bye-laws and encroachment on open spaces, and has driven up the value of land in the city. Economic diversification and urbanization have further intensified competition for land since the late 1980s and more so since 2001. As the Urban Resource Centre[z] reports, private developers and foreign investors are aware of the complexity of the planning system and its inherent informality:

The system operates in a highly personalized fashion where personal contacts and bribes are integral to informal land-use practices. Government land and properties are sold at throw-away prices due to political patronage. Recreational land is targeted easily for encroachment by private developers. In the last decade, Karachi's residents have lost over 800 acres of land designated as public amenity space, and the main victims are the urban poor and lower middle-income groups. Information regarding land ownership is not easily available to communities and NGOs. (Interview: August 2008)

This case study on Makro embedding in Karachi's land-use planning system demonstrates that informal governance practices and social dynamics can play a key role in both supporting and hindering global retailers' efforts to gain organizational legitimacy. However, the volatile process surrounding the acquisition of Webb Ground posed a challenge not only for the global retailer Makro but also for the low income residents of Gulashan-e-Zahoor in terms of voicing their image of the city. The issue of the politics of land development brings to the forefront a new type of urban politics that has emerged in Karachi between local communities, state actors, foreign private developers and corporate capital concerning the acquisition of public amenity land in the city centre, and the counter-movements that resist the commodification. These movements often seek recourse to justice through legal means that involve civil-associational groups such as Shehri, a NGO that campaigns for environmental protection and enables low-income social groups who are denied full membership in civil society to access the legal apparatus.[aa, 20] In the case of Makro-Habib opening its long awaited Makro-Saddar Centre hypermarket in Karachi, an extensive network of actors collided in arguments over the legal classification and acquisition of public amenity land. Even though this process did result in delaying Makro's plan to open additional stores across Karachi's metropolitan landscape, it also embroiled the residents of Gulshan-e-Zahoor in the vicissitudes of an adversarial political economy and the unwritten rules of land development.

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y During fieldwork informants had underscored that in the 1980s and early 1990s when Karachi was experiencing widespread violence and civil unrest, the neighbourhood was important to the MQM's operations and housed its infamous torture cells.

z The Urban Resource Center or URC was established in 1989. URC carries out extensive research on the dynamics shaping Karachi, especially major urban development projects, and examines these from the perspective of communities' interests.

aa Although I do not use it here, Chatterjee[20] has advanced the term 'political society' to describe those disadvantaged groups who are left out of the state's bureaucratic and legal apparatus and who cannot make moral claims upon the nation-state.

CONCLUSIONS

Several questions remain to be answered in the residents struggle to reclaim the public amenity land. For instance, on what legal grounds did the MoD reclaim the land? When did the Karachi Grammar School lease expire? What was the role of local politicians and bureaucrats? These and several other questions will be addressed in the next round of fieldwork.

Was the victory of Makro and its allies simply inevitable? Without the 'exogenous' turn of events, what would have been the outcome for the local community? The counterfactuals suggest that the residents of Gulshan-e-Zahoor and their advocates, Shehri, were able to gain some traction in advancing their cause. The residents did exert successfully their collective agency when confronting the powerful interests of not only global corporate capital but also state agents such as the military.

As global retailers continue to take over increasing expanses of space in metropolitan regions in Pakistan retailing appears to have become linked to political confrontations over land with city residents, for instance a recent case involves Makro's conflict with residents in a neighbourhood in Lahore. The analysis above has aimed at explaining the process of one retailer's quest for attaining organizational legitimacy by embedding in a city's land-use planning system. Further discussion and comparative case studies, for instance with India, would make it easier for generalizations to be made. However, this paper represents an attempt to record an instantiation of local urban politics involving TNC retailing in a process that is shaping contemporary urban relations and the production of place in an increasingly globalizing city.

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FUTURES RESEARCH METHODS

TRICKLE DOWN THEORY – FACT OR FABLE? TRANSITIONS OF CONSUMPTION MODELS IN TESTING OF TIME SERIES DATA

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ABSTRACT – The article examines whether the trickle down theory of sociology could be used as a tool for predicting households' consumption in future. The initial assumption is that the consumption in the fourth or fifth income quintile of households in year xxxx is a good prediction of the average consumption of all households in year xxxx+5 or xxxx+10. The assumption is tested with time series data from 1985 to 2006 describing the consumption of households in Finland both in terms of total consumption and consumption on the 12 main consumption groups.

With certain reservations the testing lends support to the conclusion that the consumption of the fourth and fifth income quintiles of households can be used as a predictor of total consumption in ten years' time and to forecast consumption on the 12 main consumption groups in five years' time according to the analogous model of future research provided that income continues to grow.

INTRODUCTION AND BACKGROUND

The article applies the so-called trickle down theory[1] of sociology to the time series data of Statistics Finland's Household Budget Surveys from 1985, 1990, 1995, 1998, 2001 and 2006. Its aim is to ascertain whether the growth and structure of consumption changes over time according to a model tied to income. The basic assumption is that the structure of consumption in high income brackets in year X "anticipates "the average consumption of households in year X+(10 or 15). In other words, it applies the analogous model frequently used in future research to the consumption of households.

In my doctoral dissertation (1996) I applied this basic assumption in estimating energy consumption in 2015 with data on it in 1990. I predicted energy consumption by assuming, among other things, that the percentage share of households with an automobile among all households would be the same in 2015 as it was in the second highest income quintile in 1990.[2] The time series data of Statistics Finland's Household Budget Survey, which describe consumption over two decades, provide a unique opportunity to examine the trickle down phenomenon with real survey data on consumption. This article studies whether consumption habits "trickle "from higher income brackets "down "to lower ones in time and how quickly the consumption model of a higher income bracket is adopted. The intention is to compare the consumption of an average household in 1995–2006 with the consumption of the highest income quintiles in earlier survey years with measures based on percentage differences. The comparison calculations are performed with standardised consumption units[3] for both total consumption and for consumption on the 12 main consumption groups, such as food, housing or transport. It is justified to presume that the impact from the growth of income varies by main consumption group because new products, for instance, enter these groups at different rates. Some of them are determined by annual fashion trends and some by technical innovations. Such factors are likely to have a bearing on changes in consumption habits.

The article studies whether the impact on consumption from growth in income follows an analogous model with which projections of consumption and its future structure could be made. Very few empirical tests like this have probably been made of the trickle down theory, so methodological development is also concerned here.

Initial assumptions

It is important to take change in income into consideration in the forecasting of future. The following simplified assumptions have been made about income. Households have been divided into quintiles according to their disposable income per consumption unit. This is a rough classification, which replaces the offset coefficients used in economics. Its advantages are clarity and transparency. Alternatively, we could use income deciles but because the aim is to "forecast "the average consumption of all households, it is more natural to use income quintiles in the analyses so that in a manner of speaking the broad variance of human behaviour becomes automatically incorporated into the model. Income deciles seemed intuitively to be too "harrow "to be used as control groups for the average consumption of all households.

This digressing assumption is supported by consumption sociology which refers to the "trickle down "phenomenon in contexts like this. The fundamentals of it have been described as follows: According to Veblen, the prestige commodities and other characteristics of the consumption of upper classes tend to trickle down from the highest socio-economic groups to lower ones over time. Simmel, too, has expressed similar views. The phenomenon is attributed to the fact that in a hierarchy a lower class always attempts to imitate the manners of a higher class. C. Wright Mills referred to it as status-oriented competition of the middle class.[4]

"One way by which it has always been possible to forecast changes in lifestyles has been to observe what the dominating layer in society does or what it regards as important in its own life. Norbert Elias has studied precisely this kind of a top-down process and formed a theory about it.[5, v.] "

*"The mechanism has been claimed to function even today. For instance, Bourdieu's studies of consumption proportional to socio-economic group are approaching this view. And Bourdieu is also not the only one holding this view, for he has many kindred spirits whose theoretic roots are, however, not identical to his. "*Ilmonen states as his conclusion that[6] *"..the trickle down theory holds true especially for certain status commodities that require a sizeable investment, such as automobiles, laptop PCs, mobile phones, sailing boats, and so on. Whether it can be seen in less capital-intensive commodities, such as food, is then quite another matter. "*The blurring of class boundaries, social and geographic mobility and the growth of real income have made this theory of top-down trickle of consumption habits even more questionable or less visible. Ilmonen states that the social elite have started to envy from the lower classes their assumed genuineness. The consequence from this has been that styles have also started to spread upwards (spring-up phenomenon). Jeans are a universal example of this while the huge popularity of mild beer in recent years is a Finnish example. Basing on the foregoing, the relevance of the trickle down phenomenon remains slightly debatable from the point of the research problem, but at a general level it seems to be an accepted frame of reference and supports the above described analysis based on income quintile averages of the impact of income growth on consumption. As far as we know, this theory that primarily interprets class and socio-economic differences has not been applied to comparisons of changes in consumption between different income brackets. As structural differences in consumption between income groups have probably narrowed in recent years, using the transition of the average in the estimation of the impact of income growth on consumption is a valid initial assumption.

The sociological definition of the trickle down phenomenon described above deviates from the economic definition according to which the trickle down phenomenon refers to the assumption that an increase in the income of high income earners will, through cascade effects, gradually trickle down to low income earners. *"Trickle-down economics"* and *"trickle-down theory"* are terms of political rhetoric that refer to the policy of providing tax cuts or other benefits to businesses and rich individuals in the belief that this will indirectly benefit the broad population ".[7]

The concept of trickle down has been used also in research on organisations to describe the downwards flow of innovations or problems through levels of organisational hierarchies. In many research frameworks it could be replaced with diffusion theory. In consumer research the concept of trickle down has been used most in studies of fashion.[8, 9, 10]

THE DATA AND THE METHOD

As already stated, the test data derive from the surveys describing the consumption of households in Finland in 1985, 1990, 1995, 1998, 2001 and 2006. The data from all survey rounds represent well households in Finland and the number of observations is so large that all the income quintiles also contain several hundreds of households. Despite their good internal quality the volume of the data is low for the intended purpose for they only allow the search for as good a projection as possible from the fourth and fifth income quintiles of previous Household Budget Surveys for future average consumption of households in four years (1995, 1998, 2001 and 2006).

The numbers of the members and the age structures of households change over time. These changes have been standardised by calculating consumption per consumption unit[3]. The income quintiles have also been formed according to disposable income standardised per consumption unit.

Comparison measures

The aim, thus, is to estimate which fourth or fifth quintile of an earlier year would best forecast the total consumption of households per consumption unit and their average consumption on the 12 main consumption groups in 1995 –2006. There are several possible measures for this:

- Percentage deviation of the total consumption of a quintile from the total consumption of the year to be forecast.
- Deviation of the sum of percentage deviations in the consumption of a quintile on the 12 main consumption groups from the total consumption of the year to be forecast. In this sum, positive and negative deviations between the consumption groups compensate each other.
- Deviation of the sum of the *absolute values* of the percentage deviations in the consumption of a quintile on the main consumption groups from the total consumption of the year to be forecast. This measure takes into account the relative error better than the previous one. However, it does not take into account the relative shares of consumption on the 12 main consumption groups in total consumption.
- Deviation of the sum of the absolute values of the percentage deviations in the consumption of a quintile on the main consumption groups from the total consumption of the year to be forecast weighted by the distribution (in percentages) of the average yearly consumption of the quintile by main consumption group, that is, errors in large (e.g. housing) and small (e.g. telecommunications) consumption groups are proportioned.

The final quality comparison between the quintiles is made with the last described method (d). All calculations were made with the monetary values of the year concerned, i.e. at current prices because the aim was to ascertain whether the consumption of quintiles could be used to forecast households 'future consumption. This solution contains the implicit assumption that the trickle down phenomenon functions in the world of nominal prices. Comparisons at constant prices could also be calculated from the data but it would not be a good solution for the forecasting of future consumption. Because the development of prices is not known it would have to be guessed basing on past development.

At least the comparison calculations and future predictions made here are transparent and simple, as only the number of households in the year to be forecast has to be guessed in the future prediction. The other parameters are readily available.

The calculations are secondly used to examine the six largest consumption groups (housing, food, transport, leisure, other consumption, and home appliances and furnishings) to see whether the 'predictive ability "of the quintiles varies by these different types of consumption as the trickle down theory would give cause to assume. These six consumption groups usually account for around 80 per cent of households 'total consumption.

THE RESULTS

We have gathered into Table 1 control figures from the fourth and fifth quintiles of earlier years for average consumption per consumption unit of all households in 1990 –2006. The underlined figures indicate the best quintile with each measure (rows).

It seems that the level of the total consumption of households in Finland could have been forecast quite well to ten years ahead with the total consumption of the highest income quintile. For 1998, the fourth quintile would give a better prediction. This may be due to the intervening economic recession (Figure 2). If we wanted to also forecast consumption on the 12 main consumption groups, it would be better to use the consumption of the fourth quintile, but only for a prediction five years ahead exclusive of year 2006, for which the best forecast taking also the main consumption groups into account is the fifth quintile from 1998, but the fourth quintile of 2001 still gives the second best estimate for 2006.

These calculations only concern Finland. It would be interesting to test whether similar results could be obtained with Eurostat's data on all EU countries.

Table 1. Estimates for 1995 –2006 for average consumption per consumption unit calculated with income quintiles, and measures of the accuracy of the estimates.

Deviations from year to be forecast	1985		1990		1995		1998		2001	
	IV.	V	IV	V	IV	V	IV	V	IV	V
Year 2006 Total consumption per consumption unit EUR 20,336										
Total consumption	8,979	11,214	13,288	16,848	13,043	17,036	15,559	20,188	18,472	24,279
a) Difference in total consumption	-0.555	-0.448	- 0.35	-0.200	-0.360	-0.162	-0.235	-0.07	-0.92	-0.194
b) Sum of differences between main groups*						-1.455	-2.759	0.115	-0.562	2.389
b) Sum of absolute values of differences between main groups*						1.88	2.759	1.377	1.6236	2.839
d) Sum of differences between weighted absolute values							0.1959	0.093	0.148	0.248
Year 2001 Total consumption per consumption unit EUR 16,525										
Total consumption	8,979	11,214	13,288	16,848	13,043	17,036	15,559	20,188		
a)*	-0.457	-0.320	-0.196	0.02	-0.21	*0.03*	-0.06	0.22		
b)*				0.536	-2.356	0.746	-0.940	2.67		
c)*				2.90	2.564	2.048	1.468	3.29		
d)*				0.20	0.199	0.142	0.081	0.248		
Year 1998 Total consumption per consumption unit EUR 14,128										
Total consumption	8,979	11,214	13,288	16,848	13,043	17,036				
a)*	-0.364	-0.206	-0.059	0.193	*-0.077*	0.206				

b)*		-2.219	-0.459	2.567	-0.715	2.95				
c)*		3.132	3.76	2.04	1.697	3.477				
d)*		0.2457	0.139	0.289	0.104	0.223				
Year 1995 Total consumption per consumption unit EUR 12,044										
Total consumption	8,979	11,214	13,288	16,848						
a)*	-0.25	-0.069	-0.103	0.339						
b)*	-3.285	-0.714	1.264	4.83						
c)*	3.377	2.78	2.29	5.22						
d)*	0.225	0.252	0.145	.462						

* For closer description of measure see section Comparison measures above

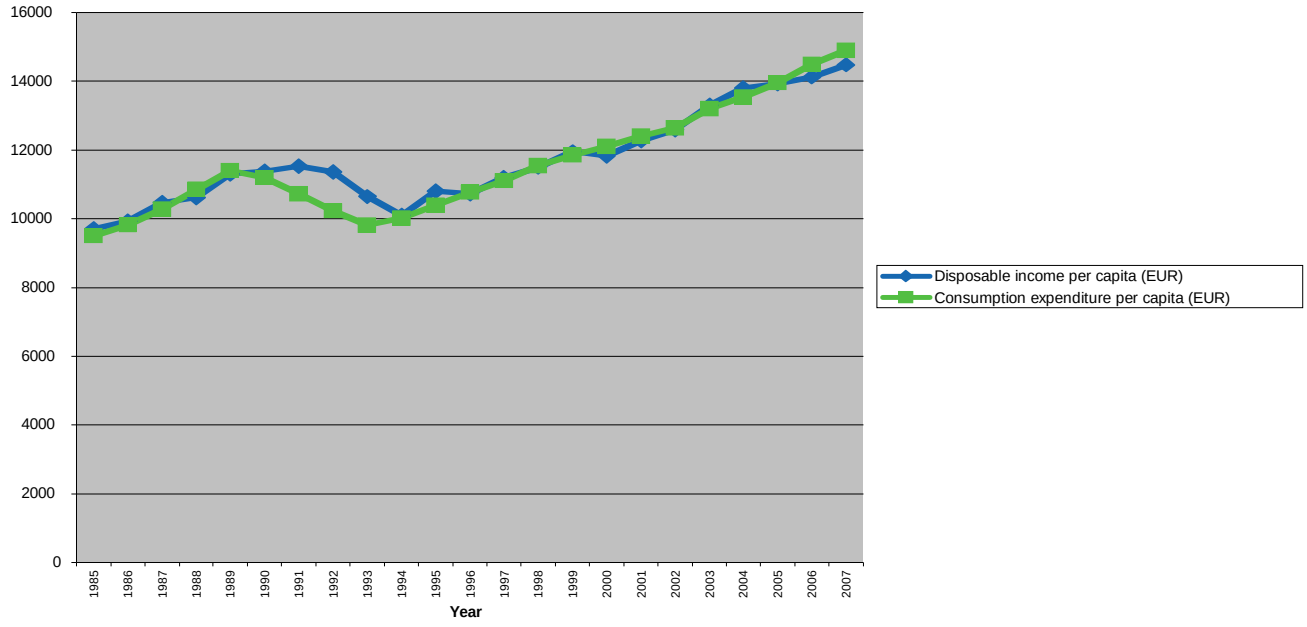

Figure 1. Development of income and consumption expenditure per capita in Finland 1985 – 2007.

Next, forecasts of consumption were calculated for 2010 and 2015 with the fourth and fifth quintiles of the 2006 Household Budget Survey. In addition, estimates were required for the numbers of households for 2010 and 2015. Official projections of numbers and structures of households are not made at Statistics Finland or elsewhere either. In my doctoral dissertation in 1996, I made projections of both the total number of households and of the number of household members 'right up to 2020. The total number of households in my projection differed from the total number of households in 2005 by only one per cent, so it was justified to use the total number of households in my projection for 2010 and 2015.[11]

According to the Household Budget Survey, households 'total consumption expenditure in 2006 was EUR 74.4 billion. When households 'total consumption expenditure in 2010 is estimated with data on the consumption of the forth quintile in 2006, the obtained total consumption expenditure is EUR 92.8 billion, i.e. growth of one-quarter compared to 2006. When we use the consumption expenditure per consumption unit of the fifth quintile as source data in calculating total consumption expenditure we receive EUR 124.3 billion as the estimate of households 'total consumption expenditure in 2015. In other words, the added up consumption expenditure of households would grow by two-thirds from 2006. Es-

pecially the latter figure seems large compared to the calculation of the KulMaKunta[12] project which indicated that households 'total consumption expenditure would amount to EUR 120 billion in 2030. By comparison, the estimate for 2010 fits in well with the trend of growth in consumption calculated by national accounts.

Table 2 compares figures on households 'average consumption in 2006 and respective figures forecast for 2010. Calculated per household, consumption would go up by 17 per cent. Growth of consumption on the six largest consumption targets (underlined) is fairly moderate so the application of the quintile model seems to produce plausible results.

Table 2. *Households 'average consumption by main consumption group in EUR in 2006 and forecast consumption in 2010 calculated with consumption of forth income quintile in 2006.*

Consumption, EUR	All households		Difference, %
	2006	2010	
A01 12 Consumption expenditure	30,247	35,484	17
A01 Food and non-alcoholic beverages	3,817	4,364	14
A021 Alcoholic beverages	498	805	62
A03 Clothing and footwear	1,153	1,417	23
A04 Housing and energy	8,193	9,176	12
A05 Home furnishings, appliances and materials	1,529	1,842	20
A06 Health	1,053	1,185	13
A07 Transport	4,715	5,810	23
A08 Telecommunications	856	963	13
A09 Culture and leisure	3,373	3,866	15
A10 Education	63	66	05
A11 Hotels, cafes and restaurants	1,261	1,611	28
A12 Other goods and services	3,508	4,379	25

Trickle down in main consumption groups

We will now go on to analyse the trickle down phenomenon in the six main consumption groups to see how the model works in subgroups. Table 3 shown the quintiles of earlier Household Budge Surveys which came closest to real consumption on the six main consumption groups in 1995 –2001. In accordance with the basic assumption of the trickle down theory we can make the presumption that the consumption habits of higher quintiles are adopted at different speeds in the different consumption groups.

Table 3. *Best predictions based on consumption of income quintiles from earlier years for consumption per consumption unit on the six main consumption groups in 1995 –2006.*

	1995	1998	2001	2006
Food	IV/1990	IV/1990	V/1990	V /2001
Housing	IV/1990	V/1985 tai V/1995)	IV/1998	V/2001
Home appliances and furnishings	IV/1985	IV/1990	V/1995	V/ 1998
Transport	IV/1985	IV/1990	V/1995	IV/2001
Leisure	IV/1985	IV/1990	IV/1998	V/1998
Other consumption	IV/1985	IV/1990	IV/1998	V /1998

In ten years, the time span for trickling down seems to have shortened and the reference group shifted from the fourth to the highest income quintile. The findings in the table contradict the assumption that trickling down would be fast in durable consumer goods and slow in, for instance, food. In housing and

food, the consumption level of the highest income quintile seems to be reached in a shorter time period than in the other major consumption groups. Consumption obviously appears to be homogenising or the highest quintile can no longer distinguish itself from other income brackets with its consumption. It would be especially interesting to explore this further with a wider international comparison.

CONCLUSIONS

The made analysis has shown that the exploitation of the trickle down theory in predictions of future consumption can be justified provided that this test with the times series data from the Finnish Household Budget Survey can be viewed as adequate proof. Households 'average consumption level is the combined end result of millions and again millions of consumption decisions and can be forecast fairly well with the consumption of the highest income quintiles of previous years. The advantages of this kind of an analogous model are simplicity and transparency. The only thing in it that the user needs to guess is the future number of households. The model also takes into account changes in the consumption potential of households by means of income growth.

Short periods of decline notwithstanding income growth in Finland has been continuous. We know, on the basis of the recession of the early 1990s, that consumption decreased primarily as a result of the households 'own immediate experiences. Preparing was also common, even if the recession had not had a direct effect on the households 'own economic situation. Unfortunately Household Budget Survey data were not collected in the worst recession years of 1991–1993. Consequently there are no empirical Finnish data available on the decrease in consumption.

Scenarios are often produced in future research. The calculation method presented here would be a good "business as usual" scenario. The model used here is not suitable for examining exceptional changes. It may, however, be that applying the model to the consumption of various population groups and data from different countries could offer the possibility to assess also the effects of exceptional changes in consumption potential on future average consumption.

The accuracy of the results presented in this article could be tested further with the Finnish data by examining whether the same model will also work within, for instance, household type categories or socio-economic groups. Tests should also be made with time series data from several countries, which would presumably be available from Eurostat.

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HOW DO CONSUMERS AFFECT CHANGES IN MACRO-LEVEL FORCES BEHIND CO_2 EMISSIONS? – LOOKING BEYOND POPULATION, AFFLUENCE, ENERGY CONSUMPTION AND TECHNOLOGY

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ABSTRACT – With the ImPACT decomposition framework, energy related emissions can be presented as combination of four drivers: population, affluence, energy intensity of economy and emission intensity of energy. Energy per GDP has been traditionally defined as the consumer's lever. Consumers influence their energy consumption to a certain extent, but other factors such as the structure of energy production and infrastructure also affect energy intensity. In addition, consumers have leverage over other macro-level forces. Especially the affluence variable that merely reflects 'consumption' has to be considered seriously when discussing emission mitigation in relation to consumers. This paper studies how consumption affects these four macro-level forces, and discusses drivers of the forces, barriers for consumers to influence them and empowerment of consumers.

INTRODUCTION AND BACKGROUND

Carbon dioxide (CO_2) emissions from the combustion of fossil fuels affect the global temperature[1]. Increasing CO_2 emissions amounted to 29 Mt in 2005[2]. Radical and immediate cuts in emissions are needed to avoid the predicted harmful impacts due to climate change. Several indirect drivers influence emissions: demographic factors, economic factors including globalisation and trade, and governance and institutions. Moreover, science and technology, in addition to cultural and religious meanings are behind changes[3]. The role of different macro-level drivers on environmental change can be detected with a simple decomposition analysis[4].

The global human population has doubled in the past 40 years or so and reached 6.0 billion in 2000. Urban areas contain half of the world population, and this proportion is increasing. Household sizes are decreasing and the average age of people is increasing[5]. Global economic activity increased around sevenfold between 1950 and 2000. Incomes per capita have also increased. Even though the intensity of energy consumption has decreased and technology has improved in the recent past, these have not been enough to compensate for the emission effects of growth in population and affluence in terms of per capita GDP[6]. This development has also been reported in some regional studies for example China during the 1980 –2007[7] and for the European Union region during 1993 –2004[8]. It has also been debated, whether dematerialisation, as in terms of improvement in energy intensity of economy, and decarbonisation, improvement in emission intensity of energy production, is permanent occurring or even occurring at all[9]. Thus, technological innovations and improvements in energy intensity haven't levelled off increasing volumes of goods and the changes in the structure of consumer demand[10].

Consumers, often treated as households in consumption studies, use energy directly through heating, cooling and warm water, electricity and transportation fuels. Indirect energy use includes energy embedded in products used by households. In most developed countries, household consumption is the most important final demand category. The share of household direct energy use and the building itself is generally between 40 and 50 percent.[11] For low income households, a large share of the total energy consumption is related to the combustion of fuels in the household. In total, 70 to 80 percent of national energy use may eventually be related to consumption[12, 13]. International trade also plays an important role. It has been estimated for example that around 30% of the CO_2 emissions related to household consump-

tion in the US occur abroad[14], and that 60% of Norwegian households 'indirect CO_2 emissions are embodied in imports.[15]

Behaviour related to household energy use, and environmentally responsible decision-making in general is co-determined by individual motivation, abilities, and opportunities.[16] Motivational aspects include values and beliefs, attitudes, subjective norms, and perceived control. Abilities refer to knowledge, habits and resources. Opportunities are determined by external conditions. Learning from past experience, can strengthen pro-environmental attitudes, skills and perceived controls, but can also become a serious barrier to changing behaviour[17]. Subjective constraints can explain a considerable amount of environmentally significant behaviour, but also structural constraints are important[18]. Individual barriers constraining lifestyle changes are: limited time and financial resources, limited awareness, attention, energy for decision-making and self-control. Limited skills and knowledge about problems and solutions can act as constraints. External conditions holding back lifestyle changes are the prevailing cultural meanings and social norms, infrastructures and the lack available alternatives[16].

In this paper, I look at the macro-level forces of population, affluence, intensity of energy use and technology that determine the development of CO_2 emissions in a decomposition framework, ImPACT[19]. ImPACT is a simple and often used model to clearly detect the drivers behind environmental change. However, ImPACT rhetoric states that intensity of energy use is consumption or the consumers 'lever. I challenge this rhetoric and study how consumers influence the development in fossil emissions of CO_2 through all the four macro-level forces. I discuss drivers, consumer influence, barriers and empowerment of consumers with respect to these four forces.

DECOMPOSITION FRAMEWORK

The ImPACT model is a simple mathematical identity used for describing and predicting the effects of changes in population, affluence, technology, and the intensity of consumption on change in the environment[19]. ImPACT is a reformulation of the original IPAT model[20].

In the ImPACT identity, total environmental impact I is determined as the product of four drivers, shown in equation (1),

$I = P \times A \times C \times T$ (1).

When studying energy related CO_2 emissions, I is measured by CO_2 emissions, P by population, A by GDP/capita, C by energy/GDP, and T by CO_2/energy. The annual percentage changes of the four drivers add to the change in emissions. Energy intensity of economy is affected by the structural composition of the economy. Moreover, the actual energy efficiency of output in energy sector affects C. Changes in intensity of emissions, T, indicate changes in combustion processes, but also structural changes in the energy system. In the identity, the factors relate to each other. There is often a strong 'mirroring effect ' especially between the changing affluence and energy intensity. For instance, affluence decreases in a recession but energy systems adjusts only slowly in the short term, thus energy intensity increases[19].

Trends and drivers of CO_2 emissions have been studied at the global and regional scale[8, 9]. Decomposition has been used for projecting future CO_2 emissions.[21] In the IPCC Emissions Scenarios[22] the Kaya identity[23] expression is used in place for ImPACT. In some studies total primary energy supply and final energy consumption are separated in the model. The European Environment Agency[24] has used decomposition analysis for different sectors of the economy. For example, household emissions of different countries are determined by the developments in population size, household size, final energy consumption per household, share of fuel in final energy consumption, share of fossil fuels from total fuels, and carbon intensity of fossil fuels. The standard IPAT or ImPACT index decomposition framework has also been applied in stochastic models[25], for instance, to estimate how a proportional change in population changes CO_2 emissions (population elasticity of emissions) [26]. Stochastic form enables estimation and hypothesis testing, and allows for the presence of non-linear relationships.

Structural decomposition analysis (SDA) is an extension of conventional index decomposition[27]. It is based on the input-output (I-O) model in quantitative economics[28]. I-O analysis is a suitable tool to determine both direct and indirect environmental impacts by examining the flow of goods and services

among the producing and purchasing sectors of a region. The SDA identifies, which economic sectors and final consumers affect the change. As an example, one recent SDA found that the increase in CO_2 emissions in China from 1992 to 2002 was mainly driven by capital investment and household consumption, which were only partly offset by efficiency improvements and technical changes in production[29].

It must be noted, that ImPACT deals with only one environmental problem at a time. The environmental impacts of increasing nuclear energy or hydro-electric power are not dealt with. Yet increasing their use improves the emission intensity variable. Moreover, GDP as a measurement solely describes the activity of the market, though many activities that raise GDP actually harm the environment[30]. Costs from environmental degradation may account percentages of the GDP.[31]

It was also argued, that the original IPAT didn't take into account the implications of institutions, cultures and social systems[32] or behavioural choices[30, 33]. Paul Waggoner and Jesse Ausubel[19] included an additional variable, 'C' in the IPAT equation and named it consumption, or consumers' lever[6]. However, consumers' behaviour reflects to some extent on other variables in the ImPACT decomposition as well, discussed in the following.

LEVERS OF CHANGE AND CONSUMPTION

Population

The debate over the role of demographic factors in explaining environmental impact started during the seventies and led to the formulation of the IPAT equation. Paul Ehrlich and John P. Holdren[20] presented the original equation and emphasized the importance of demographic aspects in relation to environmental problems. They divided the impact between population and per capita impact. Barry Commoner[34] called attention to the role of production and included technology in the equation.

Besides population size, other demographics that influence behaviour of individuals are not considered in the ImPACT model. It has been shown that population dynamics significantly influence the volume of greenhouse gas emissions[35, 36]. Age structure has clear effects on energy consumption. The share of people in working age decreases emissions at high levels of affluence[37, 38]. Urbanisation and decreasing household size accelerate emission growth[26]. Furthermore, women in the workforce and single-person households have an impact on consumption[10].

Family size and reproductive decisions depend upon information, services and available supplies. They also depend on the cultural context and the educational and economic opportunities[39]. An increase in the numbers of households is ultimately due to increasing individualism in societies[40, 12].

As an example, in China the population is 1.3 billion and it has more than doubled in about 50 years[41]. Due to reduction in birth rates as a result of one-child policies, growth is slowing. However, the number of divorces has increased and the number of families with several generations living together decreased. The number of households has increased rapidly whereas household size decreased from 4.5 to 3.5 people between 1985 and 2000. In addition, during 1952–2003, the proportion of the urban population tripled. The impacts on the environment are evident.

Consumers can directly influence population through family planning and indirectly through household size. A mandatory consideration period for divorce or encouraging co-housing schemes and eco-villages are solutions that influence household size. Policies that support smaller family size would make a significant contribution.

Affluence

Development of affluence is a strong indicator for the increase in CO_2 emissions. For instance, in China, during 1981–2002, the main driver for the increase in emissions was growth in per capita GDP. If all other factors equal to the 1981 levels, the affluence growth would have increased emissions by 469%. In reality, the emissions grew by 202% during 1981–2002, partially offset by improvements in emission intensity[42].

There are many driving forces behind affluence growth, discussed in depth by e.g. Inge Røpke[40]. At the macro-level, competition on costs, industrial mass production, product innovation, and advertising, have increased consumption. In addition, the transfer of resources from South to North, urbanisation, and the division of labour are ultimately behind this growth. Cheaper energy enables goods and services to be produced and delivered at lower cost. Lower costs in competitive markets translate into lower prices which encourage higher demand.

Increases in affluence have also been influenced by increases in work productivity that have been transformed into larger incomes rather than increased leisure time[40]. It has been shown that the ecological footprint, the requirement for biologically productive area for a nation, correlates somewhat with a respective nation's working hours.[43] Reducing working hours would result in a decline in average consumption intensity per unit of time and reduce business. Policies that direct productivity into more free time rather than higher incomes are likely to have impacts on the production mix, and hence to reduce the average emission intensity of the economy[43].

Socio-psychological explanations for constantly increasing consumption can be found in the theory of insatiable wants and the theory of envy[40]. Goods are used for relating one-self to others and making the word understandable. They also function as markers or classifiers. Even discussing goods is a source of enjoyment in addition to actually obtaining goods per se. Increasing the scale of consumption is a source of power, rationally aspired to in a hierarchical society.[44] Justification of one's own consumption is important and it can be done in several ways, such as through the need to have control over one's own life. Consumption plays an important role in the process of constructing and sustaining a self-identity, especially in the modern world where traditional ties are declining. In this respect consumption can also be a source of frustration, however.

At the socio-technological level, a paradox of timesaving can be identified[40]. People are busier than ever, and in order to save time, use more and more labour-saving equipment. Eventually, time is not saved, instead, the magnitude of consumption increases. In general, people spend a constant share of their incomes on travelling. Thus rising incomes lead nearly directly to rising demand for mobility[45]. Moreover, society adapts to these changes, by building an infrastructure based on cars. Jalas[46] argues there is a time use rebound effect in any efficiency measure that transfers household activities to markets. Some of the efficiency gains will be lost due to this temporal rebound effect and the consequent new consumption activities. Moreover, growing consumption doesn't necessary guarantee happiness[44].

Intensity of energy consumption

Even though the energy intensities are generally improving, increasing consumption is not contributing to dematerialisation[40]. For example, increasing private consumption due to changes in consumer behaviour would have potentially caused a considerable increase in energy use in Denmark between 1966 and 1992, all other factors being unchanged.[47] Nonetheless, this was partly offset due to substantial energy conservation in the energy supply sector and other production sectors.

Differences in average household energy requirements between countries are determined mainly by the efficiency of electricity generation, the average levels of household expenditures, and the average indirect energy intensities[12]. A strong rising trend in total energy requirements with increased income was observed in a study of a few European countries, although this relationship is not to be proportional[12]. Income elasticities have universally been found to be less than 1 for energy consumption.[48] The share of luxury goods increases as the income rises, more money will be spent on the same kind of goods.

A country's overall energy efficiency is also influenced by international trade. The import of energy intensive products reduces the need for domestic production and the environmental effects are often shifted to low energy efficiency countries[49]. Vast amount of indirect energy consumption is embodied in international trade and generally developed countries are net importers[50].

Indirect energy consumption rises with increasing income. The share of food from total energy use varies between 7% in the U.S. in 1997 and 22% in India in 1993/94. On the other hand, the share of mo-

bility varies between 8% for India and 36% for the U.S.[11]. Gains in energy efficiency lead to lowering of energy prices, and gains lead to increased economic growth and eventually increased consumption[49, 51].

The aggregate energy consumption of a nation reflects its consumers 'through the ownership of different household appliances, the number of cars, travelled distances, household direct electricity use, other energy consumption and living space. Farla and Blok found that dematerialization did not occur in household energy use in the Netherlands during 1980 –1995, which was mainly due to the increase in the use and ownership of household electronic appliances[52]. These authors reported this electrification effect is similar to those in other developed countries as well. As another example, the number of cars in the EU27 countries expanded from 394 cars per 1000 inhabitants in 1995 to 463 in 2004[53]. In China, the rate of increase in number of cars expanded even more, a six-fold increase during 1980 –1994, and still is growing strongly[41].

The growth of consumption is often guided towards energy intensive products, instead of services and immaterial goods. This is partly because the decrease in the prices of industrially produced goods is larger compared to prices of services. Privatizing labour intensive and materials extensive services has also had an impact. One reason is also the acquisition of time-saving devices that are especially energy consuming.

Consumption is often discussed as a matter of choice, but choices are bounded by socio-technical frameworks[40], such as the structure of the economy in addition to the structure and efficiency of the energy supply system[12]. At the city level, the manner in which all buildings and other facilities are situated, the quality of the public transport systems, and the quality of buildings, has a direct influence on household energy requirements. However, consumers also have an impact on these systems as users and thereby sustain these systems. Moreover, limited awareness, and knowledge of the energy consumption, especially of indirect energy embodied in goods are barriers towards less energy intensive consumption.

Energy efficiency measures at households often mean cost savings. However, if the direct household energy costs relative to total expenditures are already small, a consumer may not be motivated enough to increase the efficiency of use further[54]. Also, gains in the efficiency of energy consumption may lead to an effective reduction in the per unit price of energy services, leading to increased consumption[55]. Rebound effect has been studied in energy economics. One review estimated that rebound for residential energy uses would be 0 –50% for 100% increase in energy efficiency, depending much on consumer awareness[55]. The results form different studies may vary significantly depending on the boundaries used to describe the rebound effect. For instance, one Swedish study found that 20% increase in technical energy efficiency would increase household CO_2 emissions by 5%[56]. Also, it must be noted, that besides the cost reduction of energy services and possible increase in energy use, there are behavioural and technological spill-over effects, co-benefits and negative side effects not included in the traditional analysis.[57]

Consumers can directly influence intensity of energy use through energy saving investments and energy conservation at home, and through energy efficiency of purchases. Choosing fewer expensive luxury products instead of many similar bulk products has a strong effect. Furthermore, choosing energy extensive leisure activities is an option, in addition to using public transportation. At the societal level, taxes on energy intensive consumption, public financing of labor intensive services, and planning infrastructure towards energy efficient society are important. Fashion and design should be encouraged towards sustainable direction.

Technology

Emission intensity of energy is also influenced by consumers even though the behavioural effects are rather indirect. Emission intensity is mainly influence by technical solutions and science and socio-political factors. Thus, external conditions often bind consumers in influencing emission intensities. When driving a car, the emissions related to a certain amount of fuel are predetermined. Changing fossil oil for alternatives such as biofuels, gas or electricity with potentially lower emissions per energy used is not an option, as long as the large-scale infrastructures for alternatives are non-existent. The CO_2 emissions of a public district heating network are also beyond the consumer ś direct influence. However, con-

sumers can invest in solar panels for electricity, heat pumps for heating, among others[58]. Choosing public transportation may in many cases be a means of influencing emission intensity.

Saving electricity when connected to a power-distribution network directly influences on electricity production, closing down the marginal source of power, often most CO_2 intensive one, such as coal power. Choosing non-fossil 'green electricity' is option in which consumer behaviour can have an impact. However, the impact of green electricity on increasing the renewable generation capacity can be rather limited in the short term[59, 60, 61]. Even so, green electricity can be crucial in promoting the use of renewable energy sources in the mid term, as an incentive for producers and sign for policy-makers. However, determining the green electricity effect with ImPACT or even with structural decomposition analysis, is not possible as the division between the different forms of the same kind of products, ordinary versus 'green electricity' cannot be achieved with these approaches. The effects of green electricity could be quantified with a bottom-up analysis, however.

The higher prices and the availability of alternatives, such as cleaner energy solutions for electricity or heating, such as hybrid cars and so on, are barriers for consumers. Limited awareness and knowledge on the emissions of different energy sources, or the emissions embodied in goods, and how to purchase these goods are also barriers for consumers. Individual constraints to environmentally significant actions also include knowledge about the whole climate change and uncertainty about what information produced by the media is actually accurate[62]. As an external factor, there is also scientific uncertainty about what is the most sustainable option, for example, concerning the emission intensity of transportation biofuels.

Table 1. Drivers behind macro-level forces, consumer influence, barriers and consumer empowerment.

	Population (P)	Affluence (A)	Energy intensity (C)	Technology (T)
Drivers	Demographics; Industrialisation, Urbanisation Cultural meanings	Economic factors; Socio-political factors; Cultural meanings social norms; greed power of producers; advertisement, individualisation International trade Spiral of business	Science and technology; Socio-political factors; Cultural meanings; Spiral of business	Science and technology; External factors, e.g. emission intensities of district heating & automotive fuels
Consumer influence (direct)	Family size	Working hours vs. leisure	Direct energy & electricity use Energy effectiveness of durables and housing Travelling	Investments in solar panels, heat pumps Changing travelling modes, public transport
Consumer influence (indirect)	Demographic factors; household size		Energy embodied in goods Luxury goods Energy-extensive goods	Buying green electricity - incentive for producers
Barriers	Lack of birth control, Social norms	The forces behind consumption strong	Existing infrastructures Impacts not known	Higher prices of less emission intensive solutions, limited awareness & knowledge
Empowerment, policy	Family planning	Work-time reduction policies	Taxes/substitutes for energy extensive services	Taxes, subsidies

DISCUSSION AND CONCLUDING REMARKS

Achieving sustainability and an equal standard of living worldwide for increasing population is incompatible with the life-styles of the most affluent countries. Even if China alone attains the same developed-country levels of consumption, this would entail doubling impact on the world environment[41]. It has been argued that considering the mitigation of energy-induced CO_2 emissions, increased energy efficiency and efficient technologies are likely to develop in the future, though not sufficiently and fast enough learning from past development[43, 63]. Also the level of consumption overall must be reduced.

The drivers behind changes in CO_2 emissions can be described and predicted with a simple ImPACT decomposition model. Consumers 'lever is represented by energy intensity[6, 19]. Ultimately at least a major part of the energy use is due to consumer demands. But, consumers have an impact through all the macro-level forces, population, affluence, energy intensity (energy/GDP) and technology (CO_2/energy) behind emissions (Table 1). These forces and their ultimate drivers are closely interconnected.

ImPACT analysis operates at the disaggregated level. Approach can also be applied to sectors, such as households. To include for example trade effects, the IPAT equation could be modified according to the following:

CO_2 = pop × GDP/pop × $Energy_{emb}$/GDP × Energy/$Energy_{emb}$ × CO_2/Energy, where 'Energy$_{emb}$ 'is energy embodied in trade and 'Energy 'simply refers to domestic direct energy use. If more specific consumer aspects are targeted, structural decomposition analysis can be used. In such cases, data requirements increase and the simplicity of the results is reduced.

Consumers can directly influence energy efficiency and emission intensity by their daily purchases and investments. Conserving energy has a direct influence. Economic incentives are cost-effective, yet only if the price is the definitive criterion for a consumer. Consumers can be empowered to change life-styles with consumer policy that increases awareness and knowledge, informs individuals as to how they can make a difference, eases participation, and motivates by underlining that it is a normal thing to do. In the long term, influencing individuals has also the potential to influence social change.

Governmental regulation can be implemented in the form of buildings energy-efficiency standards, for example. Consumers are willing to accept a policy regulation, if it increases the quality of a product or service. Standards and restrictions are powerful factors. However, structural interventions may 'crowd out 'pre-existing internalized motivation. Environmentally sound technology and infrastructure has to be built to reduce external constraints. Exchanging incomes for leisure or family planning are radical means of action but have a strong impact on emissions. The modern consumer society can be interpreted to be driven by 'a mixture of greed, social norms and the power of producers '[44]. The structures behind consumption are often strong. The developments would have to be far-sighted and take place in many fields in order to avoid leakages and strengthen the lever of the consumers.

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EMPOWERING TOMORROW'S CONSUMERS

EXPERIENCE INNOVATIONS FOR AND BY CONSUMERS

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ABSTRACT – The notion of the experience economy describes the idea that experiences are becoming an accelerating force in our everyday life. What is particular about the potential transition to experience economy is the assumed close linkage between the incentives of profit-making firms and the evolving consumer demand. This linkage seems to make sense conceptually, but there is still a long way to go in terms of business practices. We argue that businesses currently focus too much on creating high arousal and hedonistic experiences. They also seem to actually involve consumers in a limited scale in the development of experiences.

Our work has two contributions to the body of work on experience creation. Firstly, we analytically extend the concept of experiences in the direction of low arousal, repetitive and mundane experiences. Secondly, we bring in lessons from the domains of consumer studies and user involvement in product development. This way we can obtain a more diversified picture of the kinds of experiences that users can be involved in creating. We use case studies carried out in the field of leisure to back up our argument.

INTRODUCTION

Experience innovations have become an increasingly prevalent object of research during the last decade in several disciplines including economics and innovation studies, business and marketing studies, sociology of consumption and science and technology studies. According to Pine's and Gilmore's[1] seminal work we are witnessing a two hundred years long shift from an agrarian economy based on extracting commodities, through an industrial economy based on manufacturing goods, then a service economy based on delivering services, now to an experience economy based on staging experiences.

While many observers think that the notion of experience economy offers a 'hype' image of the dynamics of contemporary society and misrepresents the living conditions in a number of countries, most still acknowledge that there are some 'elements of truth' in it. One aspect is that already the classics of consumption literature identified signs of a similar development.[2] [3] Furthermore, it is hard to deny that the production of experiences has more recently become a strategic issue for firms seeking new opportunities for profit-making. Nevertheless, consumers still seem unfulfilled with experiences that are provided to them. In response, a close interaction between firms and consumers has become a growingly valued topic in value creation. In consumer research, correspondingly, attention has shifted from information processing to the production of emotional experiences associated with products and services. All products – no matter how mundane – carry some experiential features.[4] The focus on the production of experiences sharply contrasts with the traditionally approach of product management, which has emphasized the exchange and extraction of value through different product features. Firms and consumers, in the traditional approach, adopted distinct roles of production and consumption, and consumers did not have an explicit role in the process of value creation.[5] We argue, along with many students of experience innovation, that the creation of experiences is closely related to the quality of interaction between firms, products and consumers. This is also reflected in recent efforts to translate everyday practices of consumers to the language of business life. An example is design research, which has recently widened the scope of user experience by drawing attention away from product centred and individualistic experiences. Battarbee and Koskinen[6], for instance, argue that experiences indeed have social dimensions and need to be understood as social phenomena. They propose the concept of 'co-experience' to describe how individual experiences are transformed as they become part of social interaction.

While there is an increasing faith in the worth of professionally designing the production of experiences[7], the attention of firms has often been narrowly focussed on creating high arousal experiences, which address the (assumedly) hedonistic desires of the customers. While this is not a problem for firms

who have specialised in some narrow segment of tourism or leisure (e.g., adventure holidays), the narrow focus on experience creation can be an obstacle for firms seeking new opportunities for experience innovation in more general segments of production, such as health care or manufacturing industries.

It is the purpose of this article to explore new possibilities for experience innovation beyond high arousal products and services oriented to satisfy hedonistic desires by the customers. Our research strategy is based on a "cross-fertilization" of ideas by bringing in completing perspectives from the study of experience economy, user innovation, and consumer studies. We start by reviewing how the literature on user innovation has enriched the understanding of the salient role of different consumer groups, in the creation of new experiences (Section 2). Next we make a distinction between hedonistic vs. creative ways of consuming experiences, as proposed in recent literature on consumer studies (Section 3). In order to explore new possibilities for experience creation, we develop a typology, which locates high arousal, context bound experiences (e.g., amusement park) at one extremity, and indicates three alternative types of experience based on the intensity and context of experiencing; we also showcase relevant examples and revisit recent case studies (Section 4). The concluding section (5) of this article stresses our argument for the need to go beyond the focus on high arousal experiences, by indicating ways in which experience innovation can emerge from different combinations of contexts and consumer interactions.

INVOLVING CONSUMERS IN EXPERIENCE INNOVATION

In the discourse on the experience economy, the focus is on products, services and companies that offer something more than the physical product.[1] It has also been claimed that customers need to be engaged in memorable and personal ways; often the innovation is the story built around the product.[8] These stories are not always manageable, intentionally created stories, but they rather indicate that producers and users "have met" and created a success story together. This approach has been lately evident among the leading consumer product manufacturers[9]: for example Sony addresses its products to "creative users" (e.g., *Go create* -advertising campaign for digital camcorders), and products are designed for people who are "active" (wristop computer for outdoor sports enthusiasts) and who actively make their own aesthetic choices in interior design (a changeable colour part for a door handle).

Many questions on how to commercialize experiences for the benefit of both providers and consumers remain unanswered. For instance, how can an experience be provided in the great scale required by mass consumption? After all, this is a distinct feature in what Pine and Gilmore[1] describe as the evolution of value creation. Standardized modes of mass provision would seem to challenge the individual experience. This could potentially require solutions such mass customization, individual tuning or simply taking a step away from the individuality of experience, for instance.

Simply increasing user focus on the inclusion of experiential features of goods and services is likely to give rather conventional guidance on how to create and recreate experiences. For instance, Boswijk et al.[10] provide detailed checklists which aim at giving practical guidance for experience provision by synthesizing lessons from a variety of management, design and engineering approaches. Perhaps this is why experiences have so often been focused on in traditional experience industries such as tourism and leisure.

The strict distinction between the provision and the consumption of goods and services has been questioned for years in the literature on user innovations. Accordingly, consumers participating in the provision of goods and services have been considered e.g., co-producers[11], professional amateurs[12] and user innovators[13]. Therefore, it would seem very difficult to assess experiences independently (and objectively) from their consumers. Consuming an experience requires participation from its consumer. (We will provide examples of this in our case studies in Section 4.)

Literature on user innovations draws attention to similar issues as literature on experience economy. It uses cases from sports which can be described as extreme by nature: rodeo kayaking[14], diving and kite surfing etc.[15]. Similarly, it makes notes that users have been able and allowed to develop these sports. Equipment and rules have given way for creative consumption and user participation, in studies on user innovation.

There is one definite and sometimes overlooked contribution that user innovation literature provides to the experience economy: users need to be very skilful to appreciate the experiences of their sports. This calls for regular practice and repetition. Similarly, the nature of the experience has to be such that it can be enjoyed a great number of times. The memorable experience which comes forth in events, gatherings or competitions is preceded by numerous less memorable experiences. In the next section we will complete this aspect of experiencing through the recent findings of consumer studies.

HEDONISTIC AND CREATIVE CONSUMPTION OF EXPERIENCES

It is important to recognize that experience is essentially intertwined with interaction between consumer and the product. The experience economy can be understood more profoundly through the lenses of recent consumer research on post-materialist lifestyles and subjective well-being. By acknowledging the active role of consumers and the intrinsic value of leisure consumption, we can approach a consumer-based characterization of experience innovation.

Economic wealth has created a consumer culture in which consumers are progressively liberated from the everyday struggle for sustenance to pursue happiness in a variety of ways. Markets for mass products are gradually saturated, and consumers start to search for more meaningful things to consume. The discussion on the experience[1] or dream[8] economy; suggests products and services such as cafés, amusement parks, university education and nature reserves as the new outlets for meaningful consumption. It also refers to ordinary products that are enhanced with an "experience" or "story-telling" aspect. Yet defining the "experience economy" calls for a more detailed understanding of hedonistic consumption.

A growing body of research on hedonistic well-being[16, 17, 18] has identified broadly two different types of experience-based consumption: the pursuit of hedonistic pleasure, and the creative pleasure of an active life (Table 1). The intensity of experience takes one out of the flow of the everyday life and frames everyday pleasures to reportable stories.

The hedonistic features of consumption are often in the focus of experience provision. These features relate to strong immediate sensations. Such consumption does not require much reflection or sense making. The extreme or exciting new experience is sought for. Even a family visit to the Walt Disney World, which is considered memorable for a long time afterwards, is viewed from this perspective.[1] It is also taken for granted that a new visit would provide a similar kind of experience and pleasure.

Table 1. Characteristics of hedonistic and creative pleasure.

Hedonistic pleasure	Creative pleasure
• Pleasures involving strong sensations such as euphoria, ecstasy, inspiration – and little reflection • Sensations are momentary, immediate experiences, which do not require cognitive interpretation or sense making • The treadmill of pleasure: people adapt to pleasures and start to take them for granted • Many products and services only bring momentary and passing pleasure	• Activities and hobbies in which their practitioners are engrossed • Activities provide feelings of liveliness, creativity and achievement • Practitioners are creative, think flexibly and are open to new information, creatively combine parts into entities • Continual and progressive evolution of skills and activities

Nevertheless, we believe that the focus on high arousal or hedonistic experiences is unfortunate. Pine & Gilmore[1] in fact consider that mundane experiences such as entertainment are just as important. Every experience need not be memorable or extraordinary even if it provides possibilities for creativity.

Approaching experiences from the perspective of creative pleasure would therefore seem meaningful. Such pleasure often has a repetitive foundation (cf. Mumford's[19] notion of 'expressive technology'). Accordingly, the inclusion of certain repetitive experiences in consumer practices would seem to make a solid business case for experience provision. Few families visit amusement parks often, yet many do engage in different kinds of activities on a weekly basis. It is then the creative form of consumption that takes over the experience economy. Consumer creativity incorporates long term liveliness and progressive learning of skills. It also bears a promise of more sustainable patterns of consumption. We shall provide examples of such activities in the next section.

FROM HIGH TO LOW AROUSAL EXPERIENCES

Thus far we have argued that high arousal experiences receive much attention in experience innovations, and that this is unfortunate as low arousal experiences are at least equally important from the perspective of business potential. They may also allow better room for consumer creativity and innovation.

Next we use case studies carried out within the field of leisure in Finland to bring in, and exemplify, lessons from the domains of consumer studies and user involvement in product development. This way we can obtain a more diversified picture of what kinds of experiences users can be actually involved in developing. The case studies also illustrate a typology that we have developed to distinguish between four different types of context for experiencing.

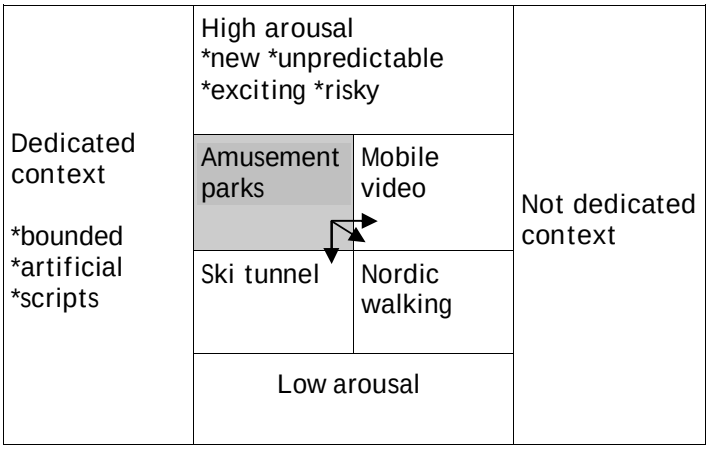

Figure 1. Experiences according to arousal and context.

The typology presented in Figure 1 elaborates on our argument. The figure incorporates two dimensions. First, there is the intensity of the experience. Intensity – i.e. arousal – relates to newness, unpredictability, risk, excitement, uncontrollability, and other 'fear factors' known from psychological studies.[20] The other dimension is the context dedicated to the experience. This relates to the stage for the experience. A dedicated stage is artificial, bounded from the environment, temporally slotted and bears formal scripts. An amusement park serves as good example of such a stage.[1]

The figure addresses two dimensions which businesses providing experiences can directly affect: the intensity of experience and user participation and the stage of this experience. We next elaborate on the typology by reporting four case studies. We use the case of amusement parks as a starting point for extending the notion of experience development to other domains. Amusement parks are in many ways forerunners in experience creation and are often mentioned in literature discussing experience economy. The contrasting three case studies focus on the development of a ski tunnel, mobile video and Nordic walking has been carried out at the National Consumer Research Centre. These cases show how experiences can be developed in less dedicated contexts and with less intended arousal. They allow for more user creativity and repetition of experiences. All cases involve experience creation in which both firms and users have participated.

The amusement park

The amusement park has a history lasting for centuries from European outdoor amusement centres to the currently predominant American amusement or theme park variant. During its history, the amusement park industry has been renown for its innovativeness. Every new season brings with it new rides, carousels or shows. Novelty and excess are essential features of the industry. It lives well up to its heritage which is closely linked to the entertainment industry.[21, 22]

Picture 1. Ride in an amusement park.

The amusement park case represents the development of a dedicated setting for high arousal experiences and, accordingly a hedonistic way of consumption. Although visitors experience the amusement park personally or co-experience it together with companions, they are expected to perform according to a script and within the given setting. In other words, the features of the park are central when providing experiences.

This case shows that experiences can be created for great numbers of people within dedicated contexts. Such experiences are carefully scripted and can offer high-arousal experiences. Experience development is provider-led.

Ski tunnel

The world ś first ski tunnel was built in Vuokatti in Finland in 1997 to provide stable training conditions for competition skiers. It is open during the summer season and during winter when outdoor conditions are too cold for skiers. The track profile of the tunnel is designed to be demanding to suit athletes.

The Finnfoam Paippi is an example of a ski tunnel developed in a different way. It is actually a tube consisting of concrete elements that have been assembled on land to provide skiers standard weather conditions throughout the year. Furthermore, the low track profile and track arrangements for different paces make skiing comfortable for skiers at different skill levels.

Picture 2. Cross-country skiing indoors.

Indeed, the tunnel is designed to promote cross-country skiing culture rather than to support the careers of competitive skiers. Families with children are welcomed as they introduce their youngsters to the sport. Similarly, pensioners are welcomed as they are likely to mediate skiing culture to younger generations. Even the age groups in between are seen to represent skiing culture rather than competitive skiing. Exercise and better health are considered by-products of this focus on culture.[23]

Behind the development of the ski tunnel were experienced skiers. They were inspired by the world's first ski tunnel, indoor slalom facilities, ice hockey stadiums and swimming pools. As experienced skiers, they knew what kinds of conditions non-competitive skiers would enjoy. In this respect, they were hobbyists who adhered to methods of empathy with future users[24]. User involvement, that is, involving themselves and their peers, was not intense, yet it played an important role in the development of the tunnel.

This case shows that low arousal experiences can be created within dedicated settings. It also indicates that a dedicated setting may give opportunities for a number of different kinds of experiences. Approaching consumer involvement both from creative and hedonistic perspectives can be useful and also contribute differently the development and provision phases of experiences.

Mobile video

It became technically possible to watch streaming video on mobile phones in Finland in the early 2000's. Industry players were then searching for ways on how to build a business around mobile video. It was thought that users would enjoy having the possibility to watch video content whenever and wherever they liked.

We participated in the search for novel uses by carrying out one of the first studies of mobile video. Altogether 13 users were given mobile phones to try out this novelty service for a week and report their experiences in a diary. They performed according to our instructions and their initial enthusiasm turned into boredom within two days[25]. Watching television shows and humorous video clips was not considered particularly exciting.

Picture 3. Co-experiencing karaoke in the subway.

However, during the study we observed that users had begun to watch videos in unintended ways. In effect, they used the mobile phones and the videos for creating experiences, or co-experiences to be more exact.[26] Singing karaoke with friends and watching cartoons with small children transformed the private use of mobile telephony into social use. In particular, singing karaoke in a metro or in a school cafeteria represents an intentional challenge to social norms, which lead to high arousal experiences, as the users reported.

This case shows that high arousal experiences can be created outside dedicated settings. It also indicates that it can be useful to leave room for user creativity when developing experiences. Setting the stage for an experience need not mean that this stage has to be carefully excluded from everyday life. The study also pinpointed experience design implications which the developers of mobile video had been unaware of.

Nordic walking

Walking is a prime example of an everyday activity which requires neither specific skills nor specific equipment. This has changed in the past years, however, as a market for different genres of walking, e.g. Nordic walking, has emerged. Nordic walking has been a commercial success in Finland, which has spread extensively from zero to 450 000 practioners in few years.[27]

Picture 4. Walking with sticks

Characteristic to the Nordic walking is that it involves some degree of regularity and planning to the walking activity. There are also sporty elements such as an increased focus on equipments including walking sticks, sports clothes and shoes, which distinguish Nordic walking from ordinary walking. Even though Nordic walking is often done for its own sake, different types of walks and walkers are defined in relation to one's motivation to walk and skills.[28]

The concept of Nordic walking was developed and actively promoted by stick manufacturers together with sport institutes and recreational associations, and, in varying degrees, by the walkers themselves. Walkers were not just adopting the sticks and various fashions of using them, but also actively involved in the development of Nordic walking. They repeatedly gave direct feedback to product developers throughout the most intensive phases of development.

That does not only refer to the symbolic dimension of the activity, but also to an active process in which the frame or some parts of it are changed as part of the users' walking practices. The appropriation of Nordic walking thus encompasses both the ideas and activities adopted. Nordic walking is an interesting case of creating a sport out of an ordinary, everyday activity.

This case shows that mundane, low arousal experiences can be turn into commercialized experience which takes place outside dedicated settings. It also shows that the creativity of consumers and associations can be integral when developing experience innovations.

DISCUSSION AND IMPLICATIONS

In this paper we have discussed the role of users in the creation of experience innovations, as reflected in recent literature on user innovation and consumer studies. We have analytically extended the concept of experiences in the direction of low arousal, repetitive and mundane experiences, and revisited three empirical cases, ski tunnels, mobile video and Nordic walking, which all support our findings. Our approach suggests that mundane issues have been overlooked in literature on experience development. Involving users in product development is a potential way of introducing the mundane in experience development.

We finalize the paper by asking what are the implications of the case studies for experience economy. Firstly, we argue that experience businesses can benefit from an expansion toward creative and low arousal experiences. As indicated by the case studies (ski tunnel & Nordic walking), successful experience innovations can focus on the area of low arousal, and hobbies which instead of momentary pleasure provide users with creative pleasures in the form of a progressive evolution of skills. Value in such cases is then co-created by users and firms, while user knowledge becomes an integral part of product development. The promise of such development lies in a shift toward more consumer centered experiences.[14, 29, 30]

Secondly, high arousal experiences need not be restricted to some artificial contexts. As the case of mobile video indicates, user creativity can help find new and unexpected ways of re-designing and expanding experience innovations. Sometimes, however, consumers are considered conservative in adopting radically innovative products. It has also been argued that it is difficult for firms to know in advance what the customers really want.[31, 32] Rather than accepting these idioms as a starting point for experience development, we challenge firms to look for suitable times and methods to incorporate user knowledge in their development processes. There is a high number of design and user innovation approaches for doing this. Especially, product developers should allow more flexibility and scope for alternative interpretation in their product scripts.[33] Openness in design and extension beyond high arousal will swing experience innovation to a new sphere.

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EMPOWERING TOMORROW'S CONSUMERS THROUGH WWVIEWS

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ABSTRACT – This paper anticipates and reflects upon the future impacts of consumer empowerment in the context of new participatory governance practice. The example is WWViews (World Wide Views on Global Warming), a global participatory project empowering citizens and consumers around the world to impact on international climate change negotiation. The paper argues that although there is currently much understanding of the rationales and dynamics of participatory governance practice, there is less understanding of the specific challenges and potential impacts of such activity at the global level. The paper contributes to a better understanding of the special requirements of consumer empowerment and citizen participation at the global level.

INTRODUCTION

Consumer empowerment is a topical theme in several research fields, such as consumer studies, economics, sociology, political science, psychology as well as cultural and environmental sciences. A generally held view is that consumers have a salient but, at the same time, fragile role in arenas of economy and politics. Similarly, the concept of "consumer empowerment "is loaded with ambiguities in recent studies[1, 2, 3, 4, 5 ,6, 7]. There are two aspects which make the concept difficult to domesticate. First, the discourses related to consumer empowerment often prism through competing empowerment activities (for instance, consumers as complainers of public services and consumers as boycotters of privately produced goods) [8]. Therefore, it would seem wise to avoid drawing distinct lines between activities traditionally attributed to the domain of consumers and activities traditionally attributed to the domain of citizens. These domains are intertwined and have for centuries been so[9, 10, 11]. Accordingly, the concept of consumer-citizens is sometimes used to address both domains.

Second, consumer empowerment is often analysed from two opposing perspectives: one regarding it as a spontaneous social process (relating to sub-politics of consumption and its often disruptive implications to established institutions of business or government); the other regarding it as measures aiming to strengthen consumers 'role in the arenas of market or politics. In this respect, empowerment can be studied both as a societal trend and strategic intervention by established institutions[12].

In this paper, we acknowledge the conceptual ambiguities between consumers and citizens. We build bridges between consumer empowerment and citizen empowerment rather than separate them analytically. We do so by focusing on a case study, an on-going project, *WWViews* (www.wwviews.org), which represents strategic intervention aiming to empower consumers and citizens around the globe to impact UN Climate Change negotiations (COP15), which take place in Copenhagen in December 2009.

On the way to understand what motivates such activity and what can be expected from it, the paper reviews the rationales, as adopted by the organisers of WWViews, of integrating non-experts – consumers and citizens – in complicated decision-making systems such as international climate change negotiations. The paper also anticipates and reflects upon the political impacts and challenges of WWViews. By focusing on these aspects we intend to contribute to a better understanding of the future prospects of consumer and citizen empowerment at the global level.

The remainder of this paper is structured as follows. Section two is a presentation of the key ideas underlying the WWViews and its objectives. Section three introduces the background of the methodological design, which is rooted in the tradition of participatory technology assessment. The fourth section provides a framework for anticipating and speculating about the political impacts of the WWViews,

which will later be tested as research hypotheses. The fifth section concludes the paper by discussing the main challenges and presenting some strategic design perspectives that may help better design future WWViews or similar empowerment exercises.

THE WWVIEWS PROJECT[a]

The idea behind the WWViews is to give citizens around the world the possibility to deliberate a number of key questions of relevance to the forthcoming climate policy. During one day, September 26th 2009, WWViews partners from 45 countries (and 7 U.S. States) will host deliberations with roughly 100 ordinary citizens, chosen to represent their region's demographic diversity.

Figure 1. Participants from 44 nations in a training seminar hold in Copenhagen in March 2009 (Photo by DBT).

The citizen panels will gather to engage in a structured deliberation aimed at answering an identical set of questions, the results of which will be gathered through a web interface. The questions will reflect the key issues and major controversies at the centre of negotiations on COP15:

- *Shared vision* – What goals for reducing CO_2 emissions should be set for the future?
- *Mitigation* – What principles should determine the different nations' share of reductions? For example, should emission quotas be administered according to current UN classifications of developed and developing nations, per capita or per GNP?
- *Adaptation* – How much do we need to spend on adaptation and how should funding be distributed?
- *Technology* – How do we ensure the development of new, CO_2 neutral technology and the proliferation of existing technologies?
- *Finance* – How should the initiatives decided on be financed?

The citizens will be provided an information material before and during the WWViews meetings, to show how the negotiations on the COP15 may affect people's lives in different ways with regards to changes in regional weather patterns as well as socio-economic consequences. The issues will be addressed in WWViews in the form of predefined questions to vote for[b]. In addition, citizens will be asked to give their recommendations to their local community, their national politicians and the COP15 negotiators.

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a Sections II and III are much based on the project descriptions of the WWViews found at the website www.wwviews.org.

b The in situ votes are supplemented by an exit-survey, which makes in-depth analysis of the opinions in the citizen group possible after the meeting.

The national WWViews meetings will be carried out simultaneously, meaning that from the first meeting concluded in the first time zone until it concludes in the last time zone, 24 hours will have passed. The results will be reported on-line through the WWViews website during the day. The national meetings will be organised by National Partners, who meet a set of criteria established in order to guarantee neutral and comparable results. The partners are non-profit organisations, independent of political influence and most are experienced with regards to citizen participation; typically technology assessment institutions, NGO's and university institutes.

PARTICIPATORY TECHNOLOGY ASSESSMENT

In terms of methodology, WWViews builds on the tradition of participatory technology assessment (pTA). The beginning of technology assessment (TA) is often located in the year 1972, when the Office of Technology Assessment (OTA) was established within the U.S. Congress. Despite the abolition of the OTA in 1995, the policy art called technology assessment is still practiced in a variety of places[13].

The evolution of TA has often been described as a series of paradigmatic shifts, from a forecasting-oriented and reactive TA to proactive, constructive and participatory forms of TA[14, 15, 16]. Participatory technology assessment (pTA) refers, according to Joss and Bellucci[17], to the methods and procedures of assessing socio-technological issues that actively involve various kinds of social actors, assessors and discussants. The initiation of pTA is often associated with the experimentation that occurred in a few countries in the late 1980s, most notably Denmark. The Danish Board of Technology held so-called "consensus conferences," which involved citizens in the centre of the assessment process. In the Netherlands, so-called "constructive TA" was developed by academics together with industry for the purpose of rendering the process of technology development more responsive to the needs of potential users through interactive assessment procedures. Since the early 1990s, pTA has become widely established and the methodological toolkit extensive[c, 16, 18].

The rationales for pTA have often been characterized in terms of the following strivings (for the rationales see[19, 20, 21, 22, 23]). The need for building *more democratic systems for technical decision-making* and revitalizing citizens' and consumers' interest in political issues; the idea that broad based participation will contribute to *socially robust decisions* on controversial issues such as climate change policy; the belief that citizens' and consumers' deliberation on the content of future climate policy will provide *useful information and new ideas* for policy makers, societal and economic actors, as well as climate change negotiators.

During the last 20 years, profound experience of citizen consultation on science and technology issues, especially in Europe, has built up mainly through technology assessment and foresight activities in the member states. During the last 5 years, the national experience has been supplemented with a few examples of trans-European activities[d]. WWViews continues this methodological expansion by introducing the participatory practice, for the first time in the history to do so, to the global level of international climate policy.

More practically, the methodological design of WWViews is based on an adaptive approach that is known from the current praxis of technology assessment, which bases the design of the process on analyses of the "problem situation" and its specific needs[24].

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c Some of the available and well tested methods are the Consensus Conference; Planning Cell; Future Lab; Deliberative Polling; Citizen Summit; Voting Conference; Interview Meetings; Scenario Workshop; Citizen Jury.

d Such as for example the "Meetings of Minds" project under the Science and Society Action Plan of FP6, and the PRISE project of the PASR programme of FP7.

Figure 2. A WWViews planning session (photo by DBT).

This approach calls for special attention to the following methodological requirements:

- *The need to effectively deliberate climate policy issues with an extremely wide range of citizens*. For this purpose, a centralized project concept has been chosen. The methodological core is the citizens ' panels with 100 participants, assembled according to similar criteria in all participating countries. Citizens will be selected with the aim of representing the demographic distribution in the region with regards to age, gender, occupation, education (and, if relevant, according to other additional criteria, such as ethnicity, language or religion).
- *The call for policy-relevance*. For this purpose, the primary target group of WWViews are policy makers around the world and negotiators at the COP15 meeting. WWViews will aim at methodologically sound results that will be accepted and referred to in the coming years by climate scientists, NGO's and political decision-makers. Furthermore, all national WWViews results will be conveyed directly to the national delegates; WWViews as a whole is in direct relationship with the COP15 host – Danish Minister of Climate, Mrs. Connie Hedegaard – who is the ambassador of project the WWViews and support it.
- *The need for global applicability and visibility over a wide set of cultures*. The global scale of the project is a big challenge in various levels of activity. There methodological design contains several elements, such as common method training workshop, translated manuals and context wise modifications of the process (though not the main structure of deliberation), which aim at global applicability. Further, the method has unique features connected mainly to global internet based cooperation and internet communication of the results. The outcome of the meetings will be reported on the WWViews web page immediately on September 26; comparisons of results between countries, regions etc. will be possible on the web page.
- *The need for rooting both the process and the product in highly variant policy cultures*. Since the WWViews partners include not only countries having understanding of deliberative democratic initiatives, but also countries with more authoritarian style of policy making (e.g., China and Russia) it will be a challenge for the organisers of WWViews to advance the recognition of the deliberative method and its product as a legitimate part of decision-making. For this purpose, and in addition to the national partners 'own efforts, an international research consortium is being established for the study and enhancement of the policy implications of the WWViews.

In addition, the WWViews method aims to apply high discourse ethical standards (fairness, competence, transparency and authenticity) in its methodological design. The fulfilment of these criteria will be supervised by an international scientific advisory panel.

ANTICIPATED POLICY IMPACTS

In general, we believe that the objective of the WWViews to empower citizens and consumers to impact on climate policy is of an increasing emphasis in the future. Recommendations for increasing participation have in recent years been made in various policy contexts including e.g., European Union documents such as the Lisbon Agenda, the Aarhus Convention and the Science in Society activities of the Framework Programme 7 [23, 25, 26] their many policy scientists[27, 28, 29] have supported the idea of the benefits of broadly involving societal stakeholders and citizens especially with issues of high risks, uncertainties and ambiguities – such as the issues of climate policy. Even though global citizen consultations have not yet been realized, a weak signal of their increasing prevalence in the future is that the WWViews project was actually initiated simultaneously by two independent organisations, who decided to merge their projects[e].

In anticipating the impacts of the WWViews on international climate change policy, we expect more modest results. In general, a single and new exercise such as WWViews cannot be expected to have high impacts on a decision-making process as complex as COP 15. The areas where WWViews may have more significant policy impacts[f, 24] are social mapping (by revealing gaps between inside negotiators and concerned everyday individuals), restructuring debate (by giving a voice to previously excluded groups) and shifting R&D policy toward carbon neutral technologies and policies (because citizens and consumers have less invested in specific technologies than organized interests). WWViews may also affect policy analysis and recommendations. Where we expect only low impact include scientific assessment (substantial research has already been completed and WWViews is not research centred), agenda setting (since climate change is already on the agenda) and mediation (organised rather than disorganised interests can be better suited to play a mediating role).

While the study of the policy implications of the WWViews is not an integrated part of the project, there are many WWViews partners, who plan to study the policy implications as a part of an international research consortium. The research will be conducted in the spirit of action research, e.g., by studying the media impacts, participants learning, and by organising workshops with national COP15 delegates. Such research not only aims at neutral observations, but also, in the spirit of futures studies to apply analytical approach with an impact in mind. This is in line with the formal objectives of the WWViews "to create an enduring network of institutions and trained project managers able to organize future WWViews deliberations on climate change or other global topics".[g]

DISCUSSION

This paper has presented the background, objectives and methodological design of the WWViews and presented a set of hypotheses of the policy impacts that will later be studies more systematically. We close this paper by discussing some of the key challenges of the WWViews and its objective to promote participatory governance in international decision-making. Main challenges so far identified relate to 1) the need to reconcile a centralized project concept with highly variant national policy cultures; 2) the effort to transmit and disseminate participants 'learning experiences of climate change issues to the broader public; 3) the challenge of conveying the message of individuals without direct institutional stakes in climate policy to the government climate policy negotiators, 4) to the recognition of deliberation as a legitimate part of decision-making.

First, it is the intent of the WWViews to provide citizens around the globe with equal opportunities to express their opinions on the future of climate policy. This has led to the adoption of a centralized project concept, which includes inter alia a symmetrical structure of deliberation, identical information and

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e The initiators of WWViews were The Danish Board of Technology and The Danish Cultural Institute. Along the process, other "competing "approaches have been also emerged.

f The following hypotheses have originally been formulated by a U.S. research team, led by prof. Richard Worthington. The hypotheses will be studied by an international research team focusing on WWViews impacts.

g See www.wwviews.org.

background materials (translated and delivered to the citizens) and rules of communication (specifically between the citizens and experts).

As we have already realised, the equality of opportunities, however, does not depend merely on common rules and structures, but to a large extent, on cultural and contextual matters. A big issue is that various partners have more or less experience with citizen participation and they operate in policy cultures more or less supporting such activity. To facilitate the adoption of the common project concept, we have found following measures useful: a) to provide flexibility with timing (even though keeping the structure of deliberation fixed). Extra time (in the national consultations) may be needed in some countries to make people familiarize themselves both with the topic of climate policy and participatory deliberation. b) Another support that has been offered is the provision of tutoring and local visits to the less experienced project partners. c) In some countries it has been difficult to find one single organisation that would have been ready to commit to the project concept of the WWViews and realize it in a politically unbiased way. In some cases coalitions of national and even international partners have been formed to support and balance each other ś competences. d) Finally, despite the intent to safeguard the core of the common project concept, all national partners are encouraged to disseminate the results and intensively network with national policy actors. This implies that local rooting, in addition to the centralized concept, is perceived an important aspect of the WWViews process.

Second, the empowerment of citizens and consumers to impact on issues of common interest is among the main rationales of any pTA exercise. Therefore it is important to transmit the experiences and reflections of the participating citizens and consumers to their fellows. This is an issue that has been tackled both as part of the media and research strategy of the WWViews. a) "Testimonies "by samples of participating citizens will be used as a part of the media communication. b) More systematic survey studies and qualitative interviews with citizens will be conducted as part of the related research activities. Interesting questions are e.g., whether people think that deliberation impact on their opinions about climate policy, whether they have been able to express their opinions during the process and whether they believe that the results will impact on climate policy makers.

Third, the number of lobbyists and conveyors of messages from research, interest organisations and other societal actors to the COP15 is high in the months before the climate summit. WWViews, therefore, operates in a highly competitive environment. To convey the main results of the WWViews to climate policy makers there are multiple strategies. These include e.g. a) direct contacts to national and international negotiators, b) effective usage of both international and local media, c) mobilisation of political support by national ministries, climate policy organisations and political actors, and last but not least d) strong coordination between research and policy: all the results as well as the quality of the method will be advised and supported by an internationally distinguished network of experts in the field of technology assessment and policy sciences.

Fourth, WWViews is a pilot case on the way toward the expansion of deliberation and participatory policy making. Due to its role as a pioneering exercise, whether it will succeed or not to make an impact on climate change policy, will be stimulating or inhibiting similar processes in the future. Whatever the end result, however, it is difficult to foresee a future where the empowerment of citizens and consumers would not be an issue of increasing momentum.

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CONSUMERS IN THE FUTURE

HOW DOES CONSUMER BEHAVIOUR CHANGE? EXAMPLES FROM ENERGY CONSERVATION

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ABSTRACT – As global consumer society is rapidly overshooting ecological limits, there is a dire need to find new ways to change consumer behaviour. Yet history knows few successful examples of reducing consumption. However, since the 1970s, there is a long legacy of work on energy conservation, which we use to identify three key factors that influence consumer behaviour: consumer awareness, contextual factors and community. Drawing on evidence from a European research project called CHANGING BEHAVIOUR, we discuss where previous efforts to change energy behaviour have succeeded in making a difference. We highlight ways in which sociotechnical systems shaping consumption can be changed and emerging ways in which consumers can join forces to achieve greater power and reach. This analysis has implications for attempts to build a more sustainable consumer society, including, but not limited to, the need to reduce primary energy consumption and greenhouse gas emissions.

INTRODUCTION AND BACKGROUND

Most research on consumer behaviour deals with how consumers choose particular products. In recent years, sociological and historical research has also started to address the reasons behind the current levels of consumption, i.e. the evolutionary dynamics of consumer society[1,2]. However, there is very little research on how to reduce consumption – something that at least rich countries will need to do in the future in order to stay within the carrying capacity of nature.

Social science research on energy conservation is an exceptional field, which has addressed the reduction of consumption since the energy crises of the 1970s. There is a long history of research on individual and contextual factors influencing energy consumption and the uptake of energy conserving practices. This line of research has also matured long enough to become self-critical, for example by examining the dominant paradigms and their ability to address the societal drivers of increasing levels of energy consumption[3,4].

This paper draws on research on energy conservation and energy demand-side management to identify issues that are crucial for adopting more sustainable lifestyles. We do so by first outlining key features and findings of social and behavioural science research on energy conservation and demand-side management. We then summarise the main lessons under three key factors derived from the literature that influence energy conservation and energy demand.

We illustrate the relevance of these factors with examples drawn from an ongoing European research project called CHANGING BEHAVIOUR[5]. This project searches for successful ways to reduce energy demand among small-scale energy users (households, offices, small business, schools and municipalities). In this project (see www.energychange.info) we have collected a database that consists of in-depth analyses of 25 cases of more and less successful energy demand-side programmes and projects. These cases were selected to represent a range of outcomes in terms of success and failure, as well as the available diversity in terms of target groups, countries, initiators, scale, scope, technologies implemented, behavioural change targeted and intervention methodologies used. The cases were analysed to understand "what works where "using a six-step framework tracking the evolution of goals, design, process and outcomes as well as the influence of context and stakeholder networks. The successfulness of the programmes was rated on two dimensions: the effectiveness and efficiency (both internal and external) of the programme, and the number of learning indicators found in the programme. Finally, a meta-analysis was conducted to identify core issues influencing success.

The full results of the analysis are presented elsewhere[6]. Here, we focus on examining the cases on three levels: individual awareness, the broader societal context, and community as an intermediate level between individual and societal context. The concluding section considers the implications of our analysis for the promotion of sustainable consumption.

DECADES OF EXPERIENCE IN ENERGY CONSERVATION

Economic and psychological approaches have been dominant. They primarily highlight factors that relate to information processing and the various aspects that influence energy related behaviour on the individual level. Mainstream neoclassical economics assumes that energy end-users are fully rational, but most economists today would acknowledge a concept of 'bounded' rationality, which means that there are limits to the amount of information we can sensibly deal with[7]. This is close to the view embraced by cognitive psychology, which however focuses in particular on the problems in information processing. Other streams of psychological research have a quite different view of rationality, with behaviourists examining a very narrow but powerful form of learning through the direct consequences of our actions (without any explicit reasoning process), and social psychologists acknowledging the role of social influences on decision-making[8, 9].

Taken together, various disciplines have revealed a range of barriers to reducing our demand for energy. They include 'market failures' such as lack of information on the risks and benefits of new solutions, or lack of access to capital for investments[10,11,12]. They also include psychological barriers like information overload, lack of direct feedback and lack of perceived 'agency' and capability to make a difference[8, 9, 13, 14]. Finally, they include social system barriers[3,15] such as existing infrastructures and power relations, shared conventions and historically embedded social practices.

The different disciplines suggest a range of approaches for reducing our demand for energy. Economics focuses mainly on removing barriers to energy efficiency by correcting market failures. This includes providing information (e.g., audits, labels), securing capital for energy efficiency investments (e.g. grants, loans, ESCOs), and supporting research, development and dissemination of energy efficient solutions[11, 12]. Psychological research suggests a range of solutions for addressing psychological barriers[8, 9, 16,17]. This can include behaviourist interventions to change routines (e.g. triggers, feedback) and improvements in energy-related communications, i.e., making information more relevant, vivid and personal. Social psychology offers ways to address the gap between attitudes or values and behaviour through enabling conditions, increased self-efficacy and agency, and supportive norms and co-operation[18, 19,20]. In essence, the psychological research on energy conservation stresses the need for multiple types of interventions that appropriately combine support, information, persuasion and incentives[16, 17, 21].

From a sociological perspective, our patterns of energy use are embedded in our social structure and culture. Sociological research additionally proposes that we should view change programmes in context. Systems of provision need to be transformed – it is not sufficient to deal with individual behaviour, but we also need to change the way energy is supplied and energy-using products are designed and distributed[3]. We need to address issues of timing, because energy use is largely determined by historical decisions and routines – both on the individual and the societal level[3, 22]. We need, further, to focus on ideas and social movements that mobilize and align the interests of different actors[15, 22]. On a more 'grassroots' level, a sociological approach suggests focusing on group rather than individual change processes[20,23] drawing on local practices rather than merely expert knowledge[4], and involving users and groups in design and allowing them flexibility in implementing the changes[24, 25, 26, 27].

FACTORS INFLUENCING ENERGY USE AND ENERGY CONSERVATION

In the following, we explore the practical significance of factors influencing energy use and energy conservation, drawing on case studies from the CHANGING BEHAVIOUR project. We have grouped these factors under three headings: consumer awareness, the broader societal context, and lastly we propose communities as an intermediate level of influence between the individual and society.

Consumer awareness

Most of the attention for decades has been focused on increasing consumers 'awareness of their energy consumption and providing information about the benefits and means for energy conservation. Some of this work has been quite successful, but some has been quite disappointing. For example, there is a long history of mass media information campaigns to promote energy conservation, and the general conclusion from these is that campaigns rarely have a large impact on consumer behaviour.

In this context, it is important to differentiate between habitual energy behaviour (such as turning off lights) and one-off behaviour (such as investing in energy efficient appliances or renovations). It is easier to make an impact on high-involvement decisions such as one-off investments[9]. Additionally, communicators need to be clear about end-user motivations to conserve energy (which can be quite diverse), and they also need to frame their messages in ways that are relevant for the energy users[13]. Important lessons from decades of increasing end-users 'awareness of energy use include the following:[13, 16, 28]

There is a need to make energy use and energy conservation more visible – the intangibility of energy use makes it difficult to relate energy to everyday activities.

Messages need to be framed in a language that is familiar and relates to the everyday domestic discourse surrounding energy use.

Relevance can be achieved by personalizing and tailoring the message, delivering it at the right time, and by targeting individual needs and circumstances.

Positive experiences have been gained in particular from personalized information, advice and energy audits. Informative energy bills and metering feedback are examples of information measures that help to make energy consumption more visible[29, 30]. These are ways of communicating about energy use that address energy users 'concerns and are salient to them.

Our set of case studies includes some successful examples of raising energy end-users 'awareness that have led to reduced energy consumption. One is the on-site energy advice provided by the Consumer Association of North-Rhine Westfalia in the German Ruhr area in the SANIT programme[31]. Here, interested households are offered a home energy audit and consultancy by trained architects or engineers. One important skill of a consultant is to explain difficult issues in an easy way. The consultants are constantly trained in communication skills and technological innovations, and they exchange experiences among themselves. The fact that the consultants are working on site and view the object personally enables them to give detailed advice and creates customer confidence. Another factor that creates confidence is the fact that the consumer association is independent of commercial interests. In the first three years, a total of 3070 advice visits were offered, contributing to 55.3 M € investments in energy efficiency and energy savings of 75 000 MWh per year.

In order to make an impact, communication needs to be continual. Moreover, salience is enhanced by using peer-to-peer communications, i.e., horizontal rather than top-down communications. Among our case studies, the Finnish Energy Expert programme is an example of a communication network building on 'lay experts 'working on a voluntary basis in their own apartment building[32]. The programme was developed by the housing association VVO and the Finnish energy agency, Motiva, and it has been ongoing since 1995. Altogether Motiva and the expert trainers 'network have trained over 3 000 Energy Experts. The Energy Experts 'advice also obviously has an impact on resident behaviour, as electricity consumption is about 10% lower and water consumption is about 20% lower than average in buildings with active Energy Experts.

Yet communication alone is not always enough, because decisions about energy use are often complex and influenced by multiple parties. Our case studies show that some residential energy audits, for example, have failed to result in the implementation of energy saving measures due to complex decision-making processes in housing associations[33]. And the Energy Expert programme mentioned above would be much more effective if there were more co-operation between the Energy Experts and the facility owners and management[32]. This observation leads us to the next topic: can consumers save energy alone?

The broader societal context

Measures to reduce energy demand by raising energy users' awareness build on the notion of individual responsibility and agency. As we saw previously, a more sociological approach would see energy use patterns as embedded in social (and sociotechnical) structures. Today's energy infrastructures are not designed to support an energy-conserving lifestyle. Our current habits and conventions of energy consumption were formed in an age of cheap, abundant and unproblematic fossil fuel supply. And while we have policies to promote energy conservation, society often sends 'mixed messages' by also promoting consumerist lifestyles[15], especially in countries that are aiming to 'catch up with' with Western European and North American levels of material well-being. Additionally, when targeting the end-users energy, we usually only focus on one side of the energy equation. We can also ask, whether it is the consumers who use energy, or the appliances and buildings. Designers, however, design what they expect consumers to want. This brings us to a notion of co-construction of technology and users[34], or to use a more conventional sociological language, the structuration of social action[35].

The interaction between demand and supply has been targeted by energy conservation policy under the heading of 'market transformation.' Market transformation is a strategy that promotes the manufacture and purchase of energy-efficient products and services. As market transformation broadens the focus from the demand-side to the market, a wide variety of actors that participate in the market come into view, from producers and distributors, to vendors, regulators and providers of secondary market services[36].

An inability to shape infrastructures and supply were found to be common barriers to success in our cases[32, 37]. Yet even relatively small players, when well-networked, were able to take steps toward 'market transformation.'

For example, the EcoTopTen (ETT) initiative (www.ecotopten.de) is an innovation and communication system for sustainable products and sustainable consumption started by the Oeko-Institut in Germany[38]. The ETT initiative provides market surveys and lists of ETT recommended products in ten product fields. The criteria for each product group are related to environment, quality and costs. ETT aims to go beyond existing labels and consumer information schemes by integrating environmental and quality aspects as well as annual life cycle costs. Furthermore, it promotes sustainable innovation, as goals are communicated to manufacturers showing which advanced criteria relating to environment, quality and costs should be met by products in a few years.

Another example among our case studies is the Latvian implementation of the European ENERLIn project in the municipality of Jelgava[39]. The aim of this project is to promote the uptake of compact fluorescent lights (CFLs) by engaging a large number of key actors, especially lighting manufacturers, individual consumers, lamp and light retailers, policy makers and politicians. One of the important issues addressed by this project is the perceptions of CFL quality by developing a quality charter for CFL. CFLs were promoted to consumers in retail outlets, but also other aspects of the social environment were emphasised. For example, competitions between schools and information days for pupils and their teachers were organized and parents were involved in the activities. With the co-operation of manufacturers, retailers, schools and the municipality, both the supply and demand for CFLs was increased significantly, leading to increased energy efficiency in lighting.

The market, as illustrated by previous examples, however, is only one part of the social structure, albeit an important one today. And even though successful efforts at market transformation have been made, setting society on a sustainable path needs to address broader issues. As climate change has today become the primary rationale for saving energy, we cannot rely merely on the private financial motives to save sufficient amounts of energy. A broader transformation of societal goals is needed. In the following, we examine the notion of 'community' as an intermediate level between individuals and the social structure that serves as a way for individuals to change the structures that surround them.

Community as an intermediate level

As part of the social context, community relations influence energy conservation in a number of ways that extend beyond the kinds of products offered in the market. Firstly, much of our behaviour is socially learned from other people, and shaped by socially shared conventions. Secondly, if we are asked to save energy for the sake of the environment, we are asked to make a personal sacrifice for a common good. Yet individual decisions to save energy in order to conserve common natural resources are framed by a social dilemma: individual efforts are useless unless others participate. Moreover, energy-related behaviour is shaped by socially shared conventions and sociotechnical infrastructures that are largely beyond individual control. Finally, these problems, together with the invisibility of the consequences of our action, lead to a sense of helplessness and disempowerment that is a major obstacle to low-energy lifestyles.

In terms of the supporting role of communities, one of the most successful examples in our database is the case of Samsø island[40], which became a renewable energy island in less than 10 years, largely due to the support of the community the organizers managed to mobilize. As a result of an initiative by an engineer and the mayor's office, the island of Samsø won the contest to be "Denmark's Renewable Energy Island" in 1997. This meant that Samsø was expected to convert all its energy supply to 100% renewable energy within 10 years, which they managed to achieve in 8 years. At first, the islanders (about 4100 people) were not very responsive to the idea, but as the organizers persevered and managed to win over the most important opinion leaders in the community, so then slowly everyone became enthusiastic and contributed to success. Although the conversion to renewable and local energy sources was achieved, it must be noted that the project had important objectives in terms of energy consumption reduction, too, which were not reached.

Another interesting initiative is the case of Carbonarium in Hungary[41]. Carbonarium is a not-for-profit association that was founded in 2005 with the overall aim of decreasing its members' CO_2 emissions. The goal of the association is to create a voluntary community of its members who believe that it is their responsibility and task to reduce the CO_2 content of the atmosphere. Members thus undertake to use a certain part of their material and other resources to reduce their emissions and/or mitigate impacts. Members also agree to record their monthly energy consumption, send it to the administrator of the programme, and pay membership fee based on their calculated CO_2 emissions. Carbonarium prepares statistics on its members' consumption and emission data and publishes some of the statistics on its website, accessible to the general public. The initiative was successful in creating a community and through it providing support for people working towards reducing their consumption. At the same time, however, it has to be recognized that Carbonarium has not managed to grow much beyond its initial membership for several reasons, one of them being the largely unsupportive context. In other countries, for example in the UK, similar initiatives appear to be more successful.

The UK offered still another example, which was analysed in the Changing Behaviour database. Manchester is my Planet (MIMP)[42] is a city-regional partnership programme aimed at transforming the level of action on climate change by local authorities, universities, businesses and citizens. The programme includes a climate change behavioural change work stream spearheaded by a Climate Change Pledge Campaign encouraging citizens across Greater Manchester to reduce their CO_2 emissions by 20% by 2010. The pledge campaign was identified as a 'quick win' to change attitudes and ultimately behaviour as well as build receptivity and support in the community for the changes needed to move towards a low-carbon economy. By encouraging citizens to make their own pledge and thus feel part of a wider 'movement' of personal, social and organizational change, the organizers managed to create a supportive community. The campaign was very successful as it resulted in more than 10,000 pledges. To build on the momentum thus created, the project was carried on in various ways, e.g. the pledgees were provided information as to how they could put their pledge in practice.

The above described cases illustrate that communities can help to solve the problems of agency and structure – at least partially – by functioning as an intermediate level between the macro-context

and the micro actors. As an intermediate level, communities also have better chances to shape infrastructures: even if they are small, they are still more powerful than individuals. Samsø is a good example of this and it represents just one of a large number of 'sustainable energy communities' – municipalities and cities – that are emerging today. Communities provide agency that allows individuals to change the context in which they operate.

IMPLICATIONS FOR PROMOTING SUSTAINABLE CONSUMPTION

Sustainable consumption has become a topical catchword that can refer to many things. Widely known definitions of sustainable consumption and production emphasise resource efficiency, the 'delinking' or 'decoupling' of economic development from environmental degradation, as well as the provision of quality of life for current and future generations.[43] From a global perspective, there is an urgent need to reduce the throughput of energy and natural resources – and resultant impacts such as climate change – in order to maintain a livable planet.

Attempts to shape the future consumer society into a less-consuming one can benefit from the experience – both positive and negative – gained during more than three decades of promoting energy conservation and reducing energy demand. One of the important lessons is how to successfully target 'ordinary'[44] and 'invisible' consumption. Energy use in the household and energy use in transport are two of the largest contributors to the environmental impacts of consumption. The third largest category is food.[45] All these consumption categories share many similar features. They are 'ordinary' daily activities, which we perform without much attention or reflection. Feedback and personalized communications, which show how much *you* (or you and your friends) are consuming, can be an effective way to make these invisible consequences visible for ordinary people.

Our framework has shown that in addition to consumers' awareness, we also need to work on their physical environment and on the social and community aspects of sustainable consumption in order to have a significant impact on consumption patterns. This is a lesson that it has taken the 'energy conservation' community a long time to learn.

In the broader context of sustainable consumption, the SCORE Network has built on a framework that addresses many of the broader structural issues. In this context, Tukker et al. [45] argue that the burden for change should not be placed solely on 'green' consumers and businesses, but that mutual reinforcement should be supported in a 'triangle of change,' consisting of (1) business, which is good at improving the efficiency of products, and can be stimulated to do so via voluntary action, standards or regulations setting minimum standards, but has limited interest in changing consumption patterns or consumption levels, (2) consumers, who can make sustainable choices when stimulated by informative instruments and campaigns, but are to a large extent locked-in to existing patterns by infrastructures, social norms and habits and (3) governments, which must stimulate sustainable products and the availability of sustainable choice for consumers, but should also encourage debate and action in how to use markets to realise equitable and sustainable development.

Our analysis, supported also by research conducted elsewhere[46, 47, 48, 49], however, shows that markets and nation-states are not the only social environment for consumption – in fact, we might argue that it may be counterproductive for the goals of sustainable consumption to conceptualise individuals merely as consumers. Our approach to examining energy and resource users in the context of communities (which may be local, or interest-based, or workplace communities) can empower people to become environmental citizens and take action and change their own social environment. Communities can also be crucial for overcoming social dilemmas by showing that others, too, are taking action. Moreover, as conventions are socially shaped, they can also be re-shaped be communities of mutually interacting people[50, 51].

If the mass media can be seen as one driving force behind the nation-state, social media can be seen as one driving force behind the community. In the same way as the press and the TV broadcasting companies made the nation-state viable, blogs, Facebook, Twitter, MySpace, etc. make it possible for consumers with shared interests to join forces and become collective actors on the markets.

Communities are not, however, a panacea for sustainable consumption. They help to overcome certain problems, but not all of them. For example, the experience with energy conservation shows that the invisibility of the impacts of our consumption patterns is a severe obstacle to changing them. The experience also shows that people need appropriate and personalized feedback on both their own and others 'conservation achievements. All in all, proponents of sustainable consumption need to combine a good understanding of economic, psychological, micro-sociological and macro-sociological factors influencing consumption. Here, evidence and ideas can be drawn for decades of experience in reducing energy demand.

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