From practices to volumes, from meaning to nutrients: an interdisciplinary approach to healthy and sustainable food consumption

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Chapter 3

From practices to volumes, from meaning to nutrients: An interdisciplinary approach to healthy and sustainable food consumption

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Abstract

Dietary recommendations based on environmental or health research findings can be disjointed from the social realities of consumption. For example, environmental impacts may be described using metrics that are not well understood or helpful for consumers to make decisions. Likewise, 'prescriptions' suggested by various entities on what people 'should' eat e.g. for health, are in conflict with people's habits, routines and representations. As part of a Swiss research project on 'healthy and sustainable diets', an interdisciplinary team came together to generate new knowledge on the health and environmental impacts of food consumption, while accounting for consumer representations and practices. To achieve this, approaches from life cycle assessment (LCA) were complemented with approaches from the sociology of consumption and social practice theory. In this chapter, we reflect on the process of integrating our respective discipline's views on food consumption, as well as the implications of this interdisciplinary collaboration. We discuss the context of our research by describing three gaps in the study of healthy and sustainable food consumption. Turning to our methodology, we show how adopting an interdisciplinary approach allowed us to render our work more relevant to everyday issues as well as to policy concerns. We finally outline the most important challenges brought upon by interdisciplinarity, and what tradeoffs were required in addressing them.

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INTRODUCTION

Food systems have significant environmental impacts across supply chains, from production to consumption (Tukker et al., 2006). At the same time, in Switzerland as well as globally, diet is a major contributor to the development of non-communicable diseases such as cardiovascular diseases, diabetes and cancer (GBD, 2015; Risk Factors Collaborators, 2016). As a consequence, there is a growing interest in research and policy action towards a change in food consumption that would address both human health and environmental issues. However, inducing significant changes in consumers' habits has proven difficult, and both research and policy trying to link food consumption, health and sustainability face significant challenges.

While research exists that quantifies various impacts of food systems, there is no one definitive guideline on what constitutes a healthy diet for both people and planet, in terms of human health and environmental protection. Further, research and policies can provide different recommendations, for example regarding the amount of meat to be consumed per day, which are disjointed from people's beliefs, representations and habits. These aspects can be largely affected by cultural context, as highlighted by the Food and Agricultural Organization and its emphasis on integrating cultural preferences into dietary guidelines, in order to be more impactful and aligned with the human right to food (FAO, 2012). Similarly, academic discourse on relevant impact categories – such as biodiversity loss and climate change – often disregard habits and traditions that are culturally embedded, thus finding little traction among the general population.

As part of a research project on 'healthy and sustainable Swiss diets',[1] an interdisciplinary team came together in order to develop new knowledge on the health and environmental impacts of food consumption, building on consumer representations and food consumption practices. Quantifying the impacts of diets on human health and the environment is only one step towards guiding healthier and more sustainable eating habits; our main hypothesis is that it is essential to also understand people's food representations and practices in their everyday lives. Bringing together social practice theory approaches (Dubuisson-Quellier and Plessz, 2013; Sahakian and Wilhite, 2014; Shove, Pantzar, and Watson, 2012), with Life Cycle Assessment (LCA) and health impact assessment (Jolliet et al., 2015; Stylianou et al., 2016), our aim is to better understand what opportunities there are for promoting healthy and sustainable diets in Switzerland.

In the following text, we focus on the methodological challenges and opportunities in integrating social practice theory with life cycle thinking, from theory to methods. First, we discuss the context of our research, by describing three gaps in the study of healthy and sustainable food consumption. We then explore how interdisciplinarity allowed us to make our respective disciplinary approaches more relevant to everyday issues as well as to policy concerns. We finally outline the most important challenges brought upon by interdisciplinarity.

GAPS IN THE STUDY OF HEALTHY AND SUSTAINABLE FOOD CONSUMPTION

The study of healthy and sustainable food consumption has many facets and wide-ranging ramifications within research and policy. As a consequence, theoretical and applied approaches inevitably face gaps in knowledge that hinder both understandings of, and actions required to improve, food consumption. The research project on which this chapter is based comes as a direct answer to some of these gaps. In the following section, we explore more closely three of them that were instrumental in the development of our research strategy: the disconnect between health and sustainability, the focus on individual food items rather than on diets, and the overly individualised understanding of food consumption practices that dominates policy and research.

The disconnect between health and sustainability within policy and research

On the one hand, Swiss policies relating to food *production*, such as farmer subsidies, take some aspects of environmental sustainability (e.g. biodiversity) into account, but are mostly centred on the financial interest of producers and economic growth in a highly competitive market (Federal Statistical Office [FSO], 2015; Organisation for Economic Co-operation and Development [OECD], 2011). Production policies do not obviously relate to nutritional health. On the other hand, food *consumption* guidelines (e.g. food pyramids) present proactive health guidance, which do not explicitly relate back to sustainability concerns regarding production and in theory should not be influenced by financial interests. Interventions (e.g. publicly funded school programmes), however, are often based on a financial rationale in the face of exploding health care systems costs and the high prevalence of lifestyle-induced, noncommunicable diseases (Chastonay et al., 2017; Galani, Schneider, and Ruten, 2007; World Health Organization [WHO], 2017). Another disconnect between health and sustainability are the policies regarding food labelling and marketing. Whereas health claims and nutritional information are highly regulated, sustainability claims and certifications (which can also be regulated depending on the certification) can be used as sales arguments, in an appeal to people's sense of ethics and moral emotions (Antonetti and Maklan, 2014). As most consumers are ill-informed regarding what makes a product more or less 'environment-friendly' (Tobler, Visschers, and Siegrist, 2011), many fall back on labels without necessarily understanding the criteria for labelling or trusting labels entirely (Godin and Sahakian, 2018).

Given these disconnects across production- and consumption-oriented policies regarding health and sustainability, a growing number of governmental and non-governmental organisations working in the field of health and nutrition are trying to include sustainability in their approach to food and diets. Unable to find definitive

answers to their interrogations, they may rely on intuition rather than evidence when formulating recommendations. This often means promoting local and seasonal food consumption as a proxy for sustainable food, even though what is 'local and seasonal' is not always well defined, and may not always result in the best environmental performance and social equity (Born and Purcell, 2006). Given different misconceptions and lack of evidence, there is still a need to answer the key question: what would a healthy and sustainable diet look like?

The project on which this chapter is based is financed by the Swiss National Science Foundation as part of a national research programme on 'Healthy nutrition and sustainable food production', which aims to tackle this problem by generating 'praxis-oriented basic knowledge on how to promote healthy nutrition in Switzerland . . . while minimizing the negative impact on the environment and using resources as efficiently as possible', as stated on their website (SNSF, 2018). In other words, a main objective of the research programme is to produce knowledge on the possibility of combining health and sustainability in food production and consumption policies.

At the international level, the last few years also saw the multiplication of initiatives addressing this challenge. For example, the EAT-Lancet Commission for Food, Planet and Health, which published its final report in February 2019 (Willett et al., 2019), brought together leading academic experts as well as governments and non-governmental organisations. The commission set to

> scientifically assess whether a global transformation to a food system delivering healthy diets from sustainable food systems to a growing world population is possible, and what implications it might have for attaining the SDGs [Sustainable Development Goals] and the Paris Climate Agreement.
>
> (Rockström, Stordalen, and Horton, 2016, p. 2365)

Many agencies from the United Nations, such as the Food and Agriculture Organization (FAO) and the World Health Organization (WHO), also support academic initiatives and leading organisations in the field, such as the Food Research Climate Network (FCRN, March 26, 2018). In this favourable environment, progress is being made in the development of the knowledge necessary to define what a healthy and sustainable diet could look like at different levels (individual, national, international), such as the integration of human health aspects into environmental Life Cycle Assessments (LCAs), as described in the section titled 'Articulating environmental LCA and health impact assessment'.

Moving from individual food items to diets

Next to the need for uniting health and sustainability into a common framework comes the need to shift the focus from food items to diets as a whole. Indeed, a

substantial basis of research focuses on 'sustainable foods' or 'healthy foods' in an attempt to answer the question: which *food items* are more environmentally sustainable and healthy (Masset et al., 2014)? However, there is increasing evidence that the more appropriate question to ask might be: which *diets* are more environmentally sustainable and healthy?

Comparing the environmental impacts and the 'healthiness' (e.g. nutritional profile) of individual food items has helped establish fundamental knowledge of food systems – for example, that ruminant meat production is generally more impacting than plant-based foods (e.g. per kilogram), and nutritional content varies greatly across foods (Fern et al., 2015; Heller, Keoleian, and Willett, 2013; Roy et al., 2009). Investigating environmental impacts of individual food items can also be useful when comparing different production practices of the same food item, or across the value chain. Through such work, it is well established that agricultural production is generally the most environmental impactful aspect of food value chains (e.g. in comparison to transport). Comparing the environmental impacts of two different food items, however, leads to limited interpretation with respect to what can be recommended for actual food practices and habits. Due to this limitation, newer work has shifted towards investigating sustainable and healthy *diets*, i.e. the overall daily consumption of an individual or population, by building on such food-specific knowledge (Hallström, Carlsson-Kanyama, and Börjesson, 2015; Heller, Keoleian, and Willett, 2013; Nemecek et al., 2016; Tilman and Clark, 2014; Walker, Gibney, and Hellweg, 2018).

Shifting towards a dietary perspective in sustainability assessments is important for several reasons. First, a dietary perspective considers the quantity of various foods consumed. Instead of comparing two different foods based on impact per kilogram or impact per calorie (regardless of quantity actually consumed in a diet), a dietary perspective puts food into the consumption context. This is relevant because a high-impacting food consumed in low quantities can have a lesser environmental impact than a low-impacting food consumed in high quantities (e.g. grains). Second, a dietary perspective can help understand the overall environmental footprint of an individual's or a population's consumption and guide decision-making towards an overall lesser footprint. Such a dietary perspective should acknowledge that reductions in consumption of one food item – for example, red meat – will likely be compensated by a replacement or substitution by another food item. Without data regarding food substitution preferences, in LCA research substitutions are often addressed as a modelled assumption based on per weight, calorie or volume, which may not reflect actual consumption or be easily interpretable (Ernstoff, Stylianou, and Goldstein, 2017; Eshel et al., 2016; Notarnicola, et al., 2017; Tilman and Clark, 2014). Another line of evidence supporting the need for a dietary perspective comes from the health angle. Generally, the 'healthiness' of food or nutrition must be considered in the context of overall consumption. For example, sodium is an essential human nutrient, but overconsumption can lead to an increase in health risks related to cardiovascular disease (GBD, 2015; Risk Factors Collaborators, 2016). From this perspective, foods 'high in

sodium' are only unhealthy if they are consumed in a diet that is overall 'high in sodium'.

Given the strengths of a dietary perspective, it is important that future LCA research continues to focus on identifying healthier and more sustainable *diets* – moving away from a focus on food items. More data are needed to understand dietary change for example when a certain food item, such as red meat, is replaced. Finally, understanding dietary change can help indicate how to ensure overall global consumption is within the safe operating space of 'planetary boundaries' – the biophysical constraints of maintaining human life on earth (Campbell et al., 2017). From this perspective, no one food (or diet) can be 'sustainable' unless the entire global system is safely within biophysical constraints.

The pervasiveness of an individualised understanding of food consumption

While health and sustainability should be considered across the whole food system, from the production of foods to their distribution, storage, consumption and final waste, dietary transitions or changes are often individualised (i.e. the claim that an individual chooses their diet). As documented in consumption studies over the past decade, the view of consumption as being motivated by individual decision-making processes has dominated policy arenas thus far (Cohen and Murphy, 2001; Fahy and Rau, 2013). The main assumption is that informed consumers make rational decisions. This viewpoint has been criticised in what has been termed the value-action gap or attitude-behaviour gap: consumers may be aware of what ought to be healthy and sustainable diets, they may even express beliefs or attitudes that are aligned with these perceptions, but this does not always translate into actual practices (Blake, 1999; Kollmuss and Agyeman, 2002; Rau, Davies, and Fahy, 2014; Shove, 2010). For example, a majority of the Swiss population is aware of main dietary recommendations, yet only 30 percent of the population eats the recommended fruit and vegetable intake each day (Federal Office of Public Health [FOPH], 2012). It has also been shown that the Swiss population is not aware of the environmental impacts of food consumption, and that social norms are found to be a stronger influence on personal values and choices (Kamm et al., 2015). Moreover, values and beliefs in one area of consumption (e.g. healthy and sustainable food) may or may not translate into other areas (e.g. socialising, caring for a newborn baby, the world of work).

To go beyond the value-action gap and the idea of rational individual choice, social practice theory approaches have been gaining in popularity among researchers and policy-makers, particularly in relation to (un)sustainable consumption practices – including food. Building on earlier work by Bourdieu (1979), Giddens (1984) and Schatzki (1996), social practices are seen as being made up of three main elements – relating to the material, individual and social dimensions of practices – which come together to form the doings and sayings of everyday life. What makes up these elements

of practice can be described in different ways; in one interpretation, the object of study in a practice approach are materials, competences and meanings (Shove and Pantzar, 2005; Shove, Pantzar, and Watson, 2012). Here, food consumption practices – such as preparing a meal or eating – are apprehended as habitual and based on routines. In the context of social practice theory, meanings are about signs and symbols that help reproduce practices. For example, the meaning of the American Thanksgiving meal is structured around a family gathering to give thanks and the cooking and eating of a turkey. If one of these aspects is taken away – the turkey or the family gathering – the meaning of Thanksgiving changes. Thus, meanings are not fixed but dynamic, and are only maintained and reproduced if taken up in practice.

Social practice theories are bringing new perspectives to food consumption studies precisely because they move beyond individual 'rational choices' to an understanding of consumption as meaningful and related to everyday life (Halkier, 2009; Halkier and Jensen, 2011; Jaeger-Erben and Offenberger, 2014; Warde, 2013). The focus on everyday habits and constraints is also emphasised in the Swiss Nutrition Policy report (FOPH, 2012), along with what are termed 'other barriers', such as lack of nutritional knowledge, insufficient information, pricing factors and taste preferences.

While much work has been done on drivers and barriers in relation to individual behaviour, there is still a lack of understanding regarding the complex cumulative ways in which social practices might be shifted, which would involve tackling the different dimensions of a practice – from images and meanings, to people and their competencies, and finally the material dimension of consumption. In relation to food consumption, these might involve meanings around festive or holiday meals, the competencies to prepare such a meal, and the space and access to products that make preparing and sharing a meal possible. Sahakian and Wilhite (2014) found that at least two of these elements needed to change in order to engender a rupture in routines or habits related to preparing and eating a meal; in the example above, opting for a vegetarian meal for Thanksgiving (instead of turkey) could indicate that traditional meanings around meat as 'social food' is shifting to meanings regarding moral questions of animal welfare.

In another study (Plessz et al., 2016), food consumption is seen as being subject to socially constructed guidelines about what ought or should be consumed, what the authors term 'prescriptions'; life-course events such as moving in with a partner were found to have an important role to play in how people take up prescriptions. The dynamic relation between life-course and everyday consumption practices is seen as a key area for encouraging more sustainable consumption (Schäfer and Jaeger-Erben, 2012; Rau, Davies, and Fahy, 2014; Greene and Rau, 2018).

In the course of this project, we found that time is an essential resource for enacting specific prescriptions, and that a lack of temporal resources might lead to tradeoffs – more than a lack of financial resources, for example. Given time constraints, mobility and transit have a structuring effect on what food can be easily accessed, where and when. The availability of food retailers and products on the way between work and

home, among others, seem to influence food purchases. In addition to time, social dynamics inside and outside the home are a defining feature for taking up prescriptions and changing practices. The composition of the household, most importantly the presence of children, is a central element for the adoption food prescriptions. Outside the home, people carry and disseminate prescriptions, and one person or one household diet is linked to its relationships and group of peers (Godin and Sahakian, 2018).

OVERCOMING THE CHALLENGES: AN INTERDISCIPLINARY APPROACH

In the following section, we describe how our research design and methodological choices helped us overcome the challenge of integrating social practice theory approaches from the sociology of consumption, with the LCA framework from environmental studies. Some of our choices relate to the interdisciplinary aspect of our methodology, while others are prompted by the possibilities and constraints brought about by our object of study – healthy and sustainable food consumption.

Interdisciplinarity as an answer to a complex object and question

Interdisciplinarity is gaining more importance in academic life, quickly becoming a central feature of institutional organisation and funding schemes at the national and international level. Despite this, there is no consensual definition of interdisciplinarity, and its meaning changes along with funding bodies and modes of academic governance (Cooper, 2013). In this project, interdisciplinarity involves a shared view of the problem among team members from different backgrounds, a common language, and consensus building at the stage of research design and implementation. Stakeholders and practitioners are involved at each step of the project, which brings us close to trans-disciplinarity as defined by Lang et al. (2012).

Interdisciplinarity is ingrained in sustainability science: given the multiple dimensions of sustainability as an object of study, some argue that progress in the development of knowledge 'will require fostering problem-driven, interdisciplinary research' (Kates et al., 2001, p. 641). In this spirit, climate change is often presented as a domain of scientific enquiry that requires interdisciplinary approaches (Cooper, 2013) and used as an example to study their implementation (e.g. Castán Broto et al., 2009). The alliance between disciplines pervasive to the study of sustainability means that novel methodological, conceptual and epistemological challenges have to be tackled in order to shed light on complex, new problems (Kates et al., 2001). For example, interdisciplinary approaches integrating social practice theory and material flow analysis tools have been successful in understanding domestic food waste by looking simultaneously at the household metabolism, including the quantity of waste, and at

consumption practices revealing why and in what way food ends up being thrown away (Leray et al., 2016).

To begin the interdisciplinary work in this project, we developed research questions that would lead to synergies between our respective disciplinary understandings of food and diets: how do prescriptions and practices evolve around what are considered 'healthy and sustainable' diets? How can the health *and* environmental impacts of dietary scenarios be assessed? How can research support transitions towards healthier and more sustainable diets in Switzerland? Answering those questions meant bringing together food prescriptions and practices, from sociology, with a novel LCA framework that combines environmental and health benefits and impacts of various dietary scenarios, anchored in ecological economics, in a first stage. The second stage, integrating new knowledge into a transition management perspective, has yet to begin at the time of writing.

The proposed questions aimed to combine methods towards streamlined goals, which are a defining feature of our project. The goals to be fulfilled through qualitative research and social practice approaches are controlled by the limitations in life cycle assessment and data availability (e.g. there is not always 'local' data available on the environmental impacts of food production and the system boundaries of what is 'local' are difficult to define), while the environmental and health impact analysis is also controlled by the outcome of the sociological research with respect to which dietary prescriptions to assess. In addition to the collaboration of the research team, a variety of non-academic stakeholders were involved in an advisory group providing guidance for selecting focus areas, in an attempt to ensure the relevance of our project for social and political actors, and for broader society. In this spirit, the LCA results will also be fed into workshops towards designing transitions in dietary changes at a later stage, thus informing qualitative and participatory methods with quantitative research results.

A social practice theory approach to food and diets

The first stage of our collaboration involved the identification of the most significant prescribed so-called healthy and/or sustainable diets in Switzerland. Based on the work of Plessz et al. (2016), we understand prescriptions as discourses stating what and how it is best to eat, designed to influence practices and providing a framework for conduct. Prescriptions can, for example, take the form of official nutrition guides, such as the Swiss food pyramid; they can be general principles carried by various stakeholders, such as the prescription for organic food consumption; and they are often the object of heated debates, as is the case for gluten-free diets without a diagnosed medical condition. We consider prescriptions as a resource in the establishment of practices, along with material resources, and competencies and skills, among others (Halkier, 2009; Plessz et al., 2016; Warde, 2013). To identify dominant food prescriptions in Switzerland, we conducted interviews with practitioners working for organisations interested in food consumption (five in-depth interviews), completed an institutional mapping of the actors involved in the promotion of healthy and/or

sustainable food consumption (90 institutional actors), studied media discourses on food and eating (188 Swiss newspaper articles and issues of 8 magazines, in French and in German) and engaged in participant observation in events (five events), such as policy consultations, relevant to our research area.

We uncovered several emerging and established prescriptions for dietary practices formulated and carried out by public authorities, health agencies, non-governmental organisations, schools and workplaces, economic actors such as participants in community-supported agriculture or retailers, health professionals, traditional media and the network of peers, among others. Five prescriptions we identified have an important impact on how the LCA and health impact assessment are conducted. First, the ideal of a balanced diet is shared by most people, and is closely linked to national dietary guidelines which, in the case of Switzerland, take the form of the Swiss food pyramid (Société Suisse de Nutrition [SSN], 2018). Next there are 'local and seasonal' diets, often associated with the consumption of 'natural and organic' food as another dietary prescription, but nonetheless distinct. Meat consumption proves to be quite divisive, with the supporters of vegetarian and vegan diets on one side, and on the other side people who advocate 'less, but better' meat consumption, although there are distinct subcategories to each prescription. Our fieldwork showed that prescriptions on meat consumption are not on a continuum but are two opposing views: on one side are the people who consider killing animals as immoral, on the other side, those who do not have an issue with the killing of animals, but insist on the importance of the well-being of the cattle, in life and death. Other prescriptions include slimming diets, proscriptive diets excluding of one or many kinds of foods, and body-oriented diets, such as 'detox' diets or clean eating, designed to 'clean' or avoid polluting the body (Godin and Sahakian, 2018).

It is worth noting that, while all prescriptions can be seen as relating to health, only a subset relates to environmental sustainability. The qualitative research showed that in consumers' representations, both categories seem to be conflated: sustainable food consumption is seen as healthier, while a healthy diet is seen as more sustainable. Moreover, health seems to have much more traction when it comes to influencing practices, and is often presented as the main reason for engaging in 'sustainable' practices such as local food consumption. Assumptions regarding the 'healthiness' of local and seasonal, but also natural and organic, food products are for the most part a matter of trust towards the producers as well as the retailer. Trust grows stronger when there is a direct contact with one or the other.

With a better grasp of food prescriptions around health and sustainability in Switzerland, we looked to understand their expression in everyday consumption practices. We conducted participant observation and short, open-ended interviews with employees and consumers in a supermarket in Lausanne (2 days, 11 interviews), which set the stage for a series of semi-directed interviews with consumers (9 interviews with 10 participants), as well as focus group discussions (5 focus groups with a total of 29 participants). We built the sampling for consumer interviews in order to access different

types of household (one-person household, nuclear families, couple without children, etc.) with members at various life stages (students, young parents, retirees, etc.). Based on a social practice approach, our goal was to understand which social institutions, dimensions of everyday life and constraints proper to the different life stages contribute the most to organising food consumption practices and the adoption of dietary prescriptions. For focus groups, we gathered participants with strong and possibly controversial opinions on food and eating in order to see how different prescriptions interact at the discursive level, what kinds of tensions exist between them and how these tensions are resolved or not in practices. During interviews and focus groups, we used visual scenarios and pictures to stimulate discussions and bring the different representations of food consumption to the surface, in a method known as photo-elicitation (Harper, 2002; Lachal et al., 2012; Meyer, 2017).

The qualitative research allowed us to have a closer look not only at consumers' representations of the different prescriptions but also at the elements at play when prescriptions are put into practice. They can be of individual nature (e.g. life stage, social network, competencies and skills), they can relate to the socio-cultural dimension (e.g. social norms, traditions, collective identity), or be linked to material limitations (e.g. accessibility of products, mobility, available tools and appliances). Different combinations of these elements can either facilitate or impede the adoption, voluntary or not, of specific prescriptions, or lead to their distortion.

Prescriptions, consumers' representations and practices and other consulted stakeholders (e.g. policy-makers) served to identify a number of variables that people associated with the healthiness and sustainability of Swiss diets. Among these variables, the most important for consumers were local food production, seasonal food consumption, organic food production, meat consumption and the level of food processing – all elements that are tangible for consumers (e.g. related to product labels). However, the variables identified through qualitative research do not always align with the quantitative findings from LCA research. For example, previous LCAs of food systems generally demonstrate that agricultural production (and, for example, fertilisers) is more influential on environmental impact of the food item than the transport of the food across far distances. Furthermore, consumers' idea of what is 'local' or 'regional' may not include foods coming from regions in neighboring countries (such as northern Italy) where transport distance may actually be similar to Swiss foods. The idea of 'local' or 'regional' does not include the type of transport used (e.g. train, lorry) which also has a large influence on the impact. Additionally, although consumers may associate 'organic' with more 'sustainable', quantitative research demonstrates tradeoffs such that organic production has less pesticide input but can require more land (Roy et al., 2009). Finally, qualitative research may indicate 'less meat' as an important association with health and sustainability, but quantitative research shows large differences among the impacts (both on health and the environment) across different meat types, as well as tradeoffs (e.g. processed meat has a higher health impact but can have lower environmental impacts than non-processed meat).

Articulating environmental LCA and health impact assessment

In the second stage of this project, we aimed at drawing a set of diets that depicts accurately what people eat, in order to estimate their health and environmental impact. Our approach takes a dietary perspective, where one single product does not contribute to 'health', but the overall dietary consumption protects health or increases disease risk. Using the Swiss Dietary Survey 'MenuCH' (Bochud et al., 2017), the first national data on food consumption based on memory recall surveys and the visual identification of portion size through photographs, we matched the hundreds of food items available in MenuCH to existing environmental data. We also considered seasonal production, processing, region of production and packaging as additional variables meaningful to consumers, as emerged from the qualitative work.

An environmental life cycle assessment (LCA) framework was used to assess the environmental impacts of the Swiss diet. LCA is a framework that involves defining a system of processes and quantifying the material and energy flows from these processes by collecting life cycle inventory (LCI) – for example, from established databases. The defined system considers relevant 'life cycle' stages from extraction and production, to consumption and final waste. LCI was then translated into impacts (e.g. climate change) through an environmental life cycle impact assessment (LCIA) method. LCIA methods do not typically include the human health impacts related to food consumption or product use, however, the Global Burden of Disease study series (GBD, 2015; Risk Factors Collaborators, 2016) shows that when combined, dietary risk factors are a leading cause of death globally. The Global Burden of Disease synthesises the published literature on health outcomes to date to better understand and compare what causes death and disease in different populations. It also provides the data needed to consider risk factors for a population (e.g. above or below which level of consumption leads to an increased risk of certain diseases). Ultimately our aim is to apply a novel LCA framework that includes Global Burden of Disease data on dietary health impacts such as done previously in a proof-of-concept study by Stylianou et al. (2016). Using this combined LCA and health impact assessment framework, we hope to assess what people eat on average in Switzerland and relate to different prescriptions. Through this work we can identify tradeoffs or misconceptions between various so-called healthy and sustainable practices – for example, where the perception of local food being more sustainable is not always reflected by the life cycle-based impact assessment approach.

CHALLENGES OF INTERDISCIPLINARITY

For this project, interdisciplinarity involves a shared view of 'healthy and sustainable' food consumption among team members from different backgrounds and a strong coordination between all involved, to ensure our respective approaches and methodologies work well together. Figure 3.1 illustrates the integration of LCA and

social practice theory approaches. When assessing dietary scenarios, LCA practitioners typically start from hypothetical diets that are constructed from available knowledge (e.g. from food pyramids, from a modelled diet not containing meat and sometimes from actual dietary survey data). This approach is disjointed from consumer representations and not always useful to relate back to most people's beliefs and practices. In this research project, consumers' practices and representations studied through the lens of social practice theory inform different dietary scenarios for LCA, to better understand what healthy and sustainable diets are in Switzerland and, as a next step, to support transition towards healthier and more sustainable diets in terms of actual consumption.

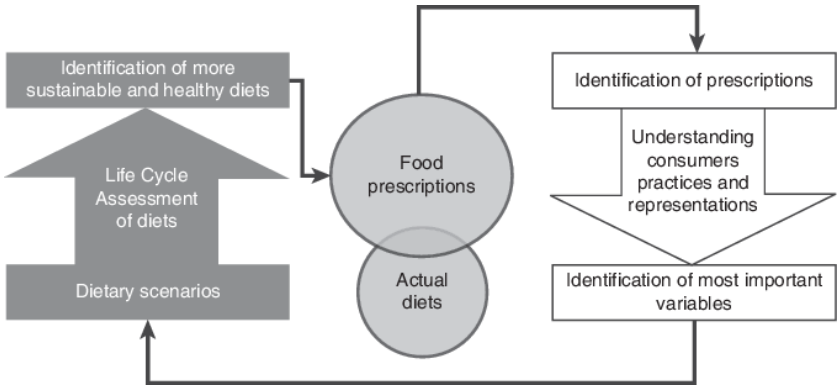

Figure 3.1 Combining LCA and social practice approaches to contribute new knowledge on 'sustainable and healthy' diets

The first challenge we met was to build a common vocabulary that would work for all of us. Second came the problem of ambiguous categories that emerged of the qualitative fieldwork and posed difficulties for LCA and health impact assessment. A third difficulty lies in the necessity of putting aside disciplinary baggage. Moving from practices to volumes and from meanings to nutrients means negotiating, compromising and dealing with tradeoffs so that we can take full advantage of the articulation of our respective views of healthy and sustainable food consumption.

Engaging in a pedagogical effort

One of the first steps we took at the beginning of the project was to develop a common vocabulary by creating a glossary to define notions that were meaningful to the different disciplinary fields. This simple exercise shed light on the need for clear definitions and the way they contribute to framing the common understanding of the project and its object, in this case healthy and sustainable Swiss diets. For example, the sociologists on the team pushed to formulate the problem in terms of practices and representations that account for both the individual and social dimensions of a phenomenon, as opposed to individual behaviour and perceptions, a formulation at risk of leading us into a definition of the problem that would obscure its social dimension, falling into the trap of the individualisation mentioned earlier.

Through the development of a common vocabulary, each team member had to engage in a pedagogical effort. Indeed, this exercise sent all of us back to the fundamentals of our disciplines, having to navigate between different views of the same issue. For the sociologists, it meant learning about the basics of LCA and the way the calculation of the environmental impact of a given product is made, as well as the criterion, variables and measurements guiding the health impact assessment at the nutritional level. It also meant defining concepts that are otherwise part of the basic toolkit and usually taken for granted, such as discourse or representation. For example, much time was spent describing the social embeddedness of everyday life, which guided the qualitative research. In this project, we aim at identifying strategies to induce a transformation of practices without necessarily appealing to individual rationality or motivation, nor veering towards structuralism. To this end, we worked to explain how everyday practices are dependent on the food system as a whole, as well as social norms and expectations around food in given contexts, and how such insights can serve to better understand what transformations might be possible towards 'sustainable and healthy' food consumption pathways. This meant going back to the core project of sociology and inviting all partners to develop their sociological imagination, to see how the actions of one person are tied to larger social dynamics, thus taking a problem usually framed as an individual one and looking at it from a *systemic and interrelated* standpoint – to use the language more common in environmental studies.

Working with ambiguous categories

Given the sequential structure of our methodology, with sociological research done first, a crucial issue was to make the categories that emerged from the qualitative fieldwork work for everyone. At this point, the discrepancies between consumers' and stakeholders' representations, the sociological definitions, and the needs of LCA and health impact assessment became highly visible. Constrained by the fundamentally different nature of our respective disciplines, we had to engage in a negotiation process that meant for each party to accept compromises in order to build categories meaningful for all of us and the project goals.

The choice of words and the definition of the notions they denominate carried minimal impact when mobilised by one discipline much more than by the other. This was the case for the concepts of practices and representations, as opposed to behaviour and perception. The use of these terms created the need for some explanation from the sociologists' part, but was not disputed as they had strong implications for only one discipline. For other, more fundamental categories, such as the notion of health, we worked in parallel. The sociologists mostly used the lay understanding of the notion, in which health can mean maintaining a body free of pollutants, or accessing all the vitamins and nutrients necessary to maintain general well-being, for example. Health impact assessments, on the other hand, generally leave aside any subjective understanding of health in favour of scientific evidence on health outcomes and disease burden measured in disability adjusted life years (DALYs), which represent the amount

of healthy life lost in a population due to death and disease (GBD, 2015; Risk Factors Collaborators, 2016). That being said, the environmental scientists on the team recognised that health could not be limited to products or items within a dietary basket, but rather would reflect overall food consumption and related habits – such as sport activity, for example. In this respect, our understanding of a healthy and sustainable diet was very much aligned.

The discussions about the examples mentioned happened without much friction. Some other categories, however, proved more complicated, especially when the lay perspective, sociological understanding and both LCA and health impact assessment needed to find some common ground. 'Local' or 'regional' food consumption is the best example for such categories, as the impossibility to achieve a definition that could mirror consumers' representations while being precise enough to conduct environmental assessment threatened the production of knowledge that should be part of the outcome of our project. Eriksen (2013, p. 47) rightly notes,

> Perceptions of local food vary, for example, with the location of the consumer. To some it refers to food that has been produced in the locality close to where 'I' live. To others food is considered local if it is produced in the same country in which it is consumed. There is also great variability in what constitutes local food for producers and for consumers.

In Switzerland, local or regional food is often defined by consumers through cantonal borders, although some institutions, retailers and labels might rely on distance in terms of kilometres to identify such products. At the same time, our research shows that local food consumption is seen as being healthier based on the consumer's perception that the producers they can talk with use fewer pesticides and antibiotics, for example. Local consumption is also seen as more socially responsible and environment friendly. However, this lack of a consistent definition of what would be a 'local' or 'regional' product is problematic when attempting to assess the environmental impacts of consuming such foods, as consumers' representations and their translation in objective measurements (e.g. food miles) differ depending on their geographic zone. In other words, LCA can be used to assess the impact of food distribution, but often uses assumptions regarding transport distances which may not be aligned with a consumer's perception of 'local' or regional, and these assumptions are disjointed from what individual consumers perceive as local.

Putting aside disciplinary baggage

Social practice theory approaches led to the identification and description of prescriptions around healthy and sustainable diets in Switzerland, along with a deeper understanding of key elements that allow or hinder the adoption of related practices at the individual and household levels. LCA results should be viewed as a screening and

prioritisation information that can help indicate environmental impacts across life cycles of food items in a consistent and quantitative way. Bringing our results together provides some elements for a common view of how to support transitions towards healthier and more sustainable Swiss diets, but the problem of achieving a tight integration in designing ways of achieving our common, normative goal, which is essential if we are to truly to make the best of our collaboration, is still to be tackled.

At the time of writing, we have developed a methodology for assessing food consumption from a social practice perspective, while assessing healthy and sustainable diets with LCA. What remains is to bring our findings together, and better understand the implications for transitions towards 'healthy and sustainable' diets in Switzerland, the last phase of our project. From a social practice theory perspective, the most important issue for LCA and health impact analysis is to move away from unitary analysis back to practices and everyday life. While new knowledge on impacts is important, we shy away from being prescriptive and look to better understand tradeoffs from the different diets represented as 'healthy and sustainable'. Social practice theory approaches point out the most important elements for consumers and policy-makers and the dynamics behind them, which might not relate to the most relevant findings and categories for environmental and health impact assessment.

Addressing this issue is critical to the success of this project, but it takes tremendous work and commitment to put aside disciplinary baggage, as well as people who are willing to take on different perspective. In this context, the reality of precarious academic work can be disruptive, as people tend to change over time – even on projects conducted on a one- or two-year time span. Given institutional, interpersonal and disciplinary dynamics, to make the best of interdisciplinary collaborations, coordination is key: to defuse conflicts or avoid them altogether, but also to define common goals that fulfil the academic and institutional requirements of all partners.

CONCLUDING REMARKS: MANAGING TRADEOFFS IN INTERDISCIPLINARY APPROACHES

The research project is ongoing, and final results as to environmental and health impacts as well as on possible transitions are still pending. That being said, this chapter aims towards uncovering how challenges in the study of healthy and sustainable diets might be overcome through interdisciplinary approaches, and what approaches might be combined towards the normative goal of achieving 'healthier and more sustainable diets' among the Swiss population.

In our explicit focus on prescriptions, we aimed to uncover what everyday people think they ought to eat when it comes to healthy and sustainable diets. There is an implicit understanding in this research project that the environmental and health impacts we will assess in relation to different diets will give us better knowledge of the most important prescriptions, or at least scientific knowledge in relation to a variety of

environmental indicators along with the Global Burden of Disease studies. However, the combination of our two disciplines can point to a general direction, but does not provide solutions for a transition towards healthier and more sustainable diets. It is more likely that the LCA results will not provide one answer for how to improve diets, but rather an assessment of tradeoffs in recognising the health and environmental value of certain diets, across provisioning systems and in relation to how food is produced, distributed, packaged and consumed. For example, we might be able to quantify the health and environmental tradeoffs associated with eating a diet that includes imported so-called superfoods, such as avocado. Perhaps the health benefits will be revealed, in relation to consuming more fruits, but there may be an environmental impact tradeoff – for example, if the avocado is flown from overseas. This leaves many questions open as to which prescriptions should be put forward that can be shared by prescribers as diverse as national health agencies, schools, community organisations, retailers, friends, families or doctors.

Our interdisciplinary approach to food consumption through the integration of social practice theory and LCA allowed us to give a sound scientific basis to the qualitative findings, which for a big part rely on a comprehensive approach and subjective construction of the relevant categories. Such a strategy can serve to address the concerns of stakeholders and, to some extent, consumers, which is part of the added value of our project. At the same time, the LCA work can be improved by being informed by what is meaningful to individuals, communities and institutional stakeholders, in relation to prescriptions and practices. Our collaboration, however, did not aim to produce larger theoretical or conceptual transformations. Rather, it is a first step to open the conversation between LCA and social constructs – for example, to inform which variables are used for the calculation – and are also relevant to the average person and their decision-making process (Goldstein et al., 2016).

Ultimately, the study of healthy and sustainable food is all about tradeoffs: not only in relation to the types of solutions that might be proposed towards dietary transitions but also between disciplines and approaches. This research project is an attempt to grapple with complexity in earnest, where compromises are better than solely a disciplinary approach to food consumption.

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NOTE

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