Designing to Change Food Habits

Exploring methodology for behavioural change as a way to start the normalization process of edible insects in Norway

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ABSTRACT

The United Nations estimates that the world will reach 9.8 billion people by 2050, and this number require raising the overall food production by 70% between 2007 and 2050. As a healthy and sustainable alternative to beef, edible insects are suggested. Today almost 2 billion people eat insects as part of their daily diet, but this mostly happens south of the equator. In Norway today, eating insects is seen as primitive behaviour, and insects are often perceived as disgusting and not as a healthy food option. In this article methodologies to influence people's food choices are explored. These methods are found within the theories of social practice theory and nudging, which will be explained in this article. The social practice theory is explored as a method to make innovation within practices, and nudging is explored as a design tool to make behavioural change. Models and guidelines will be presented within said theories. An example of using fitness enthusiasts as early adopters to entomophagy (the act of eating insects), is presented as a starting point for the design work of normalizing edible insects in Norway. This target group is chosen because of their need for a protein rich diet, and because of how they differ from the majority when it comes to food choices.

KEYWORDS: Sustainability, Entomophagy, Edible Insects, Social Practice Theory, Nudging, Food habits, Lifestyle trends, Behavioural change

1. INTRODUCTION

According to United Nations projections on population growth, the world will reach 9.8 billion people by 2050 (United Nations, 2017). The number of people in 2050 would require raising overall food production by 70% between 2007 and 2050, and the production in the developing countries would need to almost double (U.N. Food and Agricultural Organization, 2009).

The question of how to meet the demands of the growing population in a way that does not result in overuse of land and ocean is one that needs to be taken seriously (Crist, Mora, & Engelman, 2017). Emerging economies are experiencing economic growth and with that follows the growth of consumption, especially the consumption of meat. So far the meat production has caused 70% of the planet's deforestation (Stoll-Kleemann & Schmidt, 2016). This threatens irreplaceable ecosystems. In addition, approximately 14,5% of the world's anthropogenic greenhouse gas emissions are calculated to be a result of livestock farming (Stoll-Kleemann & Schmidt, 2016).

Many argue that the change of people's diet from meat eaters to vegetarians is one of great environmental value. If people started to eat the livestock's feed directly, emissions from food production could be reduced by 55% per capita compared to the projected diet patterns in 2050 (Stoll-Kleemann & Schmidt, 2016). A less drastic

behavioural change, but still an improvement, is to implement insects as an alternative to protein rich food such as beef, pork or chicken, as they need much less feed per kilogram bodyweight of gain (Van Huis et al., 2013). The goal with this article is to explore ways to start the process of normalizing edible insects in Norway. Most people do not have trouble eating all the protein they need in a day, but fitness enthusiasts and bodybuilders are exceptions. These people need extra protein for muscle development and muscle repair (Garrett Jr & Kirkendall, 2000). This suggests that this group may be used as early adopters of edible insects in Norway. It will therefore be used as an example throughout this article. In chapter 2, more facts surrounding edible insects will be presented. In chapter 3 food as a part of culture and routines will be discussed, which leads to the reason why the theories described in this article were chosen. Chapter 4 explains the social practice theory, while chapter 5 gives a short description of nudging and how it can be used as a design tool to influence food consumption. Finally, in chapter 6 the theories will be discussed followed by a conclusion in chapter 7.

1.1 Methods

This article is a literature review within the domain of design and social sciences. The search words used includes “design + behaviour change”, “food + routines”, “food habits”, “practice theory”, “nudging”, “edible insects” and more. The site most used for literature search was www.oria.no, a searching website for students and researchers, as well as some use of the website Google Scholar. When words and facts were unknown the searching engine Google was used to gain general information.

The framework for this article is based around the sources “Edible insects: Future Prospects for Food and Feed Security” by Van Huis, Van Ittereeck, Klunder, Mertens, Halloran, Muir and Vantomme (2013), “Designing change by living change” by Scott & Bakker (2011) and Kuijer’s (2017) “Practices-oriented design” for the information around practice theory, and the article “Nudging – A promising tool for sustainable consumption behaviour?” by Lehner, Mont & Heiskanen (2016) which was used for information about nudging for sustainability. In addition, other articles, books, and webpages have been used for other perspectives on chosen themes.

To start this article off, some information about edible insects will be presented.

2. EDIBLE INSECTS

There is no argument to the fact that we need insects to live on this planet. Insects pollinate plants for reproduction, they improve soil fertility and produce products such as honey and silk, just to mention some benefits of living amongst insects. It is estimated that insects form part of the traditional diets of at least 2 billion people. More than 1 900 species have reportedly been used as food (Van Huis et al., 2013). This can give enormous variety to our diets.

The environmental advantages of eating insects are many, the most significant being that they need less feed than the other livestock protein sources we consume today. Crickets only need two-kilogram feed per kilogram bodyweight of gain (Van Huis et al., 2013), while cows need 10 kilograms of feed per one-kilogram meat (Dicke, 2010). The feed used to farm insects can be of less quality than what we give cows and other similar animals, we can even feed them with our food waste which will give environmental value as well. “The possibility of using available organic waste (or rest streams), for example, should be evaluated” (Van Huis et al., 2013. p.105). Insects need less water (Van Huis et al., 2013) it is space efficient to breed because of its small size, and that it can be stacked on top of each other (Kauppi, 2016).

Insects can also give great diversity to our diets. They are a highly nutritious and healthy food source with high content of healthy fats, protein, vitamins, fibre and minerals (Van Huis et al., 2013). It is suitable for many diets such as Paleo,

Atkins, gluten free, non-GMO, low carb and as an all-natural protein-rich food source for bodybuilders (Kauppi, 2016).

In his Ted talk, Dicke (2010) talks about why people should eat insects. He makes a list of the advantages like the ones already mentioned in this article, but he also mentions how insects are less likely to spread viruses than mammals and that they produce much less manure (Kauppi, 2016).

2.1 Perception of insects in the West

Looking back in history the more advanced the agriculture became, the more the western world started to look at insects as a threat to food production. We were, and still are scared of insects destroying our crops, contaminating our food and injuring our animals (van Huis et al., 2013). The modernisation and urbanization in most western countries make people disconnected to nature and insects become alienated (Van Huis et al., 2013). Today it is common for people in the west to look at insects with the feeling of disgust and perceive the action of eating insects as primitive behaviour (Van Huis et al., 2013). Together with food neophobia, this stops us from eating insects in the west (Verbeke, 2015). The feeling of disgust is said to be rooted in culture, and culture is an important part of our food habits. "The acceptance of entomophagy is a question of culture" (Van Huis et al, 2013. p.36). In the next chapter of this article, food as a part of people's culture and routines will be discussed.

3. FOOD – A PART OF CULTURE AND ROUTINES

For most people, the act of eating food is no longer just a means to survive, it is something people do to enjoy themselves. It is a means of satisfaction. As exceptions to this behavioural norm, some people have lifestyles that do not lead to overconsumption of food, and some lifestyles make the nutritional content of the food most important when choosing what to eat, rather than what is more satisfactional or more fitting to social norms. An example of such a lifestyle is like mentioned in the introduction, the fitness enthusiasts, especially those who train to build muscle. For these people food is a fuel they need to reach their goals, and the quality of the food will affect their achievements (Garrett Jr & Kirkendall, 2000). If they eat badly, they will perform badly at the gym. Satisfaction from eating food is something they might give less priority in order to build muscle.

Food is a big part of people's everyday life, either because of social interest, or just as a source of energy. Most people eat food several times a day and often this happens in social contexts (Shepherd & Raats, 2006), like lunch at work or school, together with co-workers or classmates, or eating dinner together with your family. Food choices play an important role in the social aspects of life by expressing preferences, identities and cultural meanings (Shepherd, 2006). Our routine is a sum of the choices we make. "Yesterday's decisions may become today's habits" (Mcmeekin, Green, Tomlinson & Walsh, 2002. P. 13). In addition, culture has a major effect on people's food choices – what people eat, when they eat, how they eat it, and where they eat it. As the conceptual model from Shepherd in figure 1 shows, our food choices are made out of a process with many different factors.

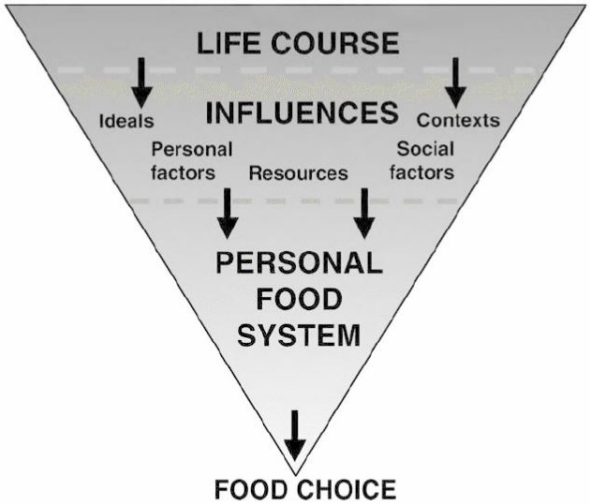

Figure 1: Food choice process model (Shepherd & Raats, 2006. P. 3)

In regards to food consumption, global systems of provision are important in structuring diets (Shove, Pantzar & Watson, 2012). What is available for people at their local grocery store affect what they eat. Insects are not listed as a food item by the European Union (EU). Although Norway is not a part of the EU, the country is in an agreement called European Economic Area (EEA) that opens for free trade between the participating countries. This agreement implies common regulations for the participating countries (Regjeringen, 2017). In addition, the EU is an organization that other countries follow as an example, even though they are not a member. From January 2018 these rules will change, and insects will be a part of a category called "new food" in Norway (Mattilsynet, 2017). This category has its own regulations, and products containing insect must go through a risk analysis before it can be produced and sold on the Norwegian market.

3.1 The growing trend of a healthy lifestyle

In the rise of social media food has become social in a new way, and the trend of showing your meals to your friends and followers on Instagram (Kloek, Salmon & de Vries, 2017), Snapchat, or other social media platforms affect our habits. When having prepared a complicated dish or having bought a delicate dish at a restaurant (especially when healthy), it is almost as if it has not existed if you did not share it with the world.

In the last years a trend called "fitspiration" (the amalgamation of the words fitness and inspiration) has taken over big parts of social media. Fitspiration consists of images and quotes that are designed to motivate people to make changes for a healthier lifestyle, both with diet and exercise (Tiggemann & Zaccardo, 2016). This creates trends and affect people's behaviour. Next, practice theory will be explained and discussed connected to trends and lifestyles.

4. PRACTICE THEORY

Practice theory is first and foremost found within the literature about social science (Kuijer, 2017). In this article, practice theory is described within the fields of design to give insight on how to design for behaviour change within the complexity that makes out people's practices.

As Scott et al. (2011) describes in their article, there is a dynamic interplay between people's rational individual actions and collective behavioural norms that occur as practices. Practices are the routinized way we move our bodies, handle objects, treat subjects, how we describe things and understand the world (Reckwitz, 2013). As examples, practices can be traveling, eating, cooking food, shopping or training.

According to Kuijer (2017), practice theory offers a conceptual framework that is helpful for understanding and tackling complex societal issues such as sustainability. Whereas the conventional design process focuses on products and services as the final outcome, a practice-orientation redefines the role of products and services as means to another end. "However, that end is no end at all, but rather a process of change in practices" (Scott et al., 2011. p 6). By exploring people's history and diversity this theory makes radical change possible (Kuijer, 2017). Practices exist only in reiterative performance over time, and this model is like a frame in a film that only suggests the full story. It can be used to make dynamic analysis of practices, and only understanding can create innovation.

In figure 2 a model of the practice theory method is illustrated. The idea is to analyse a practice by defining the different elements that link together to make the practice. The elements are separated into three different groups: Image, Stuff and Skill. Between these elements there are link that gives us understanding of the practice. A weak link may be broken so that new links can be created, whilst strong links cannot be broken, so we must learn how to use them to our advantage (Scott et al., 2011).

As Scott et al. (2011) describe, innovation within practices happens when existing links are broken

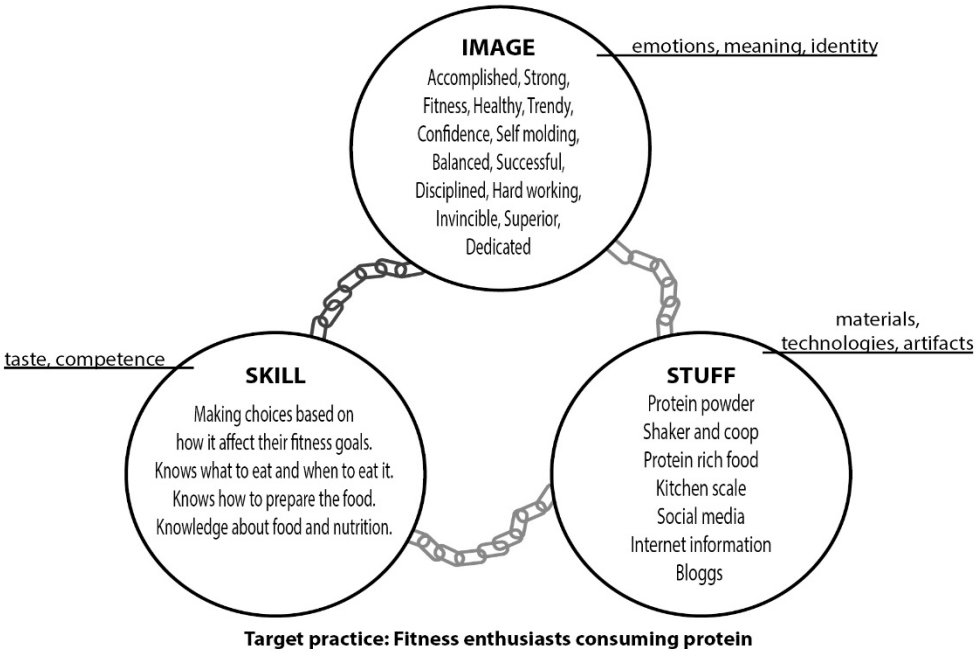

Figure 2: Example of use of practice theory model from Scott et al., 2011. p. 5

and new links are created: new ideas, new products, and new procedures are introduced, or existing elements form new links with what exist outside the practice. As Pantzar & Shove (2010) describes: "The apparently plausible suggestion that new practices represent novel combinations of existing elements supposes perhaps less plausibly that elements are somehow 'out there' in the world, waiting to be linked together". Innovation in practice is a matter of making and breaking links between elements. (Pantzar & Shove, 2010). The practices does not stand alone divided from other practices, it is all connected and a network of practices can be identified as "lifestyles" (Scott et al., 2011).

The model in figure 2 shows an example of practice theory based on the model from Scott et al. (2011. P.5). The targeted practice that is analysed and mapped is fitness enthusiasts eating protein. The practice consist of not only the product being consumed, but also the image and skills connected to this. A new practice may be created if a way to replace the current protein product with edible insects is found. This will affect the other elements and links within the practice, and we may imagine an image of being sustainable with a strong link to this. Together with other practices such as "working out" this may create a new lifestyle.

In the next chapter the concept of nudging, and how knowledge of human instinct will give insight on how to influence people's behaviour will be discussed.

5. NUDGING

Nudge theory or nudging, is a concept found within the domains of behavioural science, choice architecture, economics and political theories (Thaler, Cass & Sunstein, 2008). It has in the latest years been discussed as a possible design tool within sustainability and health. Its purpose is to serve as a decision making tool to help people choose the best outcome. This outcome is the best option both for the designer's customer and the user (Thaler, Cass & Sunstein, 2008).

The literal meaning of nudge is according to the Cambridge dictionary "to push something or someone gently, especially to push someone with your elbow to attract the person's attention" or

Nudge mechanisms used	Applications to food consumption	Evidence of effectiveness
Simplification and framing of information	Provide simplified information and signifiers	Small-scale studies in controlled environments indicate large impact; no large scale studies available; impact seems to vary for different segments of society
Changes to the physical environment	Change visibility and accessibility influence size	Strong evidence in controlled environments (i.e canteens; restaurants). Experiments with portion size and package size suggest strong impact
Changes to the default option	Positioning of product choice	Wide use in retailing suggest large impact; few studies available for pro-sustainable nudging
Use of social norms	Provide information about others' behaviour and ideal type behaviour.	Studies suggest effectiveness, particularly when behaviour is publicly and in cases of uncertainty about appropriate behaviour

Table 1: Nudge mechanisms used to influence food consumption (Lehner et al., 2016)

"to move slowly and almost reach a higher point or level" (Cambridge dictionary, 2017).

Thaler, Crass & Sunstein (2008) emphasise in their book the importance of the nudge being possible to avoid and not forbidding other options. A nudge is supposed to fit with the user's wishes, so that the option is chosen out of free will as a means to reach their goal. The example given in the book is connected to choice architecture in a cafeteria, as a way to nudge for a healthier way of eating: "putting fruit at eye level is a nudge. Banning junk food is not".

Nudging is found used in campaigns, and as a tool within the domain of health, mainly against obesity and overconsumption. It has also been used, although not seen too often, in the domain of sustainability. Lehner, Mont and Heiskanen (2016) mention in their article a case where it has been used as a tool to reduce red meat consumption and food waste. This is one of the reasons why nudging is mentioned in this article as a possible design tool to implement edible insects in the west.

Next, ways to use nudging is presented as tools and guidelines.

5.1 Nudge tools

Next, Nudge comprises four types of tools:

1) Simplification and framing of information
2) Changes to the physical environment
3) Changes to the default policy
4) The use of social norms
(Lehner, Mont & Heiskanen, 2016)

Table 1 from Lehner et al. (2016) shows nudge mechanisms used to influence food consumption. The first and last mechanisms is of great interest in this article because of its aim to give the people new knowledge and to influence with social norms, which has been discussed in this article as being a big part in people's food habits. Social norms also affect people's perception of what is food and what is not (Shepherd & Raats, 2006). Knowledge on how to prepare food, what is safe to eat, and what is healthy, will affect what people eat. This knowledge can be given through nudging.

5.2 Nudging for sustainable behaviour

In her Ted talk, Krukow (2011) talks about the reasons behind people's behaviour and how we may use this knowledge to design solutions that help people behave sustainably. This she also discussed in the article "Behavioural Design in EcoGrid 2.0" (2017) together with Kepka. She believes that people intend to do the right thing and that most of us knows what the right thing is, but our instincts get in our way. An example of this is our strong pack mentality (Winston, 2003). People have a tendency to mirror what other people around us are doing, so if one person starts leaving the dishes in the sink the people who comes next will mirror this solution, and a big mess will be made. This is connected to the social

norm theory, which explains how people "behave the way we think our peers do" (Cheung & Ardolino, 2011. p.2).

To change behaviour, we need to know what drives it. Humans have two systems that makes out our way of thinking: the automatic system and the reflective system (Kahneman, 2011). The automatic system comes easily and quickly to a conclusion, while the reflective system takes both time, effort, energy and sometimes aids to use. As humans we are wired to save energy, so we avoid using this tiresome system as much as possible. We cannot be reflective over a long period of time because of our limited brain capacity (Khaneman, 2011). This all leads to guidelines to be used when designing for sustainable behaviour, as well as Krukow's conclusion that showing people what you want them to do has a better effect than telling them what they can't do (Krukow & Kepka, 2017).

1. Make solutions as simple and intuitive as possible so people do not have to be reflective for too long, and preferably make it possible to use the solution with automatic thinking.
2. Make use of the pack mentality instinct and mirroring effect. If we start changing our own behaviour and change the behaviour of influential people, other people will eventually follow.
3. Show people how to behave, do not tell them how not to behave.

Krukow also mentions that when designing for behavioural change, digital media can make a big impact. Connecting this fact to how we may use social norms as nudging mechanisms, and that we use social media to share our lifestyle choices, we may conclude that social media can be used to design for behavioural change. It is also platforms suitable to give information in an understandable way like the first nudging mechanism in table 1, and guideline one suggest.

6. DISCUSSION

To design for implementation of edible insects in the diets of Norwegians, theories within the fields of sociology, psychology and food culture must be explored. As mentioned in this article the perception of insects, and food neophobia is something that has to change in order to gain the acceptance of insects as food in Norway. This has not been discussed thoroughly in this article. What has been discussed is food as part of people's routines, and how it plays an important role in the social aspects of life. Food choices are a process of choices regarding what to eat, when to eat, and where to eat. This and the example of "cooking food" as a practice mentioned in the literature, tells us that eating food is a practice. The Practice theory was therefore a theory fitting to explore in this article. "Eating insects" can be augmented to be a practice, but it is not one that exist in large extents in Norway. Therefore, the practice of eating protein among fitness enthusiast has been used as an example in this article. The fitness enthusiast may be a group of people suited as the early adopters of edible insects in Norway because of several factors. They have a need for protein rich food and they might prioritize their food choices with the protein content as something more important than social norms and taste. Fitness enthusiasts are a part of the growing trend of a healthy lifestyle, and by implementing edible insects to a practice within this lifestyle, it might influence a lot of people to see edible insects as something normal. Like discussed in chapter 5 - nudging through social media can be a way to influence people. With simplification and framing of information about edible insects, the use of social norms and by showing own sustainable behaviour, one might influence others to do the same.

The two theories mentioned in this article, Practice theory and nudging, enlighten the question on how to implement and normalize edible insects in Norway in different ways. With practice theory a detailed picture on the existing practice where edible insects might be implement, is mapped. This process of changing

an already existing practice is long and difficult, and might impose risks because of many factors, just like other radical innovations. Practice theory also gives us insight in lifestyles, since a network of practices make out a lifestyle. This is especially interesting because of the chosen example of fitness enthusiasts, and how their lifestyle make out one of the biggest trends of today. By discussing nudging and its guidelines on how to make small changes toward the long term goal, new ways of solving the problem arises. This theory might be seen as the incremental way to reach the goal, one small step at a time.

The practice theory gives a framework to analyse practices that might be used in further work with edible insects. The model in figure 2 is an example of how this model was used to analyse a practice in a project connected to this article.

7. CONCLUSIONS

As discussed, two ways of working toward the normalization of edible insects are presented. With the future prediction from United Nations, it might be a good idea to use both theories for future design work so that one can support the other. With the practice theory model, analysing practices to find opportunities to implement new elements to already existing practices is made possible, as well as other ways to create new practices. By choosing these practices within a fitting lifestyle (preferably one that has socially accepted norms or is seen as trends), the new practices may take hold within bigger parts of the society, and help normalize the product. With the theory of nudging, the new practice of eating insects can be communicated to others as ideal behaviour. By the framing information and the use of social norms, edible insects might spread to the masses and become normalized.

If succeeded with the normalization of edible insects in Norway, there is hope of it spreading to other countries that look to Norway for inspiration about sustainability and health. This way, this process might have a bigger impact on the environment.

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