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FUTURE OF THE CONSUMER SOCIETY

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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 Schatzki¹, Reckwitz² and Warde³. Even though developed earlier by theorists such as Bourdieu⁴ and Giddens⁵, 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.

Reckwitz² 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. Reckwitz² provides a verbose definition, saying that 'a '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 Schatzki¹ 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). Warde³ delineates his theory of practices as a triangle consisting of understandings, procedures and engagements, whereas Shove and Pantzar⁸ 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 'own' and transform them into an integral part of their everyday lives.^{14, 15} The analytical distinction between conceptual and practical appropriation¹³ 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 Miller¹⁵ (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 transduced to central nervous system. There the information is perceived as sensation and recognized¹⁹. 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 receptors²⁰. 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 environment²⁸. 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, too²⁹. Also the perception of fat in salad dressings has been linked to PROP tasting differences between individuals³⁰. 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* gene³⁷. 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 Brassicaceae family depends on this genotype²⁶. In addition to TAS2R38 taste receptor also at least TAS2R43 and TAS2R44 so far have been reported to be involved in bitterness perception³⁸. 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 arisen³⁶. 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 compounds³⁷. 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 health²⁷. 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 experts⁴³. 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 citizens⁴⁴.

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 study⁴⁸ – 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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