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Valuing and valorizing insects as *good to eat*.

On practices of market value creation at an Austrian edible insect company.

verfasst von / submitted by

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I thank my two siblings, who always listen to my insect-talks lovingly despite their great fear of insects. Thanks to my dog – also jumpy towards insects, but at least eating them – for forcing me to take breaks and breathe fresh air.

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0. Abstract (English)

In recent months and years, entomophagy – the practice of eating insects – has received increased attention in the European Union (EU). As edible insects are considered an environmentally-friendly animal protein with the potential to render food systems more resilient and sustainable, eleven species are currently being evaluated for approval in EU markets. Drawing on *Science, and Technology Studies* (STS), discourses around *Valuation and Evaluation Studies*, and literature investigating food valuation, I aim to identify how an Austrian edible insect company enacts insects as *good to eat*. In this research, I primarily examine how the company valorizes and values insects in order to convince potential consumers that insects are good food. Furthermore, I investigate the values that the company co-creates through its marketing, products, website, and cooking classes. The research questions on how the insect company values insects as *good to eat* are answered through semi-structured interviews with three company members, a website analysis, and a participatory observation at a cooking class. Subsequently, the collected data is analyzed using a Multimodal Critical Discourse Analysis (MCDA) and thematic coding to identify practices of market creation, *Registers of Valuing,* and what the company does not care about in its activities (Heuts & Mol, 2013).

0. Abstract (Deutsch)

In den letzten Monaten und Jahren hat Entomophagie - die Praxis, Insekten zu essen - in der Europäischen Union (EU) an Aufmerksamkeit gewonnen. Da essbare Insekten als umweltfreundliches, tierisches Eiweiß gelten, das das Potenzial hat, Nahrungsmittelsysteme resilienter und nachhaltiger zu machen, werden derzeit elf Insektenarten für die Zulassung auf den EU-Märkten geprüft. Basierend auf *Science and Technology Studies* (STS), Diskursen rund um *Valuation and Evaluation Studies* und Literatur, die sich mit der Wertung von Lebensmitteln befasst, möchte ich herausfinden, wie ein österreichisches Unternehmen, das essbare Insekten vertreibt, diese als gut zum Essen darstellt. In dieser Arbeit untersuche ich in erster Linie, wie das Unternehmen Insekten valorisiert und wertschätzt, um potenzielle Konsumenten davon zu überzeugen, dass Insekten ein gutes Lebensmittel sind. Darüber hinaus untersuche ich die Werte, die das Unternehmen durch sein Marketing, seine Produkte, seine Website und seine Kochkurse vermittelt. Die Forschungsfragen hinsichtlich der Art und Weise, wie das Insektenunternehmen Insekten als gutes Lebensmittel wertet, werden durch halbstrukturierte Interviews mit drei Unternehmensmitgliedern, eine Website-Analyse und eine teilnehmende Beobachtung bei einem Kochkurs beantwortet. Anschließend werden die gesammelten Daten mithilfe einer multimodalen kritischen Diskursanalyse (MCDA) und thematischer Kodierung analysiert, um Praktiken der Marktbildung, *Registers of Valuing* und das, was dem Unternehmen bei seinen Aktivitäten nicht wichtig ist, zu identifizieren (Heuts & Mol, 2013).

1. Introduction

During my initial research for the topic of this thesis, I came across a headline in my social media feed that immediately caught my attention "First insect in the EU: Mealworms officially approved as food" (Zeitimbild, 2021). In recent years and months, the European Union (EU) has paid growing attention to entomophagy, – the practice of eating insects – the topic I tackle in this master's thesis (Kuljanic & Gregory-Manning, 2020).

In 2013, the Food and Agriculture Organization (FAO) of the United Nations (UN) published a report on insects as food and feed, outlining the health and environmental potential insects could have if efficiently integrated into Western food systems. In this groundwork, the FAO notes that approximately two-thirds of the world's population regularly eat insects. While insects are eaten in Africa, Asia, and Central and South America, they are far from integral to dishes in Europe and North America. Instead, in most European and Western countries, feelings of disgust and skepticism outweigh curiosity and openness regarding eating insects (Mancini et al., 2019; Van Huis et al., 2013; Videbaek & Grundert, 2020). However, the main potentials the FAO outlines in its report are that, firstly, edible insects are healthy food for human health. Secondly, they serve as an environmentally-friendly and sustainable alternative to other animal protein sources such as meat and fish. Accordingly, the eco-friendly qualities of insect breeding could become crucial solutions for more sustainable and climate-resilient food systems. At the same time, edible insects could ensure global food security for a rapidly increasing world population that will demand more protein. These advantages are not the only ones highlighted. Other benefits are insects' ability to reduce food waste and improve soil fertility, their use as natural biocontrol, and other ecological services (Kuljanic & Gregory-Manning, 2020; Van Huis et al., 2013).

Inspired by the FAO report, the European Commission (EC) has supported research under the funding programme Horizon Europe that examines entomophagy in the EU. Furthermore, eleven applications of edible insects as Novel Foods are currently evaluated by the European Food and Safety Agency (EFSA) (European Commission, 2021). Dried yellow mealworm is the first insect approved by the EFSA as safe to eat and authorized by the EC. Others follow. Foods like insects, algae, or other plant proteins that humans did not significantly consume within the EU before the 15th of May 1997 fall under the *Novel Foods legislation*. Under this, Novel Foods must go through standard authorization procedures to be labeled as safe for consumption and approved on EU markets (European Commission, 2021; European Food Safety Authority, 2021a; 2021b; 2021c; ipiff, n.d.). These authorization processes on insects as food and feed are all in line with the objective of the *European Green Deal* to reach climate neutrality by 2050. As part of the *European Green Deal*, the *Farm to*

Fork Strategy addresses changes to a more fair and environmental-friendly food system (European Commission, 2021). Research, guidelines, and regulations on entomophagy in Europe support these EU strivings to achieve a more sustainable and resilient food system (Kuljanic & Gregory-Manning, 2020).

Although insects have only recently been approved or are still not approved on the EU market, a handful of insect traders have already been selling them as food. The production and trade of edible insects without complete EU approval as Novel Food have been possible since 2018 due to a transitional measure by the EU. However, Austria and other member states refused the transitional measure in whole or in part. In some member states, the eleven approved insects could be traded in whole and processed form, while in Austria, only whole insects were allowed. Only after 2021 has it been legalized in Austria to sell insects in processed form for human consumption (ipiff, n.d.). Despite the unfavorable legal situation in Austria, one of the few early-founded European insect companies is based in Austria. Founded in 2018, this Austrian edible insect company offers a range of products made of insects. Its assortment spans from pure insects like mealworms and crickets, flavored ones, protein bars, burger patties, and insect flour to various ready-mixes, chocolate, and protein powder. Additionally, it offers cooking classes conducted by a top chef, where participants prepare a four-course meal from insects and learn more about entomophagy. Furthermore, the company's webpage is very informative and promotes insects in line with the aforementioned institutional research on entomophagy as a sustainable alternative animal protein source (Van Huis et al., 2013).

Taken together, the information above intends to illustrate how vibrant the issue of entomophagy in the EU currently is at policy level. Furthermore, it shows how action plans addressing the climate crisis, regulations, governance, markets, food cultures, concepts of more sustainable food systems, and food science are intertwined. As the topic encompasses many aspects – from economic, environmental, political to social, and cultural ones – it offers to be addressed from *Science, and Technology Studies* (STS) angles. A STS strand that, on the one hand, respects the mentioned multiple and heavily intertwined aspects of the topic and, on the other hand, offers a systematic framework is the discourse called *Valuation and Evaluation Studies*. Literature around this discourse examines "how value is produced, diffused, assessed, and institutionalized across a range of settings." (Lamont, 2012, p. 202). In my master thesis, I draw on this discourse to investigate how the above-mentioned Austrian edible insects company values and enacts insects as *good to eat*. Edible insects are not an established commodity in Europe. Thus, enactments of how this company values insects are closely linked to processes of creating values in order to make insects commodified in Europe.

Furthermore, I aim to discover what values and knowledge the company (re-)communicates through its marketing and products. The literature touching on the discourse of *Valuation and Evaluation Studies* serves as a discursive framework for my thesis. Moreover, I refer to two concepts I use as lenses to examine my case. The first is the analytical tool of *co-modification* (Asdal, 2015; Asdal & Cointe, 2021), and the second is the concept *of Matters of Care* (Puig de la Bellacasa, 2011; 2015). These concepts help to address how insects as Novel Foods in the EU become a commodity and how the company's actions perform care. Since I focus on the performative enactments of the Austrian company and how it values entomophagy through its doings, I collected material of different kinds in order to answer my research questions comprehensively. More precisely, I conducted semi-structural interviews with three company members, a participatory observation at a cooking class, and looked at the company's website's text, visuals, and offered products. In the following sections, I go through the State of the Art, elaborate on the research case and questions, explain the concepts I use and the methods I apply, and lastly, analyze my empirical material.

2. State of the Art

In this section, I introduce the literature that I consider relevant to the research case of this thesis and through which a better understanding of the thesis topic can be achieved. To get this better understanding, the State of the Art elaborates on entomophagy's political and scientific discourse. It also zooms into the discourse of STS and *Valuation and Evaluation Studies* that is related to food in order to position from where this thesis investigates insect eating. As research on entomophagy is approached from multiple perspectives, I divide the literature into three types:

The first type of literature comes from organizations, agencies, and organs of the UN and the EU. More precisely, this literature includes reports, information on EU websites, and scientific opinions for policy decisions that inform about the potential of entomophagy and influence the authorization procedures of insects as Novel Foods in the EU. These policy documents allow getting a grasp of the current state of knowledge with which the EU is operating to establish the regulatory framework of edible insects for EU markets. In other words, these documents impact the policy-making and future of insect eating in Europe and communicate the topic to the public. The first type of literature is split into the first two subsections of this State of the Art. The first (2.1) is dedicated to the groundwork of the FAO, and the second outlines how the EU handles entomophagy (2.2).

The second type of literature was published in food and nutrition journals and focuses on key research trends of entomophagy. Including this type of literature aims to get a sense of what kind of studies on insect eating exist and are predominantly conducted. In this part, I identify two types of research areas that are primarily investigated. The first focuses on the nutritional and environmental benefits of insects. The second is dedicated to consumer behavior and questions the disgust that exists in Europe towards entomophagy. I do not focus on the first research area about consumer behavior, as the main facts presented are an iteration of the knowledge I summarize in the first part of this State of the Art (2.1). However, I delve deeper into the second area of research as it is relevant to my empirical case. Including this literature makes the cultural situation and attitude in Europe clearer to the reader and increases awareness of the aversion the Austrian company faces. Furthermore, it shows what strategies research suggests in order to tackle consumers' disgust. Summarizing the predominantly conducted research on entomophagy helps me to argue later on why approaching the topic from a STS perspective is different from the main research trends and, therefore, relevant in discourses on entomophagy.

The third type of literature I present comes from *Science, and Technology Studies* (STS) or *Science, Technology and Society Studies*. Unfortunately, I did not find any STS

literature that deals with insect eating. Thus, I had to find related topics that inspired me to decide on how to approach my case from a STS perspective. In this part, I first review the STS literature on the making of ontologies of Novel Foods. Next, I address what STS literature writes about food regulations' epistemological and ontological power. Last but not least, I introduce literature from the discourse of *Valuation and Evaluation Studies* that deal with food. The STS literature I introduce here tackles similar areas as this paper's theory and concept section. As a result, both parts have some overlap. However, the main difference is that the State of the Art concentrates more on how STS literature approaches topics relevant to my research case. Therefore, I highlight relevant topics and present empirical examples. The STS literature in this State of the Art also applies or demonstrates theoretical concepts that are fruitful for examining the case of this thesis. In the theory section, I discuss the respective concepts in much more detail.

2.1 Initiating the political discourse on Entomophagy

In 2013, the FAO published the report "Edible insects: future prospects for food and feed security" in cooperation with Wageningen University & Research (Van Huis et al., 2013). It is a comprehensive 187-page report on what was known about insects as food and feed at the time of publishing. The report reviews data and research from experts around the world to examine how insect eating is practiced in non-Western countries and the ecological potential and benefits it bears. The chapters of the report cover various aspects of the insect food and feed value chain, including the role of insects, cultural aspects and history, breeding methods, nutritional values, insects as animal feed, food safety, economic factors, marketing, and regulation. Due to the comprehensiveness of the report, almost all subsequent literature and scientific papers on the subject, as well as all commercial insect traders in Europe, refer to this report. Accordingly, the FAO report can be considered a groundwork of the Western discourse on entomophagy, which is why it is also an essential part of this research project. As this thesis focuses on insects as human food, I omit the report's parts on the potential of insects as animal feed (Van Huis et al., 2013).

The main reason for the report's existence is the urgent need for alternative, sustainable protein sources to replace unsustainable, conventional animal proteins like meat and fish. With the world's population forecasted to increase to 9 billion people by 2050, all of whom demand protein for existing, and with climate change simultaneously challenging global food safety, the authors point to the need for climate-resilient food systems. Due to their high greenhouse gas emissions, conventional protein sources like meat contribute significantly to climate change. At the same time, the oceans are overfished. Therefore, the report's central

claim is that insects are a sustainable alternative to conventional animal proteins such as meat and fish and can help cope with the world's major food challenges (Van Huis et al., 2013). But what exactly are the environmental potentials attributed to insects? First, Van Huis et al. (2013) point to insect's high feed conversion efficiency, making them very environmentally-friendly. Insects are cold-blooded, which enables them to convert feed into protein more efficiently. Since some insects can be reared on organic side streams, they moreover have the potential to reduce food waste. Second, most edible insects emit far fewer greenhouse gases, the leading causes of climate change, than other livestock. Only a few insect species, like termites or cockroaches, emit large amounts of greenhouse gases. Third, insects require much less space and water than conventional animal protein sources. Thus, insects consume fewer resources but convert the ones they consume very efficiently. Another positive aspect connected to the benefit of insects using fewer resources is dedicated to animal welfare. To ensure welfare, the farmed species should be reared under natural conditions, which in many cases means living in high density. Therefore, they need little space to live. The authors write that research has not yet proven whether insects feel pain and suggest that the gentlest method of killing is to freeze or immediately shred the insects. Moreover, Van Huis et al. (2013) state that edible insects are not only a great protein source but also contain other healthy nutrients, vitamins, fiber, and minerals. Thus, eating insects can contribute to a healthy, balanced, and ethically responsible human diet (Van Huis et al., 2013).

With all of these benefits and potential, one may wonder why insects are not yet part of Western diets. Two third of the world's population eat them regularly. Over 2000 insect species are eaten worldwide. However, in the West, feelings of disgust outweigh the willingness to eat insects (Van Huis et al., 2013). Van Huis et al. (2013) claim that cultural, religious, and historical reasons have stabilized a Western view of eating insects as primitive and negative behavior. In order to implement insects as food and feed in Western countries, the authors claim that strategies must be developed to overcome disgust. According to the authors, education plays a crucial part in this. Moreover, the disgust factor is not the only reason insects are not part of Western diets. At the time of publication, there were no regulations for the market in the West. Furthermore, standardized insect production is a relatively new harvesting method, as most edible insects globally eaten are semi-cultivated or harvested in the wild. Thus, the authors argue that large-scale farming systems are still under development (Van Huis et al., 2013).

To sum up, the report comprehensively gathers extensive knowledge on entomophagy. It gives a comprehensive overview of the use of insects in agriculture, their benefits, and their pitfalls. It is a suitable groundwork for readers who are not yet familiar with

the subject. As the FAO report can be seen as the starting point of the Western discourse on entomophagy (e.g., for subsequent research from different disciplinary perspectives, marketing of insect companies, and legislation), my summary aims to give an overview of the main facts the report puts forward. The 183-page report goes into much more detail than I can elaborate on here. However, one aspect of my research question is investigating what values and knowledge stabilize in the discourse around entomophagy (SQ1). Thus, I refer to the report in different parts of this thesis to show which knowledge the Austrian insect company adopts and which it ignores. More precisely, after coding my empirical material and clustering them into themes, I revised the themes to answer what values and knowledge the company use and what is neglected.

2.2 Legalizing Edible Insects for Human Consumption in EU markets

As mentioned above, the FAO report is a crucial source for companies, research, and legislation (Van Huis et al., 2013). In recent years, the EC and EFSA have been working on the regulation of eleven different insect species to be legalised on EU markets (European Commission, 2021). All actors and agencies involved frequently mention the FAO report as the fundamental source on which to base current research (Van Huis et al., 2013). In the following I summarize various bodies of literature that clarify the EU legislation process on edible insects and knowledge produced in it. Including the literature generated in the regulation processes not only provide information on the current state of knowledge in Europe but also on how entomophagy is regulated to be practiced in the EU. As the legal framework is crucial to how the Austrian insect company does and has done its work, it is inevitable to include it here (European Commission, 2021).

Before diving into some policy documents produced by EU agencies, the website of the EU non-profit organization International Platform of Insect for Food and Feed (ipiff) (n.d.) gives an overview of the EU legislation procedure of insects as food. The ipiff is a non-profit organization that informs producers, citizens and policy makers about the current state of legislation on insects for food and feed in the EU. As ipiff (n.d.) informs:

> *"EU law regulates the conditions for food and feed business operators, such as insects producers, to produce and commercialize their products in the EU. Notably, EU policymakers have adopted – in the early 2000s – a package of legislative texts which define general principles and standards in the area of food and feed safety."*

One of these legislations is the *Novel Foods legislation* which applies to all foods not consumed in significant quantities by EU citizens prior to 15 May 1997. Since insects were not part of European cuisine, the *Novel Foods legislation* applies to them. The EU *Novel Foods legislation* determines that Novel Food must undergo an authorization procedure in order to

be labeled as safe for human consumption and permitted on EU markets. The procedure is as follows: Food business operators can submit an online application to the EC for the approval of a Novel Food. After verification, the EFSA carries out a risk assessment to check whether the food is safe for human consumption, what the hygienic standards of production and storage should look like, and more. After the EFSA publishes its scientific opinion, the EC decides whether the Novel Food can be legally placed on the EU market. Eleven insect species have been requested for authorization (European Commission, 2021). Since 2021, the EFSA has published six scientific opinions on the following insects: Dried yellow mealworm (Tenebrio molitor); dried and frozen migratory locust (Locusta migratoria); dried, ground and frozen house cricket (Acheta domesticus); frozen, and freeze-dried mealworm (Alphitobious diaperinus larva). Accordingly, this indicates that the EU authorization processes are currently in full operation (ipiff, n.d.; Turck, 2021a; 2021b; 2021c; 2021d) The EC (2021) has approved three insect species on the EU market – this number can likely change in the upcoming months (Mancini et al., 2022).

Further information on the EU authorization procedures of insects as Novel Foods, as well as the overall EU agenda of integrating insects into EU markets can be found on the European Commission (n.d.a; n.d.b; n.d.c; 2021) website. The many different webpages on food safety, Novel Food, authorization, and the approval of insects not only provide information on the current state of policy-making but also give answers to the benefits of insect eating in a Frequently Asked Question (FAQ) section. The various webpages on edible insects in the EU refer mainly to the FAO's main facts on why insect eating is beneficial. Thus, I do not repeat them. What is worth adding is that EC informs about the contribution of insects as food and feed to the overall objectives of the *Farm to Fork Strategy* of the *European Green Deal*. The *Farm to Fork Strategy* aims to transform food systems to render them more climate-resilient, sustainable, fair, and healthy (European Commission, n.d.c). In addition, the EC (n.d.a) announces that research on entomophagy is a key focus of the Horizon Europe research and innovation funding programme. The main takeaway for this thesis is that the knowledge on entomophagy presented by the EC is very much in line with the opportunities the FAO reports. Based on the EU regulatory framework, the EU follows an integration of insects through standardization procedures and techniques. Methods such as wild harvesting and semi-cultivation are not considered (European Commission, n.d.a; n.d.b.; Kuljanic & Gregory-Manning, 2020)

As mentioned above, the EFSA is responsible for evaluating Novel Foods to determine whether they are safe for the EU market. Based on the EFSA's scientific opinions, the EC approves Novel Food in EU markets (Turck et al., 2020a). Since yellow mealworms were the

first officially approved insects in the EU, I briefly summarize what the EFSA includes in its scientific opinion (Mancini et al., 2022). Shedding light on how insects are assessed and what kind of values and knowledge are produced in the evaluation process gives insight into how legal frameworks of markets are made and the situation in which the Austrian company operates. As an example of a scientific opinion by the EFSA, I take the assessment of the safety of dried yellow mealworms (Turck et al., 2020a). The scientific opinion reviews recent research on yellow mealworm concerning its nutritional profile, anticipated intake, toxicity, and allergenicity. The EFSA imagines mealworms as consumed as a whole, as dried insects, or in the form of a powder that can be integrated into products such as energy bars, pasta, and biscuits. The authors not only look at what nutrients a mealworm contains but also its bioavailability. Based on a literature review, the EFSA concludes that mealworms do not raise safety concerns. Toxic contaminants in mealworms depend on the insect's diet, so compliance with the current EU feed legislation ensures safe consumption. Regarding nutrients, the EFSA's panel concludes that mealworms contain high amounts of protein, although bioavailability may lead to overestimation. Furthermore, the panel summarizes that allergic reactions may occur if a consumer has allergies to crustaceans and dust mites (Turck et al., 2020a). In summary, the political literature by the FAO and the EU gives an overview of the current state of knowledge and policy decisions on entomophagy in the EU. Thus, my summary makes it possible to refer the following literature review and precisely my research case to the FAOs scientific groundwork and the political regulations in the EU.

2.3 Research Trends on Entomophagy

In addition to the literature from policy organizations and stakeholders, the second part of the State of the Art focuses on the predominantly conducted research topics concerning entomophagy. As mentioned, the EU aims to invest funds into insect food research under Horizon Europe (European Commission, n.d.a). The reason for this is that the implementation of insects in the EU market contributes to the goal of the EU *Farm to Fork Strategy* of rendering food systems more resilient (European Commission, n.d.c). After the publication of the FAO report, research on the topic has increased rapidly (Mancini et al., 2022). Entomophagy has become a hot research topic, especially since the EU has turned its attention to the topic and the authorization process has been initiated. To identify the main research areas on entomophagy, I searched for the keywords "entomophagy", "insect eating", and "edible insects" on Web of Science and the Vienna University Library search page. I skimmed the literature ranked as most cited and relevant and grouped them into themes. Two main research areas could be filtered out from the most frequently cited literature: First, research

assessing the health and environmental benefits proclaimed by the FAO report (Van Huis et al., 2013). Second, studies address the disgust of European consumers (Caparros Megido et al., 2016; Hamerman, 2015; Hartmann et al., 2015; Hartmann & Siegrist, 2016; La Barbera et al., 2018; Mancini et al., 2019; Menozzi et al.; 2016; Tan et al., 2016; Verbeke, 2015; Videbaek & Grundert, 2020). Both topics are primarily published in food journals like *Trends in Food Science & Technology*, and *Food Quality and Preference*. The literature of the first main research area mainly focuses on small parts of the FAO report, such as nutrient composition (Baiano, 2020; Rumpold & Schlüter, 2013; Van Huis et al., 2013). Other papers, for example, give an overview of challenges in the large-scale cultivation of insects due to their physical characteristics (Gravel & Doyen, 2020). However, it is not of great relevance for the research questions of this master's thesis to review these. Therefore, I do not elaborate further. Since this thesis focuses on how a particular Austrian insect company produces values aiming at convincing potential consumers that insects are *good to eat*, the second research area is more relevant. As this thesis analyzes how the company communicates values and knowledge to customers, it is valuable to include the research that is concerned with consumers.

In recent years, numerous studies have been conducted and published on the acceptability of edible insects among Westerners and Europeans.[1] In an early study, Verbeke (2015) examines how different variables (such as gender, the amount of meat consumption, and the education on the environmental and health impact of meat or insects) affect consumers' readiness to substitute meat with insects. The study's data are cross-sectional and come from surveys of 368 meat consumers in Belgium. The results show that male consumers are more willing to eat insects than women. Verbeke (2015) assumes that "males have a more adventurous taste orientation." (p. 153). Consumers who dislike meat as unhealthy and want to reduce meat consumption feel an increased readiness to eat insects. Familiarity with the topic of insect eating and the benefits associated with it also strengthen willingness. The study data leads to the conclusion that the environmental values of insects increase readiness more than the healthiness of insects. Food neophobia – i.e., the fear of eating new foods – is considered as the factor reducing readiness the most (Verbeke, 2015). Several other studies also pointed out this major factor (Hartmann et al., 2015; Hartmann & Siegrist, 2015). In their experimental study, La Barbera et al. (2018) point out that studies on

[1] The literature on entomophagy often uses the terms *Westerners* and *Europeans* to group people socialized in Anglo-American and European cultures in which a shared disgust towards edible insects exist. Thereby the literature contrast people socialized in cultures with this shared disgust to other cultures outside of North America and Europe, in which entomophagy is normalized. In this thesis, I use the terms too. However, I want to point out that broadly defined cultural groups, like *Westerners* and *Europeans*, are never sharply bounded but consist of contradictions and intersecting subgroups.

the acceptance of insect food have not sufficiently distinguished between the factors of neophobia and disgust. Their experiment concludes that neophobia can be addressed through strategies that make edible insects more familiar. Disgust, on the other hand, is more difficult to overcome. Here, the way food is presented and looks plays a greater role (La Barbera et al., 2018). Verbeke (2015) hardly investigates these visual and sensual components. Instead, he suggests that focusing on the integration of insects into convenient food products like snacks, and promoting environmental values more than health benefits, while at the same time devaluing meat as environmentally-unfriendly and unhealthy, may increase consumers' willingness to eat insects. In addition, he proposes targeting consumers who are more willing to eat insects, i.e., young males willing to reduce meat or who have a weak attachment to meat and are open-minded, curious about new products, and environmentally-conscious (Verbeke, 2015).

An experimental study by Hartmann and Siegrist (2016) investigates the consumption behavior of products containing processed insects. The study participants were divided into two groups. The first group was served conventional tortilla chips. The second group was served tortilla chips made with insect flour. Both groups were told the ingredients of the chips. Before eating, the participants were asked about their eating behavior. Afterward, they were questioned about their willingness to eat pure insects. The experiment results show that the willingness to eat pure insects increases with the consumption of processed insect products such as chips. However, the study's control group indicates that the experimental situation and awareness of the study participants about the conditions significantly influenced their willingness to eat insects. Nevertheless, Hartmann and Siegrist (2016) claim that processed foods with insect powder can be a strategy to introduce insects into Western cultures and overcome disgust slowly. In another study, Hartmann et al. (2015) compare food neophobia and willingness to eat insects between Chinese and German consumers. Apart from the fact that the Chinese show greater willingness, this study revealed that insects in familiar, processed foods, such as cookies, can increase the willingness of Westerners to eat insects. Hartmann et al. (2015) claim that

> *"advertisement of insects as a food source solely based on its nutritive advantages is unlikely to be an effective strategy to reach various consumer groups. Instead, consumers need to be convinced by the hedonic characteristics and social acceptability of insects as food, and marketing strategies should focus on taste education and public image modelling. Insect-based food might attract consumers who seek new food choice options and who constantly search for new, adventurous taste experiences." (p. 154).*

Various other studies also share the opinion that the willingness to eat insects is higher for familiar foods containing processed insects than for whole insects (Caparros Megido et al., 2016; Menozzi et al., 2016). Menozzi et al. (2016), for example, conclude that

> *„[b]eliefs that eating a product containing insect flour has positive effect on health and the environment are significantly correlated with attitudes and intention, while the main perceived barriers are the sense of disgust arising from seeing insects around, the incompatibility with the local food culture and the lack of products in the supermarket." (p. 33).*

To sum up, the research on Western consumers' willingness to eat insects strongly reveals that the readiness to consume processed insects in familiar foods like pastry, snacks, and pasta is significantly higher than in pure insects. In other words, creating products with processed insects is claimed to be a first strategic step to introducing insects in the West and increasing awareness and willingness to eat pure ones (Hartmann & Siegrist, 2016). Even though Verbeke (2015) shows that insects' healthy and eco-friendly benefits are not considered significant reasons to change consumer behavior or overcome disgust and food neophobia, most studies claim that marketing them can shape positive attitudes towards eating insects. Thus, studies show that education might be another key factor in changing consumers' perspectives (Hamerman, 2015; Hartmann et al., 2015; Videbaek & Grundert, 2020). And lastly, research says that social norms – meaning coming into contact with different insect products at supermarkets and observing others eat insects – play a crucial role in transforming acceptability (Hartmann et al., 2015; Menozzi et al., 2016).

One aspect seems to be less investigated in all of this literature that Mancini et al. (2019) point at in their literature review on studies investigating European consumers' acceptance. It is the aspect of sensory-liking and how good taste can change consumers' perceptions. I found one study that focuses on sensory-liking and taste. In their experiment, Tan et al. (2016) examine how prejudices and taste influence the sensory-linking and food appropriateness of unconventional Novel Foods like insects. In other words, through a randomized experiment in which 103 Dutch participants evaluated four differently labeled beef-based burgers (1. only beef; 2. beef and lamb brain; 3. beef and frog meat; 4. beef and mealworms), the authors tested "whether culturally-inappropriate foods could be accepted if sensory-liking is achieved upon tasting." (Tan et al., 2016, p. 299). The participants answered a questionnaire on their expectations before and after the tasting and on their experience and willingness to eat the burger repeatedly. The study's results show that "[s]ensory-liking of a food upon tasting improves the perceived appropriateness of a food for consumption, but is insufficient for food acceptance when culturally-inappropriate foods are involved." (Tan et al., 2016, p. 301). Thus, the authors propose that to introduce Novel Foods to be eaten regularly,

their taste must be exceptionally good compared to conventional food (Tan et al., 2016). The research aspect of investigating how taste influences readiness to eat insects relates to the research of this thesis. Since I investigate how the Austrian insect company values insects as *good to eat*, sensory promotion is part of my research. This is done by looking at the website's text and spoken words of the company members, as well as including visuals of the website and what products exist. Observing a cooking class of the company and conducting short interviews with the participants/ consumers gives further insight into what made them eat insects and how they value the taste. The findings of the aforementioned studies on consumer behavior give a relevant understanding of what insect products Western citizens are more likely to give a try and which strategies research proposes to cope with disgust towards insects (Caparros Megido et al., 2016; Hamerman, 2015; Hartmann et al., 2015; Hartmann & Siegrist, 2016; La Barbera et al., 2018; Mancini et al., 2019; Menozzi et al., 2016; Verbeke, 2015; Videbaek & Grundert, 2020). However, it is vital to keep in mind that such studies and experiments always co-construct and co-modify how consumers relate to insects as food and vice versa. By this, I mean that the experiment's research questions, methods, the variables included, and the studied participants all construct a specific reality and situation. This reality is constructed to make the research subjects quantitatively measurable in order to gain scientific findings. Inevitably, there is friction between the constructed experiment and the field/ real world. Suppose the results suggest, for example, strategies to overcome consumer disgust, find their way into entomophagy discourse, or even influence the marketing of edible insects in the commercial sector. In that case, they can constructively impact the reality of entomophagy in Europe. Nevertheless, it is important to be aware that experiments construct situational relations, which is why not all studies presented above yield the same results (Asdal & Cointe, 2021). However, by examining which strategies are used in my empirical case, this thesis gives insight into how coping with aversion towards insects is done in "real life". What values does the company ascribe to insects, how does it promote insects as *good to eat*, and what convinces its consumers? Thus, this thesis looks at experiences from the field to be contrasted with results from experiments.

Another article relates to research on consumers but looks not directly at them. Instead, it investigates how food cultures change. In their paper, Ingvar Svanberg and Åsa Berggren (2021) address how European food cultures have transformed over time. More specifically, they examine the history of entomophagy in Europe as well as its promising future, which is currently hotly debated. Using historical sources such as ethnographic accounts and folklore archives, they examine the changes in food cultures and conclude that "history teaches us that aversion to certain nutrients and raw material is easy to overcome." (Svanberg

& Berggren, 2021, p. 10). Their conclusion that a change in societal mindset is possible and that insects can become part of European cuisines underscores that future food cultures are always in the making and are ontologically shaped in the present (Svanberg & Berggren, 2021). Investigating a particular insect trader and including what kind of values are expressed in the products, promotions, and flavors it produces could provide a glimpse into how food cultures are changing at the moment. Additionally, it may shed light on what elements mutually contribute to such changes and how certain values play a role in them. The research of this thesis is, of course, just a small empirical case and not made to make universal claims. Investigating the valuing of insect eating in the practice of a small case and relating the case to broader discourses of entomophagy, nonetheless, can give a small-scale demonstration of how market value is created for edible insects in Europe. Alternatively, as Heuts and Mol (2013), a paper I review later, put it nicely:

> *"Opening up a research field, we contend, is not well served by fixing a collective language. This is not to say that cases should be studied in isolation from each other and encaged in their own corner. Instead, a good case study builds on and resonates with earlier ones while adding its own specificities to the collection. In this way each new case may help to expand and refine our collective abilities to recognize what may be the case in this or that site or situation. If as a research collective we abstain from fusing our different cases into a common scheme, but hold them in tension, each new case will better equip us to study valuing (valuation, evaluation, valorization, etc.) in the next site or situation – while remaining open to what so far has not been noticed." (p. 139-140).*

2.4 Science, and Technology Studies (STS) on (Novel) Foods

As mentioned above, I have not found any STS literature that studies insect eating. On the one hand, this lack speaks of the relevance of approaching entomophagy from STS perspectives. On the other hand, it compels me to connect the topic to related topics. Thus, I searched for subjects that might yet give relevant insight into how to approach entomophagy from a STS point of view. Therefore, I searched for STS literature on the ontology-making of (Novel) Foods, regulation, and *Valuation and Evaluation Studies* dedicated to food. This section is divided into three parts. The first part deals with STS literature that examines how ontologies of Novel Foods are made and imagined. This literature was not only important for the development of the research questions but can expand the readers' understanding of what STS perspectives can contribute to the topic of Novel Foods and entomophagy. Moreover, the examples apply related theories to the concepts used in the thesis. In a second part, I shortly outline STS literature on the regulation of Novel Foods. How food is regulated plays a minor role in the empirical case and the research questions of this thesis. Thus, I do not go into much detail. I consider the two other topics (ontology-making of Novel Foods and *Valuation and*

Evaluation Studies) more relevant for my research questions of how the Austrian company enacts and values insects as *good to eat*. Thus, the third part introduces literature from the discourse of *Valuation and Evaluation Studies* that deals with valuing and valorizing food. In this State of the Art, I address *Valuation and Evaluation Studies* by outlining empirical cases that examine how food is valued. In the theory part, I expand more widely on the discourse of *Valuation and Evaluation Studies*, describe theoretical concepts in more detail, and discuss how they can be useful as a lens to analyze my research case.

2.4.1 The Making of Ontologies of Novel Foods

An inspiring article for the case of this thesis investigates the image narratives and ontology-making of a similar Novel Food, in vitro meat (IVM) – known as cultured or laboratory-grown meat (Stephens & Ruivenkamp, 2016). In their paper, Stephens and Ruivenkamp (2016) analyze the different ways in which IVM is displayed and how these images contribute to future promises and ontologies of IVM – in other words, how they shape "what IVM is and what it can do" (Stephens & Ruivenkamp, 2016, p. 327). The authors use the term ontology to describe the being of things – meaning a more or less stabilized and categorized perception of what something is. The authors compare images of IVM from 2011, in which IVM is shown as cell images, tissue images, flowcharts, and images of meat placed on a dish with images from 2013 when the first IVM burger was tasted in a press conference. Thereby, they ask about the impact images or, more precisely, imagescapes – the collections of images of an object – have on the perception and ontology of an object (in this case of IVM). IVM is a similar promissory Novel Food and meat substitute that differs from meat in the way it is produced (Stephens & Ruivenkamp, 2016). This raises questions like "what IVM is and how it relates to existing classifications around food, science, and technology." (Stephens & Ruivenkamp, 2016, p. 331). Two questions that are also relevant for edible insects in Europe. How will insects be classified, and how will they relate to other foods? What ontologies will be created through the way they are eaten in Europe? Initially, I wanted to look at the ontologies of insects as food that the Austrian company enacts. However, as I progressed with this research, I decided to focus on how the company values insects as *good to eat*. Nevertheless, I argue that looking at what kind of values are ascribed to insect eating and how various values come into being is connected to the ontologies of insect eating in Europe (Mol, 1999; 2002). Attributing the practice of eating insects with values shapes the realities and vivid ontologies of entomophagy in Europe. By identifying various values of entomophagy enacted by one specific empirical case, the case of an Austrian edible insect company, the opportunity to focus on the value-making of a small-scale example is made possible. From this specific example,

it is possible to zoom out on the broader European discourse around entomophagy. In my understanding, the term ontology in difference to value is more vague and inconsistent. Both are produced in practice, but values and valuation practices seem easier to identify (Heuts & Mol, 2013). That is why I want to get a sense of the values the Austrian company ascribes to edible insects through its activities of valuing, which in the end, contribute to the creation of ontologies and realities of insect eating. However, the identification of different values through which the Austrian company argues insects as *good to eat* is not to be translated into a rigid common schema of how entomophagy is valued across Europe. Instead, it offers insight into how valuing is practiced at the Austrian company, which realities are generated and cared for, and which remain uncared for. The paper by Stephens and Ruivenkamp (2016) mainly investigates how images of IVM perform ontological work. Inspired by this, this thesis does not only look at spoken words from interviews and participatory observations, and text from the company's website but also at the website's visuals. Thereby, this thesis investigates how specific values of insect eating are being promoted through multiple modalities.

Jönsson (2016) also scrutinizes the promissory discourse around IVM by performing a critical close reading of peer-reviewed publications, IVM developers, and other academic accounts on IVM. He investigated how this literature stabilizes promises and builds a future platform to make IVM a viable product. Jönsson (2016) argues that the stabilization of promises involves neglecting other possible narratives that could be attributed to IVM. He concludes that IVM's promissory narratives are "enacted to be savory to investors. Not only is an ontological void filled but it is filled in a way that situates in vitro meat as an eventually viable product." (Jönsson, 2016, p. 742). In other words, he shows how research and development (R&D) of IVM tells stories attractive enough to be valued by venture capitalists. Jönsson's (2016) critical account of the future-in-the-making and discourse of IVM inspires this research to follow a similar investigation. Although this thesis looks at one specific case, it also seeks to zoom out on broader discourses of entomophagy and what is not cared for. One research question addresses what values are (re-)stabilized through the knowledge the Austrian company imparts in its marketing – this aspect is similar to Jönsson's (2016) approach to investigating how the literature stabilizes for granted taken promises. Thus, this thesis looks at how a particular empirical case (re-)enacts promises of entomophagy already enacted in the broader discourse. Moreover, one question deals with the aspect of what is not or less enacted by the company. The aspects of including the promissory discourse of entomophagy – at least to a small degree – and investigating what the company does not care for thus follow a similar investigation as Jönsson (2016) does in his research. One aspect that must be emphasized is that even if IVM and edible insects are both promoted as eco-friendly,

sustainable, novel alternatives to unsustainable animal protein, they hold significant differences. One is that IVM has its roots in biotechnology – a relatively new discipline – whereas entomophagy already exhibits multiple histories worldwide and, thus, various situated ontologies. Nonetheless, in contemporary European food cultures, edible insects are framed as Novel Foods whose market is currently regulated and established. Thus, its ontologies and worths in European cultures are still vividly under development.

Another article that investigates the ontology-making of food is by Jönsson et al. (2018). The authors examine how companies position vegan and post-animal products with identities mirroring animal-derived products. For example, milk alternatives like oat or almond milk and meat alternatives like beyond meat take up the name of animal-derived products and incorporate similar packaging and forms. With references to Annemarie Mol's (1999) theoretical elaborations on multiple ontologies, they scrutinize the situatedness and ontological politics of post-animal products. They perceive such products as performers that contribute to the enactment of realities (Jönsson et al., 2018). In line with this, I investigate the future identity of insects as food and the values ascribed to them in the present. By looking into enactments of the Austrian insect company, this thesis articulates how insects eating is argued as *good to eat*. This can be done by investigating the values, the knowledge and promises the company put forward, and the tastes and products it creates. Similar to Jönsson et al. (2018), I am interested in how the different insect products (e.g., burger patties, protein bars, and pure insects) enact values and create ontologies. More to the point, I analyze which dishes and products the company integrates insects in and how they relate to other foods.

In the last STS paper about Novel Foods, Roßmann (2020) describes imagined futures that "are the driving force of the present as they represent promissory pathways for action" (p. 70) as "make believe" (p. 73). He examines how props and imaginaries are used in the case of the Novel Food of microalgae nutrition. He argues that material prototypes, simulations, and models contribute to resolving uncertainty about whether Novel Foods like microalgae are feasible to become a commodity in the future. By investigating at a workshop about the future of microalgae, he concludes that such props increase the belief in the viability of an uncertain object, as well as its assets' value. Furthermore, such materials "reinforce, contest and shape imagined futures." (Roßmann, 2020, p. 84). This paper is another example that investigates futures-in-the-making shaped by present performances of human and non-human entities. What is accentuated is that non-humans, like prototypes, illustrations, and models, make-believe and create the future in the now (Roßmann, 2020). This articulation speaks for the importance of acknowledging the agency of the products offered, flavors created, visuals used, and visionaries the company promotes. As mentioned, this thesis does analyze not only

written materials but also visuals and insect products by the Austrian edible insect company. The materiality of the edible insects thus plays a crucial role in this thesis and is approached through various methods (interviews, website analysis, and participatory observation).

2.4.2 The Epistemological and Ontological Power of Food Regulation

The regulations of insect eating are currently negotiated in the EU. Thereby the EU follows its standard procedures of how Novel Foods are authorized to ensure that insects are safe for human consumption. The FAO report serves as the groundwork for all of the regulatory work. Moreover, standardized production systems of cultivated insects are approached within the EFSA's evaluations of particular insects. The way regulations are produced influences the ontologies made of insect eating in the EU. As the EFSA produces and reviews knowledge and writes scientific opinions, this evaluation process also impacts what knowledge and values stabilize. In other words, even if this thesis looks at how insect eating is valued as *good to eat* in the case of a small insect company, it is important to look at the broader discourse of entomophagy. The legislation making is part of this broader discourse. Although examining the ontologies made by the legislative work of political organizations is not the main focus of this thesis, it should still be touched on for the sake of completeness. That is why I briefly review what STS literature says about regulating food.

Winickoff and Bushey (2010) argue that scientific and legal authorities co-produce and stabilize specific values and knowledge through regulations on, for instance, food. Thereby networks of international institutions – or what Miller (2007) calls "international knowledge institutions" built a global epistemological and legal power regime through food regulation. Winickoff and Bushey (2010) look at how the FAO and World Health Organization's (WHO) established *Codex Alimentarius Commission* gives standards and guidelines for regulating food safety in order to demonstrate their epistemic and legal authority and consensus-making agency. The paper by Penders and Nelis (2011) works with a different approach to the topic of knowledge earning credibility through scientific "truth". Their approach is to investigate how food corporates like Unilever R&D, a company, producing and selling consumer goods, engineer the credibility of their products by incorporating scientific studies and scientific health claims into their marketing. Ultimately, this credibility of health claims promoted on foods is gained through intrinsic scientific credibility determined by academic peers, regulators, and consumers. In relation to this thesis, both articles encourage reflection on where the Austrian insect company gets its knowledge from, how it incorporates it into the development of its insect products and marketing, and how this guides its actions. It is also worth asking what knowledge, practices of eating insects, and values are not given attention. Questions of what

knowledge earns credibility and who holds epistemic and legal authority are not the central investigation of this thesis. By posing sub-questions on what values and knowledge the company re-enacts and what it does not care for, I want to at least touch on these aspects. Moreover, the article by Ponte (2009) shows that regulations on food safety or, in his case, the fishery ecolabel, which aims for a sustainable fishery, are performative. In other words, rules, regulations, and guidelines contribute to how food systems are practiced. The question he poses is whether the application of rules matches the original objectives for which they were produced or not. In the case of fishery ecolabels, he shows that "the appearance of having a system in place which functions 'as if' it followed the regulation on food safety is what counts for good performance when systems are evaluated for conformity against EU rules." (Ponte, 2009, p. 493). This is another example demonstrating how important it is to acknowledge the influence regulations and institutional knowledge have on how food production, distribution, and marketing are done. Moreover, it brings the question to the fore, whether regulations and guidelines effectively strengthen the original objective for implementation or make its achievement more complicated. Applied to entomophagy in the EU, this would mean that it is questionable whether the evaluation procedures are in favor of the original goal to render food systems more sustainable or make the implementation of edible insects more complicated.

Lezaun and Schneider's (2012) paper compares how the two Novel Foods, genetically modified food (GM) and functional food, are governed and regulated in the EU. Even though both types of food artificiality have been promoted as two contradicting foods – GMs as blemished and functional food as self-improving – and became regulated in two different legislative frameworks, the authors argue that both ways of regulating show striking similarities. Lezaun and Schneider (2012) write that "[i]n both cases regulatory authorities have engaged in protracted effort to produce stable legal definitions of these entities, but their limited success has effectively shifted much of the duty to govern novel products to actors in the marketplace." (p. 366). By this they mean that instead of stable legal definitions of both categories, the regulations enact "a never-ending process of product re-qualification." (Lezaun & Schneider, 2012, p. 367). This pattern of open-ended re-qualification is transferred to the marketplace – meaning companies and consumers – which the authors call a restless consumption. More precisely, the term *restless consumption* points to consumers being permanently exposed to situations of choice. Moreover, this endless process of re-qualifying in the marketplace creates an *economy of qualities* "in which the ever-shifting categorization of products and their attributes represents the central engine of innovation, and in which

consumers must constantly enact variable forms of calculation and 'qualculation'." (Lezaun & Schneider, 2012, p. 386).

Similar to Lezaun and Schneider (2012), Frohlich's (2017) paper is about how the United States (US) Food and Drug Administration's (FDA) regulation of nutritional labeling created an informational turn, rendering consumers responsible for their consumption choices. By examining the history of food labeling, Frohlich (2017) first points to the emergence of expected consumer empowerment through nutrition labeling and then to the imaginary of such labels as a solution to information overload. Frohlich (2017) argues that instead of the common assumption that nutritional labeling is a failed knowledge fix as it expects consumers to be knowledgeable, he frames these labels "as an example of 'information infrastructure'" (p. 147). He argues that food labeling is a legal infrastructure for marketing information in order "to consider the practices by which science, law, *and* markets co-produce everyday understanding of diet and personal responsibility." (Frohlich, 2017, p. 164). Moreover, Frohlich (2017) mentions that

> *"[c]ompanies now tinker chemically with foods to make them more 'nutritional' while preserving the idea of the original taste. […] This makes informational devices such as wine-tasting guides or nutrition labels into tools to shape and standardize subjectivities '(Shapin, 2016)', more important for 're-eduacting' modern consumers out of touch with food's production." (p. 164-165).*

Both papers raise awareness that consumers are permanently co-modified into a position of re-qualifying and calculating subjects through how food is regulated, qualified, and labeled (Asdal, 2015; Asdal & Cointe, 2021). It might be fruitful to pay attention to how regulatory and nutritional qualifications of edible insects shape and modify the company, its products, and its target group.

2.4.3 Valuing and Valorizing Food

This last part of the State of the Art on literature comes from the discourse of *Valuation and Evaluation Studies*. It brings together the many aspects touched above – from the practices of regulating markets and making standards for production to the scientific and experimental construction of strategies in order to overcome consumer's disgust and how all of these practices contribute not only to the creation of a market for edible insects but also value them as *good to eat*. To be more precise, the discourse around *Valuation and Evaluation Studies* is "concerned with how value is produced, diffused, assessed, and institutionalizes across a range of settings." (Lamont, 2012, p. 202). This means that practices of how the worth of all sorts of things comes into being are subject of study. A part of studying how the value of things is created is to investigate the functioning of markets, economies, and the making of

commodities. Studying this is done by emphasizing the activities involved. In the following, I introduce three papers dealing with valuing and value creation of particular foods.

A central article that influenced the research design and questions of this thesis to a significant degree is by Heuts and Mol (2013). This paper raises the simple question: "What is a Good Tomato?". The authors attempt to answer this question through insights discussed in the discourse of *Valuation and Evaluation Studies* and aim to contribute to the discourse by drawing an insightful picture of the processes and practices included in the act of valuing tomatoes. In other words, they are interested in the activity of valuing itself. Therefore, the authors interviewed Dutch tomato experts – from developers to professional cooks and consumers – to find out what is being valued in tomatoes for them to be considered *good to eat* and how the experts value them in practice. Put differently, Heuts and Mol (2013) emphasize that values are performed in practice – practices of knowing when a tomato is good and how to make them good. Thus, by raising such a normative, simple question as "What is a Good Tomato?", the authors can identify what values outweigh others in a good tomato and put these into *registers*. In this way, the authors can highlight the multiplicity of different values in a good tomato. But more than drawing a rigid picture of multiple values and *registers*, Heuts and Mol (2013) are precisely interested in the practices of valuing. Therefore, they prefer the term *valuing* to stress that "valuation is active" and "best suited for exploring varied ways of performing 'good tomatoes', from assessing and appreciating, to adapting and improving." (Heuts & Mol, 2013, p. 130). They aim to identify *registers*, which categorize shared relevance and values, and in which valuing activities are embedded. Put together, in their paper, Heuts and Mol (2013) filter out *registers of valuing* while showing overlaps between them as well as tensions. The *registers of valuing* they distilled from their empirical material were a register dealing with money, handling, historical time, naturalness, and sensual appeal. These *registers* are single groups that merge activities addressing similar concerns but still hold variation through the experts they are valued by and the situations they are valued in. For example, the monetary register includes valuing practices that have to do with financial matters – meaning, if tomato experts value financial benefits to make a tomato good, such practices found their way into this register. The sensual register involves valuing practices connected to visual, textual senses, or flavors. Since the practices included in the registers are diverse and situational, they appear to be relational and vivid. Moreover, they play out in actions of growing, cooking, and eating – all activities linked to care and improving. To make that clearer, Heuts and Mol (2013) argue that "valuing does not just have to do with the question how to appreciate reality as it is, but also with the question what is appropriate to do to improve things." (p. 137). As my case investigates a Novel Food whose market is currently

established through research, legislation making, and companies creating insect products, I connect it with care practices that create value. This shifts the focus of my research away from an investigation of mundane valuing practices that include the improvement of things to a greater focus on how (market) value for a novel market is enacted and established.

This focus on the making of markets brings me to a second paper by Asdal (2015). She examines innovation documents as a setting to explore the value practices that make the farmed codfish a commodity. More precisely, Asdal (2015) proposes the term *co-modification* as an analytical tool that sheds light on the value practices that modify entities into commodities. Thus, in difference from Heuts and Mol (2013), she does not focus on practices of valuing (= something actively done), but instead on the value-construction process (= something actively constructed) in the site of the innovation documents. Asdal (2015) argues that the *co-modification* process involves not only the modification of an entity/ object (e.g., a biological entity like the codfish) but also the modification of markets. Moreover, she links the process of *co-modification* to the term biocapitilizing – a term that can be described as the process of how biocaptial (= life or living entities as capital and productive force) comes into being. Asdal (2015) pays her attention to the materiality in the process of *co-modification* by "taking seriously the ways in which materiality, biology or the living are made part of the economy and how science is a powerful practice in these endeavors to modify objects." (p. 173). In the case of the codfish, this biocapitilization implies a transformation from the cod as a wild species into a farmed entity and viable marked product that the innovation document imagines to bring future monetary profit. As a result,

> *"the market is written into the body of the cod, meaning that not only do the innovation documents seek to time the necessary events in order to achieve a successful co-modification process, the scientists in the field also work to time the biological with the market, in this case so that the cod reaches market size." (Asdal, 2015, p. 179).*

These re-timing efforts in the *co-modification* process of making the cod a farmed and viable market product furthermore literally transformed its anatomy, which implied a devaluation of farmed cod in comparison to wild cod from the consumer side. Not only the re-timing but also interests such as minimizing costs and improving the available biomass is inscribed into the body of the farmed cod. To sum up, by proposing the concept of *co-modification,* Asdal's (2015) main arguments are that traceable valuation practices in innovation documents transform objects while simultaneously modifying markets. Thus, these concepts point to their mutually modifying intertwinement in the making of a viable product, which in the end, has no guarantee to succeed in being an economically profitable product.

In a more recent paper on *co-modification,* Asdal and Cointe (2021) changed their investigation site from the value-construction in innovation documents to three experimental market studies on the willingness to pay for farmed cod. All three studies resulted in an academic paper aiming to advise market development for farmed cod. The authors describe the process of conducting a market research experiment in order to investigate specific sites in which a market product is discussed, assessed, and co-modified to optimize its entity so that consumers buy it. Asdal and Cointe (2021) encounter a double process of *co-modification* in making a better commodity through research on consumer behavior. This double process can be identified in the staging of the experiment. So, on the one hand, experimenters pre-modify and pre-value the codfish in the course of controlling the experimental setting. The experimenters aim to make the codfish quantitatively measurable to observe quantifiable traits and reproduce the experiment. On the other hand, the consumers are pre-modified and valued too. The study participants are chosen based on the research interest in order to be able to characterize them quantitatively and study the pre-planned variables. After the preparations to make fish and consumers measurable and somehow controllable, fish and consumers meet. The authors main takeaway from this process is that "measured characteristics of the fish-with-consumers are relational: they emerge in specific experimental conditions" (p. 288). These make monetary *valuation* (i.e., the willingness to pay) measurable through which both the fish and the consumers are co-modified. Compared to Asdal's (2015) first paper on *co-modification*, the aspect of situational relation is therefore emphasized. Moreover, Asdal and Cointe (2021) focus on turning *valuations* into *valorization* – meaning improving an entity/ commodity to increase market value (Vatin, 2013). The results of the experiments aim to advise and serve as information for market actors to enhance the farmed cod's market value. One aspect the authors repeatedly emphasize is that the information the experiments provide to enhance market value does modify the farmed cod into a better version and the consumers through the aim of changing their willingness to pay. To sum up, the concept of *co-modification* enables to analyze sites where commodification processes are enacted (e.g., an innovation document or experiments on consumer behavior), which are based "on a myriad of mundane operations that seek to perform, on the one and, stable, packaged and synchronized products, and, on the other hand, available, interested and readied consumers." (p. 290).

Both papers on the *co-modification* of farmed cod not only provide a valuable concept, which I use for analyzing my case, but they also turn attention to the complex processes entangled in the commodification of entities. They shed light on the various human and non-human actors involved in making markets. The paper argues that innovation papers or

experiments influence the co-modification of entities as viable products and consumers as buyers turn attention to the agency of such non-humans.Similar to this, the authorization process of Novel Foods and scientific studies on consumer behavior have also agency in the commodification process of edible insects. In other words, the concept of *co-modification* also adds a new layer to this State of the Art. Insofar as these authorization processes, scientific opinions, and funded research on entomophagy and consumers can be seen as sites that make markets and modify entities (Asdal, 2015; Asdal & Cointe, 2021). All of these sites could be the research site of an entire research project – thus, I do not aim to analyze how far they co-modify edible insects, consumers, and the market. However, it is valuable for my case to be aware that all of these processes in establishing a market for edible insects construct not only a market value but also the very biology and ontology of insects. Entities are constructed by standardizing particular insect species, enhancing production efficiency, and large-scale farming development. However, this thesis aims to look at a site that acts between regulation, production, and consumers – namely, the site of trading with edible insects. And for this specific site, all three papers on valuing food and value-creation help to theoretically situate this thesis in terms of the research design and questions. Thus, I refer back to them and elaborate on their relation to my case in the following sections of the 3. Research Case and Research Questions, and 4. Sensitizing Concepts.

To summarize this State of the Art, all three types of literature contribute to understanding the discourse of entomophagy in the EU and my STS approach to this research topic. First, documents from EU institutions give a comprehensive overview of what is currently happening in the EU regarding entomophagy. Second, the literature in food journals reveals what kind of studies are preferably conducted – namely, studies on the healthy and environmental benefits of insects and the acceptance among European citizens. Finally, STS literature, the ontology-making of Novel Foods, and the valuing and value creation of foods inspire me to research questions, theories, and concepts that fit my topic well. In the following sections about my research question and concepts, I refer back to the presented STS literature to situate my research further. In other words, this State of the Art aims to review how other papers approached the topic, whereas the following sections focus on my approach.

3. Research Case, and Research Questions

Since insect eating is a relatively new research topic in Europe and its implementation in European food cultures is, in many regards, not yet well advanced, it offers several areas to investigate (European Commission, n.d.b; Van Huis et al., 2013). This thesis aims to investigate how a market of edible insects in Europe is created and how values are produced in order to make consumers perceive insects as *good to eat*. Simultaneously this thesis shows that the value-creation of edible insects includes a range of actors modifying and co-modifying each other. Put differently, it focuses on how insects, as Novel Foods, are actively commodified in entangled practices of valuing and valorizing. This commodification process of edible insects plays out in many different sites – from making regulations, scientific opinions, and research on consumer behavior on the willingness to eat insects to the development of production sites. This thesis is dedicated to one of a handful of European companies that sells products containing insects for human consumption – more precisely, an edible insect company located in Austria. In contrast to clearly defined and finished policy papers, scientific opinions, or experiments, a company is a way more vivid and changing site (e.g., new products are developed, others disappear from the assortment, and the website is constantly changing). Thus, the time and materials I analyze strongly shape my findings. I investigate how the Austrian company values and creates values through different methods: Interviews with three company members, an analysis of its website, and a participatory observation at a cooking class the company hosts. This variety in methods not only facilitates capturing various activities of valuing and valorizing but also gives the possibility to include different modalities (e.g., the products and how they are presented on the website, their flavors, and spoken as well as written text). However, it is important to acknowledge that the website is in a flow and can always change – so can the valuing practices of the company. I do not consider this flow as a weakness of this research but as a strength to emphasize the activeness of value practices. The site of an edible insect trader enables one to look at a variety of modalities (flavors, images, words) as it is actively engaged in producing value through these modalities to convince consumers to buy and eat its products. It is a suitable site to examine the practices of valuing and the materialities involved in making insects *good to eat*. A company selling insect products does not conduct research on the potential of edible insects as shown in reports or as research does. These translate insects into words, numbers, nutritional values, and more. In contrast, the company engages with the very materiality by creating flavors and food to eat. Moreover, the site of a commercial company working in the newly established market sector of edible insects makes it an actor that actively operates between scientific and legal authorities and potential consumers. It is affected by the regulations on edible insects in

the EU, uses scientific knowledge for its marketing, and depends on convincing consumers to buy its products. In other words, the company's actions are affected by regulations and consumers, but they also try to shape them actively. This is why this research focuses on the company's activities to create a market and produce value for edible insects but does not ignore to zoom out on its relation to scientific and legal authorities and potential consumers. As I mentioned earlier, timing shapes my outcome. I gathered all of the empirical material in 2022 within five months. The company members started their research for their edible insect company in 2011 by founding an association. In 2018 they founded the company and developed various products containing insects – from pure insects as snacks with natural or flavored taste, ready-made mixes, insect flour, and chocolate, to burger patties and protein bars. Before the EU evaluations of insects as Novel Food, the company faced many legal obstacles that made it challenging to distribute its insect products in supermarket chains. As mentioned in the introduction, it was legally forbidden in Austria to sell processed insects, which made it difficult for the company to bring its products into supermarkets. Thus, it is also important to consider that I gathered the empirical material shortly after the first EU approval of mealworms, which changed Austrian legislation. In other words, based on the transition measure, the company is now legally allowed to sell products with processed insects in supermarkets. The market for edible insects is still vividly being established. However, the situation that it is more and more possible for insect traders to sell their products in the retail trade must be considered in the analysis.

As outlined in the State of the Art, this research on entomophagy is positioned in STS discourses addressing the future-in-the-making, promissory discourse, and ontology-making of Novel Foods (Jönsson, 2016; Jönsson et al., 2018; Roßmann, 2020; Stephens & Ruivenkamp, 2016), as well as practices of valuation of particular foods (Asdal, 2015; Asdal & Cointe, 2021; Heuts & Mol, 2013). Therefore, my main research question deals with practices of valuing and value-creation of insects as *good to eat* through product presentations, workshops, and the company's marketing. In doing so, I aim not only to find out the various values the company ascribes to insect eating, but also to identify how it values edible insects in practice. Put another way, the research objective is to examine the activities of valuing and value-making. Moreover, this emphasis on the enactment of how insects are performed as *good to eat* is meant to highlight the ontology-making effects of these enactments. These ontology-making effects lead to questions such as: In what forms and what kind of products do edible insects occur, and how do they relate to other foods? My understanding of ontology draws on Annemarie Mol's (1999, 2002) concept of *ontological politics*, in which she argues that how objects (e.g., insects as food) are developed, regulated,

and promoted creates new realities. These newly created realities/ ontologies (re-)make the world rather than merely being integrated into an existing environment (Mol, 2002). Thus, the material way the company enacts insect eating affects the values and ontologies of entomophagy that are thereby created. Whether their value-creating practices successfully produce the desired values that make insects an established commodity in Europe is not a priori-determined and not part of this thesis' investigation. I simply explore how the Austrian edible insect company practices insect eating, what values it imparts through its actions and products, and how these doings and materials shape entomophagy in Europe. Therefore, my main research question is:

Main Question (MQ): How does an Austrian edible insect company enact insects as good to eat?

My first subquestion (SQ1) focuses on knowledge and value transfer aspects that are part of the company's enactments. Since the Austrian company ambitiously strives to impart knowledge about insect eating through different formats (e.g., educating sections on its webpage, hard facts on its packaging, cooking classes, events in universities and schools, and more), I am interested not only in how it practices, values and argues for edible insect as *good to eat*, but also in how it (re-)enacts and (re-)makes existing knowledge, promises, and values. The company's website devotes two entire sections to giving educational information about why insect eating matters. In these sections, the company refers to the aforementioned FAO report. Additionally, it exhibits visuals displaying hard facts comparing insects to other animal protein sources in order to argue for their environmental benefits. In order to capture the knowledge and values on entomophagy (re-)enacted and (re-)made by the Austrian edible insect company, I aim to determine where the company gets its information and facts from and how these shape the company's valuing and valorizing practices. As stated in State of the Art, many scholars argue that education on the different benefits of eating insects can help overcome consumer disgust (Videbaek & Grundert, 2020). Therefore, to get a more specific answer to my main research question on how the company enacts insects as *good to eat*, I also want to investigate what knowledge and values are communicated to consumers. Understanding how knowledge and values move between and are made by various entities helps grasp what contributes to creating edible insects as a new commodity. This may also shed light on what knowledge, promises, and values are prevalent and might later impact the overcoming of disgust among European customers. Moreover, examining

knowledge transfer can emphasize how scientific and legal credibility contribute to creating values and the authorities' power enacted. To sum up, the first sub-question is:

SQ1: What values on entomophagy are (re-)enacted through knowledge- and value-making practices by an Austrian edible insect company?

My second subquestion (SQ2) is dedicated to aspects of care. As described in previous sections, edible insects are presented as an environmentally-friendly and sustainable future food in the EU (Van Huis et al., 2013; Kuljanic & Gregory-Manning, 2020; European Commission, 2021, ipiff, n.d.). Thus, it is entangled in narratives involving care as its implementation is framed as caring for the environment and people's health. Looking at the values and knowledge communicated by the Austrian company (see SQ1) leads to questions of care. What and who is cared for in its enactments? Are certain bodies of knowledge and entities prioritized over others? In line with this, I would like to examine how the Austrian edible insect company practices care activity and insect eating as *good to eat*. In doing so, I do not want to ignore what and who is left out in these practices. Similar to Asdal (2015), Asdal and Cointe (2021), and Heuts and Mol (2013), I see a connection between the discourses around care and values. I elaborate on this connection in the sensitizing concept section. In care and value practices, performance, activity, doing, attentiveness, improving, and reality-creating effects play a crucial role. Since care is an integral part of entomophagy's ontology in the EU and at the Austrian company, a sub-question on concepts of care helps to capture the performative effects of the company's enactments. The matter of what types of care are performed by the Austrian insect company is therefore addressed in the second sub-question:

SQ2: What does the Austrian edible insect company (not) care for in its marketing, products, and actions?

By answering these research questions, I hope to sketch how edible insects are being enacted and valued as *good to eat*. Since European insect eating is in its early stages of development, its ontologies are far from being stabilized. For example, this can be illustrated clearly by comparing the edible insects market with tomatoes. Thus, the outcome of my research may draw a relevant picture of how ontologies and values of Novel Foods can come

into being, how Novel Foods become commodities, and how they find their way into changing food cultures. Interesting at the moment is the aspect that insects are not profoundly established in the EU market, which is why they are a suitable subject to study commodification processes. At a later stage of edible insects' establishment in EU markets, it may be interesting to ask: *What kinds of knowledge and narratives have been prioritized and predominantly included in more stabilized ontologies of insects as food?; How is care embodied in ontologies of edible insects?* The case of edible insects aimed to becoming a commodity in Europe is even more interesting as it faces the obstacles of disgust in European societies. Thus, if it finds its way into European food cultures on a large-scale, having research on an early development stage of creating values in order to commodify edible insects might draw an even more interesting case of how processes of commodification are enacted. To conclude, researching EU entomophagy from STS perspectives and *Valuation and Evaluation Studies* can give relevant insight into how edible insects are commodified at the moment.

4. Sensitizing Concepts: Approaching Valuation Practices through *Co-Modification* and *Matters of Care*

This section outlines the theoretical framework on which this research is built. Inspired by the presented STS literature on (Novel) Foods, this thesis is oriented toward the discourse of *Valuation and Evaluation Studies*. In the State of the Art, key bodies of literature have already been introduced that work with the concepts I elaborate on in this section. Some parts are slightly repetitive, yet this section is more intended to describe the concepts and relate them to the case of this thesis to show what they enable to make visible. In contrast, the State of the Art focuses more on identifying topics to draw a picture of the discourse in which my case is situated, as well as introducing empirical examples. However, there is a blurred line between positioning my research in relation to the discourse and relevant issues and describing concepts that fit the findings of this thesis. Nevertheless, it is useful to devote a separate section to sensitizing concepts in order to clarify their application in the analysis. Hence, this section on concepts begins with a more detailed introduction to the discourse around *Valuation and Evaluation Studies* by explaining the meaning of central terms such as *valuation*, *evaluation*, *valuing*, and *valorizing*. Moreover, I explain which of these terms are of particular relevance to my empirical case and how I use them. Furthermore, I introduce two concepts that serve as central analytical tools for my case: *co-modification* by Asdal (2015), and Asdal and Cointe (2021); as well as *Matters of Care* by Maria Puig de la Bellacasa (2011; 2015). Both are useful for the research design of this thesis and serve as lenses through which I examine my case.

4.1 Operating with the Terms: *Evaluation*, *Valuation*, *Valuing* and *Valorizing*

This thesis has the objective of analyzing how an Austrian insect company values edible as *good to eat*. The *how* targets to identify the doings, practices, and efforts the company undertakes and through which it attributes worth to edible insects. As mentioned several times, scholars working in the discourse of *Valuation and Evaluation Studies* offer practical perspectives, terminology, and concepts to analyze how values are assessed, produced, and done in practice. The discourse of studying the worth of things – from artworks, all kinds of commodities, food, and calculation devices, to nature and academic performance (Burrows, 2012; Callon, 2007; Fochler, 2016; Fourcade, 2011; Lamont, 2012) – originated in the journal Valuation Studies, which encompasses a range of literature examining valuation and evaluation beyond the realm of economic theory. In neoclassical economics, the value of things is defined by monetary measures set by the price consumers are willing to pay for a

good – in other words, the market price (Asdal, 2015; Aspers & Beckert, 2011; Fourcade, 2011). In contrast, to simple theories and methods of how the worth of things is and can be measured, *Valuation and Evaluation Studies* are concerned with understanding how value comes into being by acknowledging more complex, material, and performative sorting processes (Asdal, 2015; Asdal & Cointe, 2021; Fourcade, 2011; Lamont, 2012). As previously cited, *Valuation and Evaluation Studies* aim to understand "how value is produced, diffused, assessed and institutionalizes across a range of settings" (Lamont, 2012, p. 202). In other words, the main interest lies in uncovering the complex practices, doings, processes, and experiences that enact and produce values of things, including commodities. There is a strong emphasis on the performativity of these practices – values are done and are not fully measurable through intrinsic logic or economic calculations. The acknowledgment of valuations and evaluations as complex practices also means that they are done, created, and assessed in many fields, such as law, politics, scientific research, economy, and more (Fourcade, 2011). The State of the Art attempts to capture this diversity of settings by showing that the creation of a market for entomophagy in the EU is taking place in a range of settings – from reports by international organizations, regulations processes, laws, scientific opinions, consumer behavior studies to production sites, the biology of the insect species themselves and more. By capturing the complexity of sites and the diversity of materials involved, *Valuation and Evaluation Studies* contradict the understanding of a linear process of commodification/ market value-creation. A multiplicity of sites contributes to the making and ontology of a commodity. In this context, it is worth stressing that not only do multiple sites engage in the making of a commodity, the ontology to be stabilized is multiple (Mol, 1999; 2002). This means that the definition of what objects are is never straightforward and entirely singular. On the contrary, objects always consist of multiple definitions and enactments that can be formed into a whole *composite object* – meaning they have a shared stability that singularizes the object into one, though it holds plurality (Mol, 2002). However, as Asdal (2015) and Asdal and Cointe (2021) show in their research on the farmed codfish, commodification processes are highly complex undertakings carried out in many different places. Small sites such as innovation documents or experimental studies offer fruitful insights into the complex processes of commodification. However, a first note to take away from here is that *Valuation and Evaluation Studies* are mainly concerned with the performativity and practices that generate value. Thus, in order to investigate how edible insects become recognized as a commodity and food in EU markets, it is revealing to look at performative practices that shape its ontology. For this reason, my research particularly examines the enactments an Austrian insect company undertakes to make insects valued as *good to eat*. In order to clarify the

overall discourse and the dedication to practices, I briefly define how the terms *evaluation*, *valuation*, *valuing*, and *valorizing* are discussed in the literature. Though it must be mentioned that these definitions are always a bit blurry and, in many cases, intertwined. However, defining them allows me to argue how I handle the terms in my analysis.

The difference between *evaluation* and *valuation* is the first terminological distinction - which is not clear-cut. *Evaluation* can be described as an assessment practice through which something is measured or thereby given value. Evaluation activities often involve fixed, quantitative classifications, categorizations, scales, rankings, measurements, and judgments. Such institutionalized evaluation practices permeate modern Western societies in all kinds of settings in order to assess, compare or improve the efficiency and performance of these settings. The spectrum of settings ranges, for example, from universities (e.g., international university rankings, performance measurements of researchers, and more), to countries and evaluation processes of Novel Foods. Valuation practices, on the other hand, are concerned with more general activities that give value to something (Lamont, 2012). Lamont (2012) writes: „[v]aluation and evaluation practices are often conflated in the literature, and intertwined in reality.“ (p. 205). I also understand the two terminologies to be challenging to separate. However, evaluation practices seem more closely associated with quantified and standardized procedures, whereas valuation practices take place in more general, tacit, ordinary activities. In this work, both terminologies occur but are not of central conceptual relevance. Evaluation occurs when I address institutionalized evaluation practices such as Novel Food authorization. The term *valuation* is used more generally when I discuss the discourse and all kinds of valuation activities – thus, it is not so prominent in my analysis.

Two gerunds are intensely discussed in the recent literature on *Valuation and Evaluation Studies*: *valuing* and *valorizing*. Both verbs emphasize that valuation practices are performative and done in practice. Similar to valuation practices, the term *valuing* refers to a variety of practices in which valuation happens. In contrast to the nouns value or valuation, the verb *valuing* highlights that something is actively done and enacted (Asdal, 2015; Asdal & Cointe, 2021; Heuts & Mol, 2013). Heuts and Mol (2013), for example, use the term *valuing* for all kinds of actions in which values are enacted. They write: “[t]his gerund seems best suited for exploring varied ways of performing ‘good tomatoes’, from assessing and appreciating, to adapting and improving.” (Heuts & Mol, 2013, p. 130). As mentioned in the State of the Art, they seek to explore mundane valuing practices by asking how tomato experts know what a good tomato is. Heuts and Mol (2013) identify valuing in practice with the schema they call *registers of valuing*. The authors filter out *registers* that they describe as “indicat[ing] a shared relevance, while what is or isn’t good in relation to this relevance may differ from one

situation to another." (Heuts & Mol, 2013, p. 129). In other words, a *register* can be defined as a theme with a common meaning that is identifiable in different articulations, situations, and codes in the empirical data of a research. Hence, *registers* encompass a multiplicity of articulations and are apt to remain mindful of thinking in plurality. The notion of *valuing* in the schema of *registers of valuing* draws attention to valuing activities. When grouped into a *register of valuing*, these plural valuing activities articulate a shared relevance. The *registers of valuing* that Heuts and Mol (2013) extract in their interviews with tomato experts have to do with money, handling, historical time, naturalness, and sensual appeal. I similarly apply this schema to find out how the Austrian insect company enacts insects as *good to eat*. Thus, *valuing* as a term encompassing a variety of doings in which values are actively done is relevant to my research. Even though there are some overlaps between my case and Heuts and Mol's (2013), there are also some differences. I identify the following as differences. Heuts and Mol (2013) intentionally studied an established and less politically charged food in the Netherlands: Tomatoes. They do this in order to investigate mundane practices of valuing. However, my food is politically and culturally charged in Europe. In contrast to Heuts and Mol (2013), I am interested in epistemic power structures (e.g., which scientific facts about insect eating are dominant; which values are being established in Europe; which practices of cultivating insects are being standardized), and how values of a not yet established food are created. To find out about these aspects, I extract *registers of valuing* from my material, similar to Heuts and Mol (2013). Whereas Heuts and Mol (2013) investigate which practices make a tomato good through conducting interviews with tomato experts, I investigate through which practices and values the Austrian insect company makes insects *good to eat*. The main difference is that insects are not yet widely accepted as edible food in European societies. Europeans' disgust for eating insects must be overcome through value-creating practices that make them *good to eat*. This means that tomatoes are an ontologically more stabilized food entity in Europe than insects are – even if tomatoes hold an ontological multiplicity as any food does (Mol, 1999; 2002). In other words, a widely established market for tomatoes exists in Europe, whereas a market for edible insects is vividly in the making. However, similar to Heuts and Mol (2013), I aim to identify *registers of valuing* in the material I collect. This means that I filter out the *valuing practices* of the Austrian insect company, together with the *registers* (= grouped value categories that indicate shared relevance). Like Heuts and Mol (2013), I connect this with care practices that create value. Unlike them, however, I also identify what the company does not care about, which integrates a more political dimension into my research.

However, since edible insects are far less accepted in the EU than tomatoes, the activities that try to establish a market seek to create value where disgust predominantly exists. At this point, the second verb, *valorizing*, comes into play. Vatin (2013) describes this term as activities in which entities are made more valuable. So, while *valuing* is a more general verb attributed to activities in which values are done (e.g., selling, eating, teaching), valorizing are practices that aim to produce value through improvement (e.g., growing, assessing, marketing). In other words, valorizing lends itself well to emphasizing practices that increase value and processes of commodification. As I study a company whose goal is to sell its insect products to customers, practices aimed at increasing value are actively done. In my analysis, I follow Asdal and Cointe's (2021) use of the term. Vatin (2013) distinguishes between the terms *evaluating*, which takes place in the market, and *valorizing*, which occurs in production sites. Asdal and Cointe (2021) see the terms as somewhat conflated. They use the term *valorizing* for practices that transform entities in order to increase their value. Practices of *evaluations* often "valorize the entity they are to assess as they justify to others their assessment." (Lamont, 2012, p. 205). This is why I follow this conflated understanding when using the term *valorizing*. Additionally, I consider it crucial to stress practices that, in my case, add value. Therefore, I do not group all different types of valuation practices into the term *valuing* as Heuts and Mol (2013) do. I apply the same schema of *registers of valuing* in my analysis, but I am attentive to emphasize when practices of valorizing occur. Put differently, since my case is a site that engages in the commodification processes of a Novel Food, I find the distinction between the terms *valuing* and *valorizing* somehow relevant. This allows for describing a more nuanced picture of valuation practices. Although I operate with the *registers of valuing* in my analysis, I refer to the term *valorizing* in activities where the Austrian edible insect company aims to increase the value of insects.

4.2 Valuing and Valorizing in Processes of *Co-Modification*

The term *valorizing* brings me to a central analytical concept used as a lens for analysis in this thesis: *co-modification*. As valorizing practices intend to transform an entity in order to create value, they shed light on the materiality of commodities. Asdal (2015) and Asdal and Cointe (2021) pay attention to this process of material modification, which aims to enhance a commodity to make it more valuable. Alternatively said, they look at practices that seek to make it a viable market product. They examine the procedures by which commodification is done and created. Both cases deal with the modification of the biological entity of the farmed codfish that takes place during the process of commodification. Asdal (2015) makes innovation documents that provide advice for the market of famed codfish the site of her

research. In contrast, Asdal and Cointe (2021) study how the codfish becomes a commodity in consumer behavior experiments. In both cases, the authors describe complex, relational *co-modification* processes when an entity aims to become a viable commodity. Another way of saying this is that in order to establish a market, make something a commodity, and create value for it, not only the biology of the commodity is changed but also other actors, such as the consumers and the market. These modifications do not happen independently but in a relational way. To exemplify this, in the case of innovation documents dealing with farmed codfish, Asdal (2015) writes that

> *"in a very concrete way, then, the market is written into the body of the codfish, meaning that not only do the innovation documents seek to time the necessary events in order to achieve a successful co-modification process, the scientists in the field also work to time the biological with the market, in this case so that the cod reaches market size." (p. 179).*

Asdal (2015) argues that measures to (re-)time and standardize the cultivation of the codfish are changing its very biology. At the same time, these practices of valorizing and production of market value modify the market, the people, the farming methods, and more. Thus, when something is made a commodity, processes of co-modification of various entities are happening. The case of edible insects in the EU shows that there are many sites where these *co-modification* processes occur. In order to make edible insects a viable commodity, several factors must be modified. Insect species must be evaluated by the EFSA, creating new knowledge, values, and legitimacy. Furthermore, regulations must be implemented to make insects legal in EU markets. That is not all. Standardized farming methods of large-scale production must be developed, which might lead to a (re-)timing and modification of insect species. In addition, European citizens need to modify their disgust and value insects as *good to eat*. The list could be continued. At each of these sites that aim to make edible insects a viable product, the analytical concept of *co-modification* can help to investigate how these commodification processes unfold and what kind of relational modification is involved. What should be stressed here is that these processes are relational. As Asdal (2015) and Asdal and Cointe (2021) argue, commodification does not follow a linear process. Therefore, in extracting practices of valuing and valorizing from the empirical data I collect through interviews, the website analysis, and my observations at a cooking workshop, I pay attention to the relations in these practices. To clarify this, I code my material according to the thought: *who/what does/values/valorizes what for whom/ what aim*. This allows me to foreground valuing and valorizing activities and the materials/ entities that are co-modified in a relational way. To summarize, *co-modification* is an analytical tool I apply when coding my empirical data.

4.3 Valuing and Valorizing Edible Insects as *Matters of Care*

Asdal (2015), and Asdal and Cointe (2021), and Heuts and Mol (2013) point out one aspect in their elaborations on the term *valorizing*. Even though the EU identifies the integration of edible insects as an objective under the *Farm to Fork Strategy*, which aims to make food systems more resilient, success is never guaranteed. In other words, processes of valorizing do not guarantee that insects will get part of European cuisines. Above I point out that commercialization processes are interwoven with the mutual transformation of different human and non-human actors. Nevertheless, there is no way to guarantee that the modifications will occur in a way that most Europeans perceive edible insects as *good to eat*. Many scientific, political, and commercial actors strive to valorize insects in a way that creates value and integrates them into European cuisines. Some scientists research consumer behavior to find strategies to best overcome disgust. Some political actors pass regulations to legalize a handful of insect species as food. Some commercial actors develop food products and infrastructure for trade. All these actions are carefully attempting to create values and a market in Europe, so insects become a more ontologically stable food regularly eaten. The activities imply tinkering and lead to the notion of care as [c]aring is an activity in which valuing is implied—both caring about and caring for have a 'good' at their horizon. At the same time caring indicates efforts that are ongoing, adaptive, tinkering and open ended." (Heuts & Mol, 2013, p. 129). Thus, the efforts to integrate edible insects in the EU do not follow a linear, prefabricated, and controlled path but instead employ care and tinkering practices. Like Asdal (2015), Asdal and Cointe (2021), and Heuts and Mol (2013), I mobilize the term *care* but link it to the concept of *Matters of Care* by Puig de la Bellacasa (2011). The concept of *Matters of Care* acknowledges the world-making performativity of objects. Furthermore, it carries an ethical undertone that can be useful when examining how values and knowledge are enacted by a company that sells insects as food (Puig de la Bellacasa, 2011). *Matters of Care* focuses on the practices, the doings, and world-building effects that entities in a network contribute to shaping. The emphasis on *doing* is in line with the focus on performativity in *Evaluation and Valuation Studies* but goes further to questions of ethics. Puig de la Bellacasa (2011) stresses that "how we present things matters" (p. 87). Put differently, non-human representations have an agency. Websites, products, campaigns, images, flavors, events, regulations, and scientific experiments contribute to performative world-makings and value-creation (Puig de la Bellacasa, 2011).

The concept of *Matters of Care* is based on Latour's (2004; 2005) understanding of *Matters of Facts* as *Matters of Concern*. In the concept of *Matters of Concern*, Latour (2004; 2005) acknowledges the reality-making effects of science, technology, and artifacts. He uses

the concept of *Matters of Concern* to argue that technological and scientific facts (hard facts) are constantly involved in social and political concerns. Thus, myriad interests and concerns of human and non-human entities are embodied in scientific (arti-)facts. Drawing on the discourse of Feminist Science Studies, Puig de la Bellacasa (2011) transforms Latour's (2004; 2005) notion into *Matters of Care*. In doing so, she emphasizes the caring performativity of facts and objects. The difference between *I am concerned* and *I care* illustrates an action- and a practice-oriented touch of the term *care*. The term *care* seems to be attributed to more active choice than *concern*. Paying attention to the care practices enacted in the company's valuing and valorizing edible insects reveals what is cared for and how it is done. Moreover, filtering out *registers of valuing* can identify potentially "neglected things" (Puig de la Bellacasa, 2011, p. 100) that the company does not care for in its practices of valuing and valorizing. The awareness of things that are not cared for can help draw a more comprehensive picture of the power structure exercised through the company's valuing and valorizing practices. Investigating what values and knowledge are to be stabilized and what is neglected shows how it is done and how it could be done otherwise (Puig de la Bellacasa, 2011).

Scientific and political opinions on entomophagy in the EU have often linked to the narrative that the use of edible insects is a solution to unsustainable and environmentally-damaging food systems (Kuljanic, Gregory-Manning, 2020; Van Huis et al., 2013). Hence, eating insects is associated with care work, as it is presented as a solution to unsustainable food systems and an improvement in climate resilience. Responsibility and care are exhibited in creating a market for edible insects in the EU. This fits into Puig de la Bellacasa's (2011) call, "we must take care of things in order to remain responsible for their becomings" (p. 90) in two ways. First, the practices of valuing and valorizing to create a market for edible insects are framed as a solution and care activity for climate-resilient food systems. In other words, it is communicated as something good. Second, this solution and care should not be taken for granted as something responsible and good. Here I position my research. I aim to discover how an Austrian edible insect company enacts insects as *good to eat*. One aspect I pay attention to is what values and knowledge are intended to be stabilized. By investigating how it is done, I do not want to miss out on how it could be done otherwise and what is not cared for (SQ2). The concept of *Matters of Care* points to the ethical and political power of care matters (Puig de la Bellacasa, 2011). It is not about moralizing and saying that something is right or wrong. However, by being attentive to how the market of edible insects currently comes into being, it is made possible to decide if this path is the way to go. In other words, knowing how things are done enables one to remain "responsible for their becoming" (Puig de la

Bellacasa, 2011, p. 90) – which means that through awareness, one has a greater agency to respond to what is happening.

Since *Matters of Care* emphasizes the agency of more-than-human actors such as websites, products, campaigns, images, flavors, events, regulations, and scientific experiments, it also has relevance to my research design. So, first of all, integrating the website with its text, images and the flavors of the products, as well as the spoken words of the interviews with the company's team and the activities in the cooking workshop into my data collection, appreciates more-than-human forms of agency. *Matters of Care* can also help frame my performed research as a particular articulation and doing. In this way, I can position myself as a researcher who performs care and valuing. The awareness this concept fosters can emphasize responsibility in research and motivate me to be very transparent and accountable in my decisions and actions (Puig de la Bellacasa, 2011).

5. Research Design, Methods, and Ethics

In this section, I elaborate on how I conducted my research - more specifically, what methods I applied. In order to answer my research questions, I used three methods for data collection: The qualitative social science methods of semi-structured interviews, a website analysis, and a participant observation at a cooking workshop that the company regularly hosts. After collecting, the data were analyzed with the multimodal critical discourse analysis (MCDA). This method allows themes to be identified using more modalities than text. In other words, the modalities of visuals and flavors were also paid attention to. In the following, I first discuss the development of my research design and how I gained access to the field. Secondly, I address the various methods, starting with the website analysis, followed by the interviews and participant observation. Thirdly, I reflect on the limitations of the research and ethical considerations.

5.1 Research Design and Field Access

As I have been engaged in high-performance sports from a young age, I have developed an awareness of what I eat. In 2019, this awareness and my interest in climate-resilient development led me to research how I can eat environmentally-friendly and healthy. Having experienced that a vegan diet lowers my physical well-being and performance in sports, I was looking for an alternative protein source to conventional animal (e.g., meat and fish) and plant protein (e.g., legumes, rice, hemp). During this private research, I came across the topic of entomophagy, started reading the FAO report, and began to include insects in my diet. Different facets of entomophagy in the West fascinated me: For example, reading scientific studies on the nutritional composition and ecological benefits of insects, asking where the prevailing disgust of insects in the West comes from, and experimenting with recipes that incorporate edible insects. As part of the master's programme in STS, I began to approach the discourse on entomophagy in the West differently. I considered the scientific and regulatory development in the West as an interesting case to study science and culture in the making and a suitable example to apply different STS concepts. After deciding to make entomophagy the topic of my master's thesis and reading through most of the literature presented in State of the Art, I looked for a potential research case. My main criteria were a locally accessible case in the European insect market that fits within the scope of a master's thesis. As I had already tried insects from the Austrian insect company in 2019, my decision quickly fell on it as the research case of my master's thesis. The direction of the concepts I use, as well as the research questions, were already determined at a very early stage of my

research project. Neither has changed significantly. In the course of developing the research proposal, I focused more on *Valuation and Evaluation Studies* and minimized my commitment to Mol's (1999, 2002) concept of *ontological multiplicity*. The methodological research design evolved around the question of how to capture valuation practices in the Austrian insect company most thoroughly. This question involved the two interrelated questions of which actors are involved in the company's actions and which methods should be used to collect data. My specific research site is the company. However, it is crucial not to see the company's valuation actions and marketing as autonomous and detached from the context in which it operates. By this, I mean that it is necessary to ask: Which actors are part of the company? Who influences the company's behavior? Where does it get the knowledge, it incorporates into its marketing and valuation practices? Through what channels and practices does it communicate why insects are *good to eat*? To capture the value-creation beyond the human actors of the company that is identifiable through interviews, I decided to include various methods. Materials, such as the website and the events that the company regularly conducts, open up to investigate the value-creation of other actors than the company members (e.g., the scientific community, regulatory work, and customers). The focus of my research is still on the company. But as I mentioned earlier, a diversity of methodologies opens up a rigid definition of the company as exclusively human and without being embedded in a context. A website analysis allows one to look at multiple modalities (text and visual) of the website. This acknowledges the agency and materiality of more-than-human actors. In the cooking class I could observe hands-on practices and investigate the company's relationship with its customers. Thereby, I could get insight into the relations and directions in which values are enacted and flow into and out of the company. Moreover, I decided to cover this aspect of relational value-production through the way I formulate my codes. I created the codes along the thought of *who does/values what for whom/ what aim* in order to grasp the flow of value-production. After grouping the codes into themes that I call *registers of valuing*, I relate them to the FAO report. This also allows for a contextual, relational analysis.

However, after I had decided which methods to apply for data collection and how I wanted to analyze them, I started accessing the field. I contacted the company via email in January 2021. In this first email, I introduced myself and attached a summary of the master thesis project. The CEO responded immediately, and we had an initial call in which I explained my interest and planned timetable. The company confirmed that it would fully support me. Subsequently, I sent a written consent, which I repeated in written and verbal form before each interview. In February 2021, I started analyzing the company’s website, which was a good entry point in getting an overview of my research site. In addition, the content of the

website helped me plan the questionnaire for the interviews. However, finding the right way to carry out the analysis was challenging because the website consists of many sub-pages. I decided to translate the website into tables (see Figure 1) in order to make it codable with atlas.ti. In April 2021, I conducted two interviews and participated in the cooking class. The last interview followed in June 2021. At this time, I had the website analysis structured into tables and started tinkering with how to code my analysis properly. I transcribed the interviews and participatory observation in May, June, and July 2021 and finally began coding. In the following, I go through each method to outline the gain they bring, how I apply them, and structure them.

5.2 Data Collection: Website Analysis

In order to explore how the Austrian insect company produces and communicates values to its (potential) customers, non-human materials can also provide useful information. As Prior (2007) writes in his text on document analysis that "documents are never inert. Indeed, they frequently serve as active agents in schemes of human interaction." (p. 353). An important mediating agent of the company is its website. Since the company has only recently begun selling its insect burger patties in a big Austrian supermarket chain and its other products in a few small supermarkets, its website has so far provided an essential platform for sales. However, the website offers more than the possibility to buy its products. The website is dominated by several sub-pages that provide information to visitors and impart knowledge about why eating insects is meaningful. This is precisely why I think the website contains telling data relevant to my research questions.

Jancsary et al. (2015) write in their text about multimodal analyses that "[l]anguage, after all, is the most prominent resource for the social construction of reality and the storage of social knowledge '(Berger and Luckmann 1967)'. Unfortunately, this also means that in actual analyses, researchers often focus on written and spoken verbal text, and ignore, or at least downplay, the importance of other information." (p. 181-182). Furthermore, they acknowledge the agency other modes than language can have on producing meaning. Since the company produces values through more modes than language, I consider it as important to not only code and analyze written and spoken text in this thesis (Jancsary et al., 2015). Looking at the company's website reveals the inclusion of other modes, such as visual elements (images, graphics, and videos) that contribute to communicating messages. Therefore, I included written text and visuals in my website analysis. Another aspect I particularly paid attention to is linked to the visuals and text. As mentioned in the State of the Art, Jönsson et al. (2018) investigate how vegan and post-animal products such as oat milk

or plant-based burger patties relate to conventional food based on their form, product name, and packaging. The Austrian insect company runs several lines of products, from which I took one example product into account in my analysis, the burger patty. In addition to the text and visuals, the flavors of the insect products and their forms are acknowledged as meaning resources in my analysis (Jancsary et al., 2015). Taken together, the website analysis pays attention to written text, and visuals, with a particular focus on what kind of products and flavors the company sells on its website.

Before coding, I structured the company's homepage into separate spreadsheet documents (see Figure 1). The website consists of 7 pages: Landing page; Why insects; Mission; Ambassadors; Blog; FAQ; Shop. Additionally, there exist sub-pages for each product and checkout. In my analysis, I included the following pages: Landing page; Why insects; Mission; Ambassadors; FAQ, Shop; and the product pages of the company's burger patty. Since the variety of methods I used resulted in a lot of data, I had to limit the scope. Therefore, I decided that the analysis of the blog, as well as the analysis of each product, goes beyond the scope of a master's thesis. I firmly believe that this limitation does not have a significant impact on my results.

Before the individual pages were structured in table form, I made a screen video of the pages. This was because the website permanently changes, and I wanted my analysis to be traceable. The tables were arranged in three columns: Text, image description, and other notes/ flavors. The text column consists of a copy of the webpage's texts. In the image column, an image description was inserted. The notes column has comments about the website's composition. Additionally, comments on the flavors and products were written down in this column. Other than columns, the tables consist of rows. The respective pages were divided into sections that can be viewed by scrolling. Therefore, the table's rows correspond to the website's layout. The text contents and visuals were packed in each line, as they are found next to each other on the respective webpages. After converting the whole webpage into table form, everything was coded in atlas.ti. Additionally, I wrote a coding book in which I gave definitions of the codes. The further coding process is elaborated on in the analysis section.

Website Analysis I Landing page

URL (27 April 2022)
Genre/Purpose: Website as communication and education tool and to sell the company's products

Text	Visuals	Other notes/ flavors
ESSBARE INSEKTEN BESTELLEN UND DIR DAMIT GUTES TUN! In unserem Online Shop findest du köstliche Lebensmittel mit wertvollem Insektenprotein. Vom saftigen Insektenburger über proteinreiche Energiespender bis hin zu Snacks für Zwischendurch. Koste dich durch unsere hochwertige Produktvielfalt mit Heuschrecken, Grillen, Buffalowürmern und Mehlwürmern aus regionaler Zucht und lass sie dir direkt vor deine Haustüre liefern ZUM SHOP	Picture showing the burger consisting of a crispy burger bread with a juicy looking insect burger patty, sauce on top and under the patty, lettuce leafs, tomatoes, and cucumbers. The burger is placed on a white packaging sheet. The colours are very saturated, high in contrast and the spots and lightning makes the burger look very tasty. A white flag with a neon yellow dot and the writing "EAT FOR FUTURE" is stuck in the upper burger bread. On the bottom right corner of the white wrapper sheet is another neon yellow dot with the words "NEW TRY IT NOW". The burger is circled by grey and neon yellow strokes that are also included in the logo of the company.	Headline: - Active, motivating language. - Directly addressing the consumer. Flavors/product: - Burger patty in form of a normal burger. - Meat substitute Visual - Insectburger labelled as future food. - Integrated thought: burger looks like a "normal" burger. - Hyperlink to order the burger. Text: - Summary of the online shop. - Active, motivating language. - Directly addressing the consumer. - What is 'regional'? Button: Hyperlink to shop page.

Figure 1: Table form of the website analysis before coding it in atlas.ti.

5.3 Data Collection: Semi-Structured Interviews

Jensen and Laurie (2016) write that qualitative interviews shed light on individual people's perceptions and how they experience and perceive specific issues. Therefore, I use interviews to get insight into how the company members perceive their works and insects as *good to eat*. Moreover, including three interviews with members of the company helped to build an understanding of how the company's team makes sense of entomophagy in the EU, how it enacts insects as *good to eat* (MQ), what values and knowledge it (re)-enacts (SQ1), and what the team members do (not) care for in the company's marketing strategies and product development (SQ2). In particular, it enabled to identify what values the company members ascribe to insect eating. Since the Austrian insect company is a relatively small company with two hands full of members, I decided to conduct three interviews. Two interview partners were founders of the company, and one is mainly responsible for product development. I deliberately select these interview partners because I believe their positions within the company best align with getting answers to my research questions. I am aware that additional interview partners could provide even more comprehensive results. However, I chose to use

various methods, allowing space for values generated by non-humans and other modalities (Jancsary et al., 2015).

In order to maintain explorative flexibility and allow the interview to proceed naturally, I decided to conduct semi-structured interviews (Jensen & Laurie, 2016). To do so, I prepared a questionnaire for each interview that contained important questions marked yellow. Additionally, I prepared some questions to return to in case an interview loses direction. For each interviewee, I designed a separate questionnaire based on the person's position in the company. However, some key questions appeared in all questionnaires. For example, I started each interview with questions about their experience when they first tried edible insects, how they came up with the idea of founding a company selling edible insects, and why. I asked two interviewees questions related to why they think insects are *good to eat* and through which strategies they communicate this to its customers. Moreover, I wanted to know what the company's goals are and how they imagine the future of entomophagy. My third interview was specified differently. Since the interviewee is responsible for product development, I focused more on the practices of developing products, cooking, and strategies that make edible insects *good to eat* from costumer's perspectives. By using this mix of identical and individual questions, I aim to address a broader range of the company's enactments while maintaining a comparable connection between each interview. This allows me to identify a greater variety of valuation practices and filter out dominant ones. Each interviewee responded differently to similar questions, resulting in varying follow-up questions. Some of the interviewees were chattier, whereas others were more difficult to make them talk. At the request of the company members, the interviews are carried out via Microsoft Teams. I recorded all interviews with an audio device, transcribed them afterward, and coded them using atlas.ti. Since the interviews were in German, I translated the answers into my final analysis. Due to the request for pseudonymization, I changed the company's name in the quotes I used for the analysis to "the company".

The choice of semi-structured interviews underscores the research interest (e.g., research questions, theories) in a situated enactment – maintaining a natural flow through open-ended questions allows for a more performative and dynamic quality. By this, I imply that my approach to the interviews follows a constructivist agenda (Silverman, 2006). By constructivist, I mean that interviews are always situated and construct a particular reality, or as Silverman (2006) describes: "[h]ow interview responses are produced in the interaction between interviewer and respondent." (p. 131). In other words, how I conduct and design my interviews influences the outcome. Consequently, having structure helps to position me as an interviewer in advance. My questionnaires are structured thematically according to a

predetermined order. The structure changed during the actual interview. I color-coded the most essential questions to keep them in view. In addition, important information about my project is noted at the beginning of the questionnaire to inform my interview partners about all relevant details before the interviews start. I asked for written consent before the interview, and for additional oral consent before the interview started.

5.4 Data Collection: Participatory Observation

The Austrian insect company offers cooking classes conducted by a top chef and the other company members. In these workshops, participants are invited to cook a four-course meal made of insects and learn more about entomophagy. Since my research questions address valuation practices enacted by the company, participating in and observing one cooking class offers a suitable, vivid site to investigate these doings I am interested in. The cooking classes are promoted as an educational format. By teaching a four-course meal, not only knowledge is brought closer to the participant but also practices of how to cook with insects. Thus, investigating one of these cooking classes gives further relevant insight into what knowledge, promises, and values move between entities (SQ1) and how insects are prepared, cooked, and valued as *good to eat*. Furthermore, the cooking workshop is a suitable site to include customers of the company. Investigating such a workshop is in line with my concepts insofar that *Valuation and Evaluation Studies*, but also, the concept of *Matters of Care* stresses that reality is being done in practice (Puig de la Bellacasa, 2011).

In order to not go beyond the scope of my research project, it is crucial to be prepared how to observe the cooking class. Since conducting interviews and analyzing the webpage already produces a lot of data, it is important to be careful not to gather too much data. That is why I participated in and observed only one cooking class. I decided to collect data based on my experience while participating in the cooking class. I introduced myself at the beginning of the workshop and asked for oral consent of the participants. The participants were pseudonymized in my observations. In the analysis, I do only refer to every participant as “participant”. During the workshop, I typed in notes on my mobile phone on what was said and done by the company members and the participants. I conducted additional small interviews with the participants, in which I asked about their motivation to join the cooking workshop, their experiences, and why they think it is *good to eat* insects. After the cooking class, I recorded my experiences based on my notes and added thoughts that popped up in my mind the following days. Then I transcribed the records and short interviews and coded them with atlas.ti, which I will explain in more detail later.

To be mindful of an often-raised criticism of autoethnography in my research design, calling it self-indulgent, narcissistic, and self-centered, I refer to arguments by Law (2000). Law (2000) questions "the personal" (researcher) in academia, which is often seen when included too much as not only self-absorbed and self-centered but also as distorting objectivity and truth. Often the problem of subjectivity in research comes with the assumption that it can only be solved by the disappearance of the researcher's body in research. In his writing, Law (2000) attempts to conceptualize "the personal" in the academic entangled with the research subject. Through his understanding of enmeshed subject-object relations, he gives less space to radically patriarchal claims to objectivity as well as to beliefs in full self-centeredness in the involvement of the personal. A central argument of Law (2000) is that the personal is always social:

> *"[i]f we want to understand social life, then we need to attend both to the personal and to the social. Or no—that gives too much away: it suggests that the distinction between the personal and the social is analytically irrelevant." (p. 11).*

By this, he means that a strict separation between a research subject and research object cannot be drawn straightforwardly, as they are much more likely to be in a position of relational, discursive, and mutual influence:

> "So the distinction 'public/private,' or 'knowledge/personal,' these are distinctions made, constituted in the enabling logics of discourse that run through, permeate, and perform the materials of the social. They go everywhere, into our bodies, our practices, our texts, our knowledges, our town plans, our buildings, and all the rest." (Law, 2000, p. 13).

To capture the moment of entanglement between subject and object or environment, Law (2000) uses the term *interpellated*. Moreover, he argues that we live in a world that largely interpellates and trains to live a singular self-understanding rather than a multiple one. This is why he finds it important to give more attention to enacting subject multiplicity and subject-object entanglement in research:

> *"[T]here is a place for the body, not only as the flesh and narrative blood that walks in what we used to call 'the field,' bringing back reports, reports of how it is 'out there.' But rather, or also, that there is room for the body, for the personal, in the stories that are later performed, that perform themselves through us as we tell of narrative diffractions and interferences." (Law, 2000, p. 28).*

As a participant in the cooking class, I am, to some degree, part of the value-generating situation at the workshop, as well as part of the whole research performance of the thesis. I want to observe the workshop and participate in cooking and eating the meals. The attentiveness to a relation between the researcher and research matter and the world- or value-generating performance through (research) practices, fits very well with the theoretical

framework I have chosen: *Valuation and Evaluation Studies*, *co-modification,* and *Matters of Care* (Asdal, 2015; Asdal & Cointe, 2021; Puig de la Bellacasa, 2011). Following Asdal (2015) and Asdal and Cointe (2021), it could be argued that my research co-modifies my research matter to a certain degree. I try to make the research processes, development, and data analysis as transparent and comprehensible as possible. Nevertheless, the collected data from my three methods are transformed into a new written form that articulates a certain reality. The whole research process and the collected research material are also sense-expanding and modifying for me as a researcher. Putting what has been observed and collected into a meaningful form does not fail to have an educational effect on me. In addition, the results are presented to the company. What the team does with it is, of course, up to them. But it carries the potential that it will influence their actions. Even though my research could impact the company's actions, this thesis is certainly not a good place to research processes that co-modify insects into viable products. Instead, my research focuses on this issue of co-modification that happens in the enactments of the company. Asdal and Cointe (2021) use consumer behavior research to demonstrate a dual process of *co-modification* aimed at making farmed codfish a better product. In no way, do I wish to argue that my research engages in such *co-modification*, for I am not aiming to develop strategies for a better functioning value-generation of edible insects. I merely aim to raise awareness that I consciously want to situate myself, my actions, and my decisions in this work. I do not want to neglect my doings' effect on the outcome. Neither do I want to focus too much on my actions. My main argument is that transparency of my actions is vital for responsible research practice. In other words, keeping these concepts in mind when preparing and conducting the observation helps me position myself responsibly, carefully, caringly, and entangled with the matter. This is why I started the research design and field access section with how I came in contact with the topic of entomophagy. Moreover, I try to be self-reflexive in my analysis by describing the context and materiality in which my findings are situated. However, I consider the method of participant observation as suitable to position myself more reflexively as a researcher as the codes are produced based on my experiences.

5.5 Multimodal Critical Discourse Analysis (MCDA)

As mentioned several times, my research aims to understand how a particular Austrian edible insect company enacts insects as *good to eat* (MQ), what values and knowledge it conveys (SQ1), and what it does (not) care for in its enactments (SQ2). Since the company consists not only of its team but of several components (e.g., its products, website, cooking classes), it is vital to study the value-generating impact of different modalities and their relation to each

other. Therefore, my research intends to analyze the data from multiple methods (website analysis, interviews, participatory observation) and modalities (e.g., spoken word, text, visuals, flavors). This allows me to comprehensively answer my research questions on the company's valuing enactments of entomophagy. To do so, I apply the analysis method of Multimodal Critical Discourse Analysis (MCDA). MCDA facilitates the analysis of various materials, including images, text, and sensory observations on the company's webpage, as well as from the interviews and my participatory observation (Jancsary et al., 2015). More precisely, a "[m]ultimodal analysis aims at addressing this shortcoming in existing research, and acknowledges the multitude of different materials and 'meaning resources' that people use to create and distribute meaningful signs." (Jancsary et al., 2015, p. 182). I think these “meaning resources” (Jancsary et al., 2015, p. 182) fit nicely into my project, which aims to examine how valuation practices are performed. It is important to include different meaning-making elements and their interrelations.

Jancsary et al. (2015) mention that MCDA is not a uniform analysis tool that can be applied similarly. Depending on the research design, methods applied, and modalities included, MCDA must be adapted each time differently. However, MCDA always critically examines meaning/ values produced by various modalities of a discourse/ document and the interrelation, connections, and frictions between the modalities. Additionally, MCDA focuses on power relations and interests within a discourse/ document (Jancsary et al., 2015). This fits well with my research question of what is (not) cared for at the company (SQ2). In my research, I drew on examples of how Jancsary et al. (2015) apply MCDA. At the same time, I aimed to remain creative by adapting and modifying their approach to my research question, methods, and materials. In the following, I explain the structure of my analysis, which is supported by figure 2, figure 3, and figure 4. Jancsary et al. (2015) propose three layers/ steps for the analysis. The first layer is the 1. individual modes (see figure 2). This step brought individual modes/ methods into a codable document. Depending on the method, I included different modalities. To make this more understandable, I examined three modalities (text, visuals, and flavors) in the mode of the company's website. I identified codes based on the modalities that serve as "meaning resources" (Jancsary et al., 2015, p. 182). In my interview transcripts, I only coded the spoken words. For the methods of participatory observation, I coded the short interviews with the participants and my notes that focused on practices and spoken words. After bringing the data from the three methods into separate documents, I coded all three individual modes separately in atlas.ti according to the thought: *who/what does/values/valorize what for whom/ what aim*. This was followed by the second phase proposed by Jancsary et al. (2015): 2. integrated analysis (see figure 3). This second phase

is the state where I have collected all my materials, transcribed them, coded them separately, and handled them in a more integrated, relational way. During coding, it was important to keep track of the source of each code so that I could bring them together in this second phase. In this phase, I organized the codes into themes, valorizing processes, and *registers of valuing*. The last step of the analysis resonates with the last layer of Jancsary et al. (2015): 3. broader discourse (consisting of critical evaluation, see figure 4). This was the phase when I critically reviewed the themes, valorizing processes, and *registers of valuing* and cross-checked them with the empirical material. The SQ2 had greater importance in this phase: What does the Austrian edible insect company (not) care for in its marketing, products, and offerings? At this phase, I reviewed the FAO report. I did not analyze it in-depth but reread the report through the lens of the valorizing processes and *registers of valuing* I have identified.

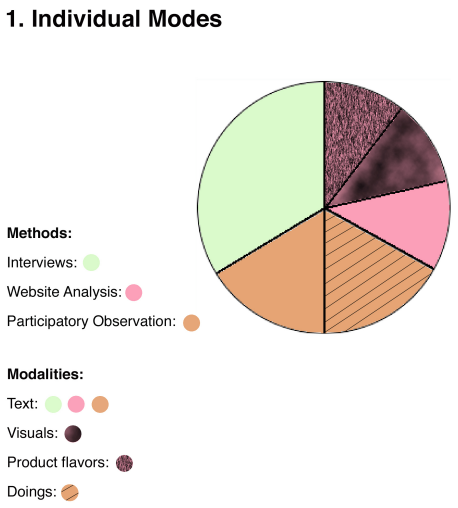

Figure 2: Individual modes

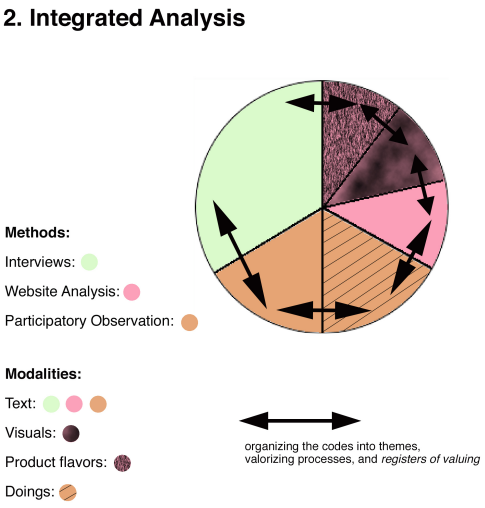

Figure 3: Integrated analysis

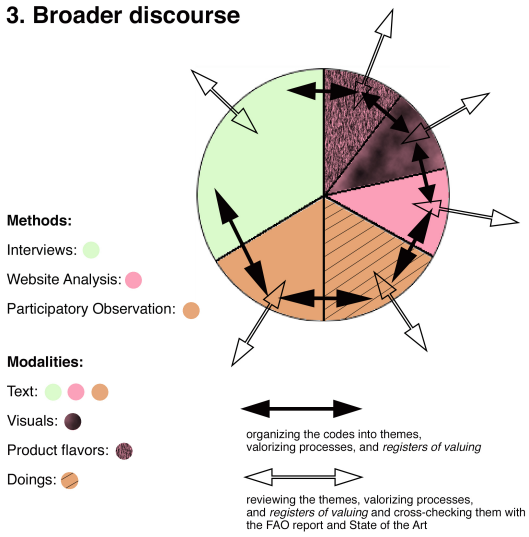

Figure 4: Broader discourse

5.6 Ethical Considerations and Limitations

When I first contacted the company, I had already discussed the ethical framework and sent the founders a written consent. It was agreed that I would pseudonymize the company's name and the names of the interviewees in the final master's thesis. I handled it so that I refer to all three company members as company members. The company agreed I could share its name in my master's seminar and with my faculty. The company has consented that I am allowed to write about it as an Austrian company of insect food. It is also informed that I analyze its website and that it is not excluded that I quote text from it. The company's website is only in German. Thus, I had to translate my quotes. This favors ethics since it makes it harder to identify the company as the quotes are not in the same language. However, since the edible insect market is tiny and not many European companies sell insects for food, I am aware that it is hard to fully protect the company's anonymity. I strictly adhere to the agreement and pseudonymization, but I see a weakness in effectiveness. I am confident that the anonymization of the participants of the cooking class is easier accomplished. I do not think the data of the interviews is easily traceable to specific individuals as I never relate citations to specific company members and their position within the company. Moreover, this pseudonymization of the company comes with limitations. I describe the visuals on the website, but I cannot display them in the thesis. It would be transparent, beneficial, and fruitful for the reader to have the website's visuals while reading my analysis. However, it is more important to protect the company's interest. Moreover, I do not cite the website quotes according to APA, as this would also be ethically incorrect.

I should also be aware that even though I try to capture the value-generating discourse of entomophagy in the EU and how a market for edible insects establishes, it is impossible to grasp this discourse fully. The core site of this thesis is the Austrian edible insect company. As it produces values in relation to a broader discourse and other actors, I try to open up my research a bit. I do this by including some consumers and rereading the FAO report with the valorizing processes and *registers of valuing* I identified. My choice of what to include and exclude affects the outcome. Additionally, I can never grasp the whole discourse. Even though I call my analysis a discourse analysis, I am aware of the limitations a small case brings. However, Asdal and Cointe (2021) argue: "[t]hose familiar with studies of markets and STS know that it is not that unusual to start from detailed analyses of seemingly small, mundane objects in order to tease out the functioning of markets and economies." (p. 281). Similarly, I think having a core case, and considering its relations to a broader discourse, must not aim to draw a complete and fixed picture of a discourse. A small case reveals enough fruitful insights

into practices of value-creation that have their place and relations in the discourse. Thus, I decided to stick with the term discourse analysis, even though I am aware of its limitations.

6. Analysis

This analysis is divided into two main parts that comprehensively describe the enactments the Austrian edible insect company performs to value and valorize insects as *good to eat.* To this, I add a third part that takes a different stance of asking what the company does not care for. The first part is dedicated to processes of market creation. Put in other words, it describes the company's activities of valorizing insects. Activities of improving aim to ensure that edible insects are perceived as *good to eat* by a majority of Europeans. The company's activities related to valorizing are predominantly linked to its marketing. As insects are not yet a culturally accepted food in Europe, the company needs to create market value to encourage consumers to buy its insects. Thus, in the first part, I try to capture how the company engages in commodification processes. More precisely, I describe the strategies for how the company valorizes insects. These valorizing activities are linked to improving, creating, marketing, and doing.

The second part focuses on the *registers of valuing*. In contrast to the first part, which focuses on describing valorizing practices, the second part aims to identify the *registers of valuing* that are enacted in these valorizing practices (Heuts & Mol, 2013). As mentioned in the methods section, *registers* "indicate a shared relevance, while what is or isn't good in relation to this relevance may differ from one situation to another." (Heuts & Mol, 2013, p. 129). Thus, the second part, about the *register of valuing*, is dedicated to the themes and values created through the strategies described in the first part. I structure this part into the following *register of valuing*: valuing the healthy self, valuing sustainability, valuing what is to be natural, sensual valuing, economic valuing, valuing change, and valuing the experience. The second part is a more conceptual approach to structuring the firstly described valorization practices differently. This does not make it a repetition of the first part. Instead, it adds another perspective on the empirical material through which it can be well shown what the company values about edible insects and how it does it.

The third part pays attention to care practices enacted by the company, but through the opposite way of asking what the company does not care for. I put this section as a last as these findings build on the previous sections. After identifying the processes of valorizing and the *registers of valuing* in the previous sections, I re-read my State of the Art and the FAO report and asked what practices and values are being stabilized and not being cared for. Elaborating on what is not cared for adds an opposing perspective to answer my main research question of how the company enacts insects as *good to eat*.

6.1 On practices of valorizing and creating market value for edible insects

Before I discuss the company's activities to encourage consumers to eat its insect products, I spend a few words on the structure. The insights I address here come from the empirical material I gathered from the website analysis, the interviews, and the participant observation of the cooking class. Based on all these materials, I could identify strategies and activities that the company carries out to win over consumers. However, these valorizing processes are not purely linear but rather patchy. Even though I try to put the process in order in a timeline where I start by analyzing valorization activities that had greater significance at an earlier time, in reality, these activities take place simultaneously and jumbledly. Moreover, I have found frictions, contradictory statements, and ambiguities in the materials I have collected, and I also attempt to shed light on these in this analysis.

6.1.1 Processes of Educating, Informing, and Communicating to Modify the Consumer's Disgust

The initial motivations of the company members to start a business selling edible insects were different to a small extent but have the same basis, namely the urge for change. One founder's initial motivation was to get people to eat healthier because he believes that the state is failing to look after its citizens' health. Instead, the state only cares about economic profit, which makes people sick. Besides the motivation to work for a healthier population, a second motivation that led to the founding of the company was concern about the climate crisis:

> *"I was very concerned with the impact of our diet on climate change and then one thing led to another. Then the FAO came out with the first report that Europe needs to rethink. And then quickly came the conviction that this [insect eating] is an issue that has incredible impact and is an issue that I want to work on.".*

The company was founded in 2018. However, the company's members have been involved in various networks since 2011 to inform, educate and discuss entomophagy. In other words, before one company member started a business selling edible insect products in 2018, he had an association that organized educational events and a small company dedicated to communicating about entomophagy. Another team member was researching how to change the biology of certain insects in order to breed them at University. Their firm belief that eating insects is a real game changer, as it can significantly impact the planet and human health, led them to start the company. As one team member said, the real impact is not talking about entomophagy but actually eating insects. To make a difference, he believes education and talking are not enough. That is why the team founded a company that sells edible insects.

However, solely founding a company is not enough to integrate entomophagy into European kitchens. As mentioned in the State of the Art, edible insects are not a traditional food in Europe. On the contrary, the majority of Europeans are disgusted by eating insects. Even some company members admitted they felt aversion when trying insects for the first time. Thus, establishing an edible insect company in 2018 meant that the company positioned itself in a market where most potential consumers felt disgusted. Moreover, the lack of regulations led to even more obstacles the company faced. As one team member said:

> *"It was difficult to find partners/firms that produce food with insects. On the one hand, on the legal level, because there was no basis and many companies said, if it is not allowed, we cannot do it. That's why I had to search for a long time until I found courageous partners who were open to give it a try and see how it would develop.".*

Thus, in order to work on establishing entomophagy in Europe – i.e., selling edible insects for human consumption – the company had to find strategies to modify this unfavorable situation. Describing these modification strategies aimed at valorizing insects as *good to eat* is the subject of this section. I want to stress that this unfavorable situation is a suitable site to illustrate how commodification and valorizing edible insects are interwoven with activities of *co-modification* (Asdal, 2015; Asdal & Cointe, 2021). In other words, the company's behavior and the strategies it had and still has to find in order to sell its products are embedded in and modified by this unfavorable situation. At the same time, the company seeks to find strategies to modify this unfavorable situation – i.e. to modify consumers' disgust and the market.

The roots of the company lie in entomophagy education. Even though all members have changed their focus by starting a business selling edible insects for human consumption, education is still one of the most important marketing strategies to establish insects in the mainstream. As one team member stated:

> *"And to increase acceptance, we have held hundreds of events in the last few years, made a lot of media contributions and done a lot of educational work. We went to schools. That has decreased a bit in the last two years because of Corona. But it's certainly an educational topic and I've done a lot of educational work in the last few years and the last decade. And trying to educate people. Which I think we've done very well. But that doesn't mean that insects have become part of everyday life, because that takes a lot of time and a lot of financial resources. So, we certainly still have a long way to go.".*

The company's activities ranged from diverse events like pop-up stores, selling its products at food fairs, climate action events, going to schools and universities. In these events, the company informs why insects are *good to eat*. In other words, the team educates about the benefits on health and the planet. But as one team member argued, informing is not enough.

The real impact comes through the act of eating insects, and educating can lead to a willingness to try them. However, according to the company's team, what convinces people, in the end, are good-tasting products:

> *"For example, on Thursday['s event] there were actually few people who were disgusted and otherwise we convince with the benefits we present in all our channels and communication messages. And at the end of the day, [we convince] with a good product. I've often heard: No, I'm not going to eat that, taste it anyway and then ask if they can try it again because it tastes better than their head might have told them.".*

The strategy of communicating insects' health and environmental benefits through different formats is therefore aimed at increasing the willingness to consume them. By providing information, consumers should start valuing insects as *good to eat*. These mental modification processes are processes of valorizing. The mental attitude that leads to disgust should thus be modified in the consumer to such an extent that the persons are willing to taste insects. What is ultimately really convincing, according to the company's team, is a good taste:

> *"The most important thing is the taste, if the product doesn't taste good, no matter how good your arguments are. No one will eat disgusting food for the planet. So, we lose people who don't like our products - that's quite clear. That also applies to the topic of buying again. Today, many of them are not buying again. Some are, but certainly not all. Many do it because of the "Aha" moment, as a gift, or as a joke product."*

> *"People's mouths stay wide open for a moment because they still have the disgust barrier in their heads. They think it's an insect and I won't like it, and then they eat something that tastes good to them. And that's where the word 'wow' is very descriptive and then the conversations usually start: How is the product developed or how do we create the composition of the product.".*

Thus, to make consumers eat insects regularly, not only must consumers' attitudes be modified, but also the company needs to create products that taste well. At this point, I want to emphasize that to sell insect products, the company does not only try to modify consumers' attitudes towards insects but also has to modify insects into tasty products. So, on the one hand, the company aims to modify consumers' mental willingness to try insects through education and reasonable argumentation. This is one step of modification but not the final convincing one. On the other hand, good taste on the consumer's tongue can modify the perception. Therefore, the company needs to make products that taste well and modify insects into delicious products. The modifications are not one-way but relational as the company needs to create insect products its customers like. In other words, we can speak of *co-modification* processes here. However, I will go into more detail on the product creation process later.

As part of my research was to participate in a cooking workshop the company regularly conducts, I use my observations as an example to describe how the company educates. Besides the mentioned formats in which the company informs about entomophagy, the company offers cooking workshops in which it educates how to cook with insects and integrates it into everyday dishes in simple steps. When I joined one of the cooking workshops, we were a small group of 8 people. The location was a fine cuisine studio with a big table and a modern kitchen. The setting was very cozy, and the atmosphere was very intimate. First, one of the team members started sharing the story of how the company was founded, what motivation led to it, and which obstacles the company faced. While the member talked, the participants could already try tacos filled with the company's insect burger patties (Picture 1). The tacos were extraordinarily delicious, I have to commit – probably, my favorite dish of the evening. However, although almost everyone had already tried insects before, this initial phase seemed to have the purpose of building trust. After this phase of educating about insects' health and environmental benefits and giving insight into the company's work, the participant could support cooking (Picture 2, Picture 3). One company member explained the structure of the cooking class as follows:

> *"There are four courses and we prepare the whole thing with the people, whereby they are also quite welcome to remain seated after a certain point. Of course, it is also important for us in the initial hot phase to really cook for one to two hours. In this phase, I try to teach everyone as much as possible. At the end, there is a time window where only the last steps have to be taken and that's when the conversations start. Then people often ask how I can integrate this into my everyday life. How can we work with it?".*

Picture 1: Tacos with insect burger patty

Picture 2: Preparing the meals.

Picture 3: Crickets in a pan.

Picture 4: Jerusalem artichoke soup.

During the meal, the participants chatted about what they liked and disliked about each dish. In general, the team members tried to create a cozy atmosphere in which everyone felt comfortable. The meals were very diverse. We first cooked and ate cigar-börek – a Turkish dish that consisted of pumpkin, red lentils, china cabbage, apple, and smoked crickets. The second dish was jerusalem artichoke soup with a topping consisting of mealworm-crispbread, grasshoppers, and mustard caviar (see Picture 4). Afterward, we had beetroot gnocchi made of buffalo worm flour, hazelnut butter, and rocket. We ate rhubarb crumble made of buffalo worm flour, green cardamom, and vegan vanilla ice cream as a dessert. Despite the insects, all ingredients were vegan. Also, all dishes except the tacos substitute for vegetarian dishes. One reason could be that the company's only product substituting meat is its burger patty. The company wants to cook with different products and insects it offers, which might be one reason the menu mainly substituted vegetarian dishes. In between cooking and eating, I conducted short interviews with the participants to find out what motivated them to participate in the cooking class and why they liked eating insects. Besides the two usual aspects that insects are healthy and environmentally-friendly, I noticed some other qualities that several participants mentioned. Specific curiosity and open-mindedness were common to all participants. When I asked what they thought of the topic, answers came like the followings:

> *"Well, I find the topic interesting. But I thought I'd see if it's relevant for me and if I can imagine cooking with insects.".*
>
> *"I'm not disgusted at all. I could also eat earthworms. I have also slaughtered animals and have a different approach to food.".*

> *"I was very interested right from the start, also because I had eaten insects before. But it's the first time I've cooked with them - so I was very pleased because it's simply something new and interesting.".*

Since the participants took part in the cooking class voluntarily, it can be assumed that they were willing to eat insects or at least open to change. Even though one team member said that there are always one or two participants who are skeptical about eating insects, I would argue that they at least dared to put themselves in the workshop situation. So, there was a level of willingness to change. Other reasons for participating were social ones: They wanted to have a new experience together with friends or family. But also the learning aspect, how to cook well with insects or how to convince others that insects are good, were reasons for participating in the course. These reasons to learn how to cook can also be understood as practices of valorization, as participants learn how to improve the taste of insects in order to integrate them into everyday cooking. Furthermore, offering a cooking class to teach different recipes with insects shows how insects can be integrated and changed in dishes. The aim is not only to teach how to cook with insects but to convince people that they can cook with them regularly. In summary, these educational formats, where consumers can try and eat insect products, aim to bring about change through education and eating well. It is about changing mindsets and mouths. As one team member of the company said:

> *"Eating insects is simply something different. Especially for us as Europeans, the texture in the mouth is probably a foreign body. For example, when I work with mealworms. They become a little soft and still have a little bite. There are people who say that it doesn't feel homogeneous in the mouth and that creates a kind of... Foreign body, is perhaps too much to say... but an unfamiliar bite. It's really something new for people who don't know it yet.".*

So, the consumer's mindset and mouth have to be changed in such a way that they eventually classify an insect as tasty, but also the dishes and products they eat have to be prepared in such a way that they are evaluated as good. In other words, the company does much educational work to convince potential consumers to eat and like edible insects. This educational work includes presenting scientific facts, learning cooking techniques, and modifying insects into products consumers like and taste.

6.1.2 Legitimizing that Insects are *Good to Eat*

So far, I have attempted to point out that the Austrian insect company is primarily dedicated to educational work, through which it not only presents insects as *good to eat* but also tries to establish them in Europe. One unavoidable aspect is the question of how it legitimizes its knowledge and how it builds trust in consumers and partners. Additional to the formats I have presented above, the company's webshop dedicates three entire webpages to informing

visitors about why eating insects is good. On the landing page, several graphics illustrate the scientific benefits of insects. The pages Why Insects, Mission, and FAQ present these in more detail. On the one hand, the pages refer to the health benefits of insects. Namely, the websites point out that insects are a high-quality source of protein and contain valuable vitamins such as B-12 and minerals such as iron, zinc, and calcium, unlike many vegetable protein sources. On the other hand, the sites refer to the ecological benefits of insect protein in contrast to other animal proteins such as meat. Namely, some visuals illustrate that insects, compared to meat, require a fraction of the water used in farming and 10x less space, 7-8x less feed, and 25x less CO2 emissions. The company uses only the FAO report and hyperlinks to the relevant passages as a source. Accordingly, the company tries to pass on the central facts in the groundwork of the FAO report published in 2013. In doing so, the company legitimizes its slogans such as "Good for you. Good for the Planet", with which it markets its insect products. When I asked about the company's scientific sources, one company member replied:

> *"The main source continues to be the FAO report, which is internationally and Europe-wide renowned. We have many people and nutritionists in our network. But also universities with whom we are in constant exchange and who offer us support. New reports are coming out all over Europe all the time, confirming what we think. We are in the process of setting up our own studies with the next investment and examining the body after eating insects. So very broad I would say. The consensus is clear and unanimous that insects will be an important alternative in the future because of the benefits. So, the scientific basis has actually been laid.".*

Thus, one way of creating credibility for the company's arguments that insect eating is good for people's health and the planet is through institutionalized, scientific knowledge. Though, it only refers transparently to the FAO report. One member self-critically reflected on the knowledge the company presents. In other words, he reflected that numerical facts might have changed since the publishing of the FAO report in 2013 or are varying depending on the source:

> *"Most of it still refers to the FAO report. But especially on the topic of feed conversion and water consumption and feed consumption, you can find xy different information. But we are also in direct exchange with our suppliers - especially the larger ones. There are also comprehensive lifecycle assessments. The evidence that insects are much more climate-friendly than all other animal protein is already there and we will also present it better on our new homepage. We also refer in principle to the FAO report, because it is the most comprehensive and broadest groundwork. And then we are also behind creating transparency with regard to where and how the added value really takes place. Because most people have very little idea about insect breeding. But this is also a topic that we will certainly have to address more broadly, in the sense of providing more insights into how it works."*

However, what can be identified is that the scientific facts the company presents on its webshop, the packaging of its products, and its educational events strive to create scientifically

founded credibility. In other words, the presented facts also modify how the company communicates, promotes, and values insects on its website, events, and product packaging.

Another aspect the company framed as one of its biggest obstacles in establishing insects as an accepted Novel Food in Europe was the lack of regulations.

> *"As I said, the legal issue was one of the biggest hurdles in the last ten years. Especially in Austria, where everything has been interpreted in a very restrictive and even more complicated way than throughout Europe. In Austria, we also held talks with ministers and actually fell on deaf ears. All that was said was that the law must change in Europe. And of course, the approvals, which had been submitted a long time ago, were the decisive factor that we were listened to and that the legal situation was also adapted in Austria.".*

In addition to educating potential European consumers about entomophagy, the company also educated policy-makers in Austria – mostly in vain. Even though the company was founded in 2018, it has been officially allowed to sell them since last year in 2021. The reason is the evaluation processes of the EFSA. Before 2021 the company was only allowed to sell freeze-dried insects in pure form, but not processed in food. Nevertheless, in the interviews, the cooking workshop, and the website, the company labels itself as a pioneer and revolutionary as it offered insects in the form of protein bars, chocolate, and other processed foods against the law. However, the change in regulations impacted the company's work as they made it possible to sell its insect burger patty in large-scale Austrian supermarkets:

> *"The change in regulations was a big milestone for the whole industry in Europe. Of course, we gained more customers through the reach of the 800 supermarkets in Austria. That is quite clear. And of course, for consumers, the legal uncertainty has led to question marks. If it's not allowed, why should I eat it?".*

In addition to the scientific credibility the company puts forward in its marketing, the regulations gave it credibility to sell insect products legally in its webshop and Austrian supermarket.

A third strategy the company fosters to increase credibility is through its ambassadors. The company's website dedicates a whole webpage to showing photos of its ambassadors and statements about why they think insects are *good to eat*. The ambassadors range from (professional) athletes who value insects as a sustainable and nutritious protein source and sports food to fathers who care about future generations and therefore want to eat sustainably. Having ambassadors is a way to communicate the topic and raise awareness. Moreover, it aims to create credibility based on personal experiences. Thereby, the company might build trust in potential consumers who are unsure how to evaluate edible insects. This strategy of having ambassadors – some being professional, known athletes, some being scientists, entrepreneurs, or students – can also be framed as a way to valorize insects.

The three ways of building credibility and scientifically, legally, and personally legitimizing that insects are good to eat speak for practices that aim to valorize insects in the

eyes of consumers. Building trust is the practice of improving value. Scientific facts presented in graphs, on the packaging, and in slogans and legitimized through links create values about why insects are healthy and environmentally-friendly. Regulations make it possible to improve the market and build a standardized infrastructure for farming, producing, and trading edible insects. Furthermore, they ensure European consumers that insects are safe to eat. Lastly, the statements of ambassadors add a personal touch of credibility. In the words of one of the members:

> *"It just needs trust and we get that through key opinion leaders, scientific studies, people like you who spread the word and tell people about insects as an alternative protein source. It will take a lot of marketing in the next few years and certainly a lot of willingness and customer conversations.".*

6.1.3 Processes of Creating Edible Insect Products

The section on practices of improving values through educating and increasing credibility leads to the very goal of the company: The company targets to make an impact through selling products to the consumer. Buying edible insects should then make consumers eat them. Therefore, the ultimate practice of valuing the company wants to achieve in its consumers is eating it. Thereby, the population should be rendered healthier, and diets made more climate-friendly. However, as stressed above, the taste of an insect product can make all the teaching and legitimize finally stand or fall. Thus, this section describes and analyzes the processes of creating edible insect products. This process can also be framed as a process of valorizing as the company seeks to modify insects into delicious food products. However, I want to zoom into the process to illustrate that more factors influence which products of edible insects are integrated. All in all, the company assortment includes 21 different products made of four different insect species. The insect species the company works with within its products are grasshoppers, crickets, buffalo worms, and mealworms. Its online shop offers food products: an insect burger patty, seven ready-made mixes, three different protein bars, protein flour, two flavored whole insect snacks, three unflavored whole insect snacks, and chocolate with mealworms. Thus, the product range is extensive and diverse in flavors. Which may raise the question: How does the company decide which products it wants to develop? One team member described the development of a new product as follows:

> *"The original ideas usually come from the inner circle. We sit down together and think about what we can deliver to our customers that works in everyday life. Often products are very elaborate or you have to adapt a whole dish to them. We try to avoid that. That's why we try to deliver a complete dish or a complete basic framework to work from there. That was the top premise for our burger patty. We want to make healthy convenience food. In other words, food that is useful in*

> *everyday life and is ready quickly. Of course, we also look at what's on the market. What do people like to eat in everyday life? From there, we try to develop adaptations or new products.".*

When creating a new product, the company thus already has a potential consumer in mind. Thus, the target group has an indirect influence on the products created. They are embodied in the product in order to target them when offered in a supermarket or the webshop. The potential consumers, the company envisions, modify the edible insect product. The product, its form, its flavors, and how it is labeled, packaged, and promoted all hold messages. In the end, all of these features that make up the product are made to be bought by the target group the company imagines in the creation process. Therefore, the question is, who does the company target? Who indirectly modifies the products? As readable out of the statement above, as well as the broad product range, the company targets, broadly speaking, everybody. The company's website states: "We have reinterpreted popular classics of international cuisine. Quick, sensible, and simply delicious!" So, on the one hand, the company targets a broad mass of European eaters who like to eat quickly cooked, tasty, and healthy food. "A healthy convenience food", as one member put it. Thus, the broad target group is defined as:

> *"We don't just want to reach people with an affinity for cooking, but the normal person who goes to the gym after work or does something with the kids and doesn't want to spend two hours in the kitchen. That's why we want to create a wider range of products to support people."*

> *"The dream would be everyone, of course. If there were a product from us once a week or an insect product in general, we would have already taken a good step forward. But in the end, we want to appeal to all nutrition-conscious people."*

The ready-mixes that reinterpret international meals, such as oat loaf, pancake, falafel, risotto, bread, brownies, and stone mushroom soup, speak for the diverse tongues targeted. Similar to the menu of the cooking class, these ready-mixes mainly substitute vegetarian dishes. Additionally, the easy way of preparing the ready-mixes embodies the convenience the company addresses. The snack products likewise emphasize this as they can be gulped. On the other hand, the company specifies a focus target group: nutrition-conscious people or, named differently, athletes.

> *"The future target group is actually real omnivores and especially people who are outdoors a lot and do a lot of sports. To name a focus target group. Athletes in particular are a target group for insects. But so far, for me, it's been everyone, because we all eat, three times a day. Every meal has a huge impact on the resources of our planet. And that's why I've always said that in the future insects will be eaten by everyone in Europe and the world. That's why we want to reach every person and we do that through different products.".*

This target group of athletes that want to eat a high protein and nutritious diet but are at the same time conscious about their diet's impact on the planet is also well represented in the

ambassadors the company presents on its webshop. For example, one professional athlete states on the webpage: “For me, insects are a great alternative to meat because they taste really good and are also helpful for sports due to their high protein content.”. However, many products emphasize that this specific group is targeted. For example, protein bars are a typical food product eaten by athletes to higher the protein intake with a condensed product. The insect protein bars of the company take up the same shapes and labeling as conventional ones. Thereby, they can be easily identified by the target group. To sum up, the target groups the company envisions in creating a new product impact the outcome. Whether various international flavored products target a broad mass of people or typical sports food targets athletes, the logic behind its creation is similar. The potential consumers indirectly modify how the company integrates insects into food products – in which shapes, flavors, and packaging.

The target group is not the only thing that influences product development. The materiality of the four farmed insect species also impacts their product use. First, the nutritional values scientific studies attribute to insects characterize for whom they might be of value. In other words, as insects contain high amounts of protein, this feature naturally influences the value insects can have for athletes who care about protein intake. Moreover, the other essential and healthy nutrients of insects, such as vitamin B-12, iron, calcium, and zinc, also can produce value for consumers. The company can envision a target group based on the nutritional values attributed to insects and thereby create products that emphasize these values. The protein bars exemplify it again as they stress the protein-rich values of insects the most. However, the company promotes high protein content and healthy nutrients on the product packaging and website. Besides the protein bars, also the burger gives an illustrative example of how the nutritional composition and other messages the company seeks to communicate are incorporated into a product. So, on the one hand, burgers are an internationally popular dish. Therefore, the company targets many people by creating such a product. On the other hand, original burgers made of meat contain a high protein content. By creating insect products that have similar macronutrients as the original ones, the company produces alternatives. Conventional ones influence the shape and flavor of the burger patty. As insects are promoted as a healthier and more environmental-friendly animal protein, the company offers a ‘better’ alternative to conventional burger patties made of meat. To conclude, the nutritional values of insects give a direction in which products insects are modified. Second, the texture and taste of insects set how they can be included in food products and dishes:

> *“The challenges are definitely that you can't work with insects the way you can with classic protein. Of course, I can fry them, or deep-fry them. But the end result is not*

> *like a schnitzel. It simply has to do with the shell and the protein structure itself. Because there's less there, so you have less moisture - so everything dries out faster. What is again an interesting topic is that you can do so much with insects in terms of taste. [...] So you take dried insects and enrich them with different flavor components. That's one approach. Or how we do it with our snack insects, that you take dried insects and add flavor in the form of a powder. You can build up an insanely varied range of dishes and the big difference is that you don't have any cooking times.".*

One quality the company repeatedly emphasizes is the adaptable taste of insects. Its website describes the taste: "Our whole insect snacks are crunchy and taste subtly nutty.". Moreover, the taste of its insect burger patty is described as: "hearty and with a good bite. Buffalo worms themselves taste discreetly nutty and therefore do not stand out prominently in the patty.". Put differently, as insects' taste is not too dominant, the company can incorporate insects in various products. Besides the taste, the texture is another factor influencing how insects can be modified into products. As mentioned in the statement above, the company works with whole and processed insects. The processed insects make it possible to integrate insects into various products such as protein bars, falafel, burger patties, and more. A strategy that a few insect traders in Europe follow is that the company sells flavored and unflavored whole insects. The company explains this strategy as follows:

> *"The whole insects are an important tool to create awareness and to consciously show and let consumers taste the insect. But the future lies in processed products. Of course, it is easier to sell a burger than a whole mealworm. That is also the path we are taking. Namely, to focus on whole products.".*

This statement demonstrates that the company includes messages and agency in the products it creates. It includes the time and place in its product creation, it is located in as it includes the lack of education on edible insects existing in Europe. However, it is not only the target group that indirectly modifies which products the company incorporates edible insects, but also the materiality of farmed insects. The nutrients, taste, and texture set the tone for how insects can be modified and with which flavors they can combine.

One last aspect impacts the developing process of edible insect products. Even though one could think that the regulations in Austria had an impact on the company's product creation, the reality seems different. Against the regulations until 2021 that prescribed insects be sold in the whole form, the company created products with processed insects and sold them on its webshop. As mentioned above, the EFSA's authorization processes enabled the company to offer its burger patty in supermarkets in Austria. So, they influenced the distribution of the company's products. In terms of product development, however, the authorization processes on eleven insect species have an indirect impact. The European regulations standardize the farming process and give direction on what insect species are

cultivated. My question about how the company decides which insect species it works with was therefore answered with: “That is easy to answer. In Europe, there are two handfuls of insect farmers who breed five-six insects for human consumption and these are the ones we offer.”. The insect farmers follow the hygienic and standardized regulations set by the EU and which species are allowed to be cultivated. As a result, the Austrian edible insect company can only work with the insects available on the European market as it strictly avoids importing insects from Asia. Two reasons for this are that first, the company promotes its local production within the EU, which is more environmentally-friendly than importing it from Asia. Second, the company values the “highest breeding standards for human consumption in Europe”. It does not explicitly argue that breeding standards in Asia are low. However, contrasting Asia with Europe and using the superlative to describe European farming speaks for itself. As the insect species' nature, taste, and texture influence product development, the insect farmers also affect the process. One last example should demonstrate the materiality of insect species, the farming process, and also to whom the product is targeted to co-modify the product development. The insect burger patties are based on buffalo worms – an insect the company describes as highly efficient in converting feed into body mass/ protein. The company's website labels the buffalo worm as an "Efficiency miracle. Our buffalo worms are extremely frugal. Compared to cattle, they cause 28x less CO2 emissions.". Additionally, it calls it an "[u]pcycling world champion. Insects can convert otherwise unused agricultural products such as surplus fruit and vegetables into high-quality protein.". Thus, the environmentally-friendly values of farmed buffalo worms due to their efficiency of converting feed into body mass, as well as their healthy materiality, affect which products they are suitable to be incorporated. Furthermore, these values can be aligned with what food potential consumers might eat. What I want to stress, similar to Asdal (2015) in her work on innovation papers of the farmed codfish, is that

> *“the market is written into the body of the cod, meaning that not only do the innovation document seek to time the necessary events in order to achieve a successful co-modification process, the scientists in the field also work to time the biological with the market, in this case so that the cod reaches market size.” (p. 179).*

Applied to my case, a range of actors are co-modified when the company develops edible insect products. The target group, the materiality of the insects, and the standardized farming process are all written into the body of the product. At the same time, the modified body seeks to modify the group it targets as it gets written and digested into the eater's body. Moreover, the creation of edible insect products aims to be bought, create a market, and nourish the size of farming sites. What is happening in the product development process is a *co-modification* of

insects, humans, and markets. They transform each other by eating, digesting, and nourishing (Asdal, 2015; Asdal & Cointe, 2021).

6.1.4 On Tinkering in order to Valorize Edible Insects

I identified one aspect prevalent in the company's doings. It is the aspect of tinkering. The market of edible insects in Europe is still new and not widely established. Insects as food face disgust and aversion in Europeans. As the Austrian company aims to impact human health and the environment, it must find the right strategies to establish acceptance among Europeans. In the material I collected, I could identify diverse target groups addressed. First, the company targets an unspecific, broad mass called everybody through its various products. Second, it focuses on nutrition- and environmentally-conscious athletes. Having two target groups, one unspecific, another specific, is friction per se. However, as the answers to questions about who the target group was often a bit unclear, it seemed to me that the company does not want to specify too much but keeps open to what works best and adapts its strategies accordingly. Another aspect I observed is that the company most dominantly addresses the future and environment instead of creating clear slogans targeting one of these two groups. After most product names, the wording “FOR FUTURE” follows (e.g., Burger for future, ready-mixes for future, and protein bars for future). Additionally, the company uses the slogan “Good for you. Good for the planet.” This seems to be more in line with its focus target group. However, my observations were confirmed by the company:

> *“But the biggest challenge is certainly still how to communicate this properly and how to reach people without standing up and saying: 'Limits to growth have been exceeded for half a century, and everything is unhealthy, and meat is not acceptable, and....' That is certainly the wrong way and at the same time the biggest challenge. Namely, how do you communicate and transport this topic effectively?”.*

These activities of finding the right messages in the company’s marketing (e.g., slogans, packaging, products) for consumers willing to buy the products speak for tinkering practices. The products, marketing, and retail the company develops are not straightforward or linear but include tinkering, trials, and errors. For example, in 2018, the company already had its pure insects in a large-scale supermarket for a particular time. Due to the legal situation, the supermarket backed out again. Thus, the company had to find new locations to sell its products. As Asdal (2015), Asdal and Cointe (2021), and Heuts and Mol (2013) point out, success is never guaranteed in practices of valorizing. There is never a guarantee that the modifications the company co-enacts lead to the result that most Europeans perceive edible insects as *good to eat*. However, the company puts much effort into succeeding. So far, the

company has promoted the environmentally- and future-friendly values attributed to edible insects in its marketing. But as one team member argued:

> *"What kind of person bases food decisions primarily on the size of the CO2 emissions? Nobody does that. Nobody does. Well, of course some do. I do it too. Without being completely radical in the plantbased or entomophagy corner, but at the end of the day nobody does it. It's the arguments that convince. It's taste and protein content and quality and health and all that. What's not is: we eat what we eat so that people will still be well in seven generations. Would be nice if it was.".*

So far, it has included much marketing addressing the future, such as the slogan "EAT FOR FUTURE". It wants to change this promotion to a focus on the health benefits insects have for individuals as it thinks people who care about a healthy diet might be more willing to buy edible insects. Changing its marketing strategy to promote the healthy aspects of edible insects over the environmental ones does not only speak for valuing healthy humans but also illustrates the company's goal of maximizing market reach. However, the company describes the reason for its decision to change its marketing strategy as follows:

> *"We're talking about real omnivores, people who like to eat well, but who also care about their own health, the planet and the environment. And that is certainly the broadest definition of the target group anyway. And you should communicate at this level. And we are currently still communicating more on this Greta Thunberg Fridays for Future track, where I obviously scare off 9 out of 10 people.".*

The company strives to bring its marketing into the present, away from labeling insects as future food but eaten now. This strategy aligns with Puig de la Bellacasa's (2011) thought that non-humans articulate a specific reality and thereby have a world-making effect. In other words, marketing insects as future food might be misleading as the company wants to sell insects in the present. It is not about saying what marketing is effective, right, or wrong – instead, what can be extracted from the quotes above is that the company is aware of the world-making effects of how it presents and promotes insects. Put differently, slogans and packaging communicate messages. As Puig de la Bellacasa (2011) writes: "how we present things matter." (p. 87). However, what is readable from the empirical material is that finding the proper marketing and points of sale is a real tinkering and open-ended process. Throughout the journey, the company could find out on which sites its products are bought, who is willing to eat insects, and what messages should be communicated. For example, the company emphasizes that its products sold outstandingly well at a climbing hall:

> *"The most important channels are the ones where you don't have to convince anymore. I took the second version of our protein bar to the climbing hall and it sold like hot cakes. It certainly sold better than at the supermarket checkout. It's not there yet, but because there it faces completely different competition and has a completely different target group. The broad masses are not the niche. In sales, we have to concentrate on the channels that have a high rotation, because there are simply target groups running around to whom you don't have to explain the topic.".*

Nevertheless, even if the company already knows what it wants to change, changing whole marketing takes time. Hence, it still communicates on the level of “eating for the future”, but seeks to change that in the future.

> *“Even when I scroll through it briefly, FUTURE stands out everywhere. It also needs to be redone from the ground up. Not only the homepage, but also the branding and packaging of all products. There should be nothing about the future at the top - that's the biggest mistake I see there. Everything is redone at the end of the day. Of course, with the basis of what is already there. But it has historically grown with the focus. So we're already going to revise it thoroughly.”.*

The last aspect that highlights that practices of building a market for edible products are linked to tinkering and being adaptive shows the following statement: “How can you establish on this market, where Nestle or other big players in the food industry can jump on board from one day to the next? How can you establish yourself there in the long term?”. In the cooking class and interviews, this aspect of fearing that big food companies could make establishing the company’s products difficult came out quite clearly. The company mentioned that it is pretty confident that edible insects will find their way into European cuisines in the future. However, they are worried that big companies make it difficult to lead the market. Therefore, the company’s members emphasized they might change its focus in the future – from a broad assortment to purely sports food. The company needs to be adaptive depending on how the market for edible insects develops. This, again, stresses that tinkering is part of creating a market.

To sum up, in practices of valorizing insects to make them perceived as *good to eat* by most European consumers, processes of *co-modification* and relational transformation take place. Through strategies of educating values and learning how to cook with insects, disgusted minds and tongues are aimed to be modified. Scientific and institutionalized knowledge, regulations, and personal valuations prove that insects are good. In the creation of edible insect products, not only the targeted consumers are written into the product, but also the materiality of insects and the farming procedures. Simultaneously, the products seek to modify the market and potential consumers' perception of edible insects as *good to eat*.

6.2 The *Registers of Valuing* Insects as *Good to Eat*

So far, I have analyzed and described the processes of creating a market for edible insects the company enacts. This first part was dedicated to practices of creating, improving, enhancing, and valorizing. To comprehensively investigate how the Austrian edible insect company enacts insects as *good to eat*, I filter out the themes/ values/ registers the company communicates in its marketing. Furthermore, I combine these with practices and doing in

which these values are done. Some themes were already mentioned in the first part about valorizing. However, ordering them into *registers of valuing* draws a clearer picture of what is valued in edible insects and how this is done (Heuts & Mol, 2013). The themes I identified are: valuing the healthy self, valuing sustainability, valuing what is to be natural, sensual valuing, economic valuing, valuing change, and valuing the experience.

6.2.1 Valuing the Healthy Self

As mentioned right at the beginning of this analysis, the initial motivation to found a company that sells edible insects was to make citizens healthier:

> *"I have been very busy with various topics. On the one hand, the health issue of our nutrition. I studied health management and, in the course of my master's thesis, I spoke with many experts about the question: 'Does our state want us to grow old in good health?' No, actually it doesn't. And at that time I already felt that I didn't want to accept that and that I wanted to change that.".*

From the beginning, the company found ways to integrate this health value, which the members saw in edible insects, into its marketing. From developing sports food, promoting athletes as ambassadors, participating in sports events, and selling its products in sports halls, to creating slogans emphasizing health values in insects – valuing edible insects as healthy has always been a big part of how the company promotes them. The first sentence on the website's landing page writes: "Order edible insects and do yourself some good!". Many diverse spots on the company's website mention that insects contribute to a healthy and balanced diet. Insects are labeled as protein-rich superfoods and energizers containing high-quality nutrients such as fiber, vitamin B-12, and minerals like iron, zinc, and calcium. For example, the company states on one of its educational webpages: "Insects are the most natural form of animal protein. Insects provide us with up to 70% high-quality protein with all amino acids. In general, insects have a very balanced nutritional profile, and they are very well tolerated by us humans.". Writing statements on the website about the health benefits of insects is one thing. Also, on its packaging, the company adds: "Containing high-quality insect protein."

Moreover, by promoting its products on its website as healthy, the company highly stresses that insects are the perfect food for athletes: "Take advantage of the best proteins and high-quality ingredients as an athlete.". This target group is further valued on the ambassador webpage. Here the company presents many athletes that value the healthy nutrients of insects. The ambassador's statements about why they value insects are supported by photos showing them actively doing sports. Two athletes on the ambassador webpage value edible insects as follows:

> *“A vegetarian diet for an athlete could lead to supplementation needs/desires with B-12, iron and protein powders because we absolutely want to get the most out of a hard work-out. As I think a diet where one need to supplement with pills is not a great one, I was so happy to find insect as a sustainable full protein (+B-12, iron and more) source.”.*

> *“Protein is an important part of the diet - especially if you do strength training regularly. Insects are an excellent source of protein that can help you meet your increased protein needs and are more sustainable than other alternatives.”.*

Also, one participant in the cooking class, who referred to himself as an athlete, mentioned: “And on the other hand, as an athlete or marathon runner, the health aspect is important to me. So, the question is: how can I optimize my diet? In terms of nutrients, insects are great.”.

Another health aspect promoted by the company is quality. On the one hand, it says that insects are well tolerated by humans and, therefore, high-quality. The argument further stresses that human ancestors ate insects, which is why they can be seen as species-appropriate food. On the other hand, safety is guaranteed by a hygienic production site. Thus, the company values that it gets its insects from farms in Europe that are highly regulated by EU standards: “Insects are bred under strictly controlled and hygienic conditions for human consumption in Europe. We work with breeding partners in Austria as well as with European ‘insect farms’.”. In other words, high-quality in insects is, on the one hand, defined as the value of being well tolerated by human organisms and, on the other hand, created through strictly controlled European production.

6.2.2 Valuing Sustainability

Even though the company aims to focus on edible insects' health values in its marketing, it often adds the value of being an environmentally-friendly animal protein to insects. Dominant slogans of the company like "Good for you. Good for the planet" speak for this conjunction of values. Also, the ambassadors often value that insects are a sustainable protein source. One term that comes into play due to this conjunction is being an alternative food. As many athletes, for example, want to eat a diet high in protein and other essential nutrients, they are happy to find a more environmentally-friendly, high-quality, and well tolerated protein source other than meat. Hence, insects are often valued as a sustainable alternative to other animal proteins. Moreover, they are also valued as supplementing a plant-based diet, as it often leads to a lack of nutrients and protein. Thus, ambassadors and participants in the cooking class valued insects as alternative food:

> *“Insects are a great alternative to meat for me because they taste really good and are also helpful for sports due to their high protein content.”.*

> *“I have been eating 1kg - 1.5kg of meat per day since I was 15. I am aware that these amounts are not healthy and try to switch to vegetable protein as much as possible, but performance-wise I cannot cope with larger amounts of vegetable protein because the amounts are simply too stressful. Therefore, I am happy to be able to reduce my daily meat consumption by 250-300g with insects.”.*

> *“The environmental aspect convinced me to eat insects, because it is absurd what is being done to the environment with other animal protein. And on the other hand, as an athlete or marathon runner, the health aspect is important to me.”.*

The company also labels insects as a sustainable alternative food. One member, for example, said:

> *“The aim is simply to develop products that are of high-quality in terms of health and also have a nutritional value for the consumer and on the other hand are also demonstrably climate-friendly, more climate-neutral than many other meat substitutes or meat in general.”*

Also, the company's website promotes edible insects as a sustainable protein alternative: "Insects require significantly fewer resources in cultivation than other protein sources." But how does the company communicate and legitimize that insects are sustainable? On its website, the company dedicates entire webpages to giving scientific facts on the resource consumption of insects compared to other protein sources. Written text and visuals support the facts to make them more tangible. Furthermore, it hyperlinks to the FAO report as a source to legitimize that the knowledge it shares has institutionalized scientific credibility.

The future is very present in the company's marketing. All products are named "FOR FUTURE". Furthermore, the company encourages at different spots on its website to "EAT FOR FUTURE". What the company wants to highlight is that eating insects is an act of caring for future generations and the future of the planet. As mentioned in the section about practices of tinkering, this marketing strategy is something the company wants to reduce or get rid of. However, it is still done and stresses that the company values sustainability in insects.

6.2.3 Valuing What is Natural

A third register I came across in the empirical material is arguments that frame insect eating as something natural. The website writes: “Insects are the most natural form of animal protein.” This argument is furthermore supported by the explanation: “Insects have always been eaten by humans, we are talking about a species-appropriate diet. Insects are very well tolerated by us.”. In other words, the company presents insects as species-appropriate food for humans. Humans tolerate it well, and even though Europeans have not eaten insects in the last centuries, humans have eaten them in general. Moreover, the company explained in the cooking workshop as well as in one interview: “Otherwise, it's a really interesting and good protein for the body. And yes, it is part of a balanced diet in my mind. As one team member

preaches: we come from monkeys, and they eat insects. Why don't we?" The company gives naturalizing arguments about why insects are a natural food on its website and other educational formats.

The pictures the company puts on its website also stress this connection to nature. First, some ambassadors are depicted in nature or while doing outdoor sports, like biking or playing tennis. Second, the shopping page of the protein bar shows a picture of an athletic man practicing outdoor climbing without any safety ropes.

Lastly, cultivated insects are presented as being farmed in species-appropriate conditions. This argument is only illustrated through words and not made transparently by giving insight into farming sites. However, the company writes on the website:

> *"Insects as food are bred under species-appropriate conditions and do not compete with their wild counterparts. Unlike mammals, buffalo worms, for example, are naturally more frugal and more suitable for keeping en masse. Living densely together is also normal in the wild.".*

Moreover, it states that "at the end of the harvesting process, insects are killed by freezing, which is similar to their natural death with the onset of winter." In other words, the company frames eating insects as ethically acceptable due to species-appropriate farming conditions.

6.2.4 Sensual Valuing

A prominent valuing practice in how the company enacts insects as *good to eat* is devoted to sensual appreciation. Taste is central to the company, as good taste mostly convinces consumers whether they consider insects as *good to eat*. Thus, the company is engaged in diverse forms of sensual valuing. One obvious one is the food it creates. I elaborated on how the company creates its products in the valorizing section above. However, solely the fact that the company offers products containing insects meant to be eaten is a doing that values insects as *good to eat* as eating can be seen as the ultimate sensual valuing practice in the case of entomophagy.

The company's webpage describes the taste of insects as nutty, crispy, subtle, and easily adaptable. It includes taste descriptions in many places on the website. In the FAQ section, the company answers the question: "How do insects taste?". Moreover, it uses the adjectives tasty and delicious many times. These practices of describing the taste can be analyzed as a way to prepare consumers who have not tried insects yet. Therefore, it is an educational tool to remove consumers' disgust and aversion. When I asked which insect species one of the team members likes most, he answered very passionately:

> *“Because crickets are the finest tasting of all the insects we offer. It doesn't have a brute taste, but a delicate, nutty, almost marzipan-like taste when you roast them and they absorb other flavors insanely well. And when it comes to cooking time, they are very forgiving. At the cooking class, we let the crickets simmer on low heat for an hour and they were still slightly crunchy, but still nice and soft.”.*

This accurately illustrates the sensual valuing the company enacts not only on its webpage as an educational or marketing tool but also individually.

Furthermore, the company’s cooking workshop is an offer to teach consumers how to integrate insects into diverse, everyday dishes. The activity of teaching how to cook and the practice of cooking itself value insects as food ingredients. In this setting, insects are not valued as pure, single food or ready-made products but as an ingredient in various dishes. The following statement of one of the team members depicts the sensual learning experienced when he learned how to cook with insects.

> *"So one of the first dishes I made was braised crickets - I made a vegan vegetable stock that becomes a dark sauce. I put a handful of crickets in there. After thirty seconds to a minute, the whole thing was ready. That was quite interesting learning at the beginning.".*

The ultimate sensual valuing enacted not only by the company members but also by the consumers is eating insects. Eating insects is the activity the company seeks to achieve in Europeans. When explaining that the company currently wants to change its website and marketing, one member mentioned:

> *“The website tries to explain something to you first and not necessarily tempt you to buy. But in the end, that's what we want. And not to explain forever why insects are so great and good, but to sell insects. After all, that's how the impact comes about in reality. We have to eat it. Talking about it only gets us so far.”.*

This leads to the following practices of valuing: an economic one.

6.2.5 Economic Valuing

The webpage dedicated to the company’s mission writes: “Our company is about more than profit. Our goal is to build structures that have a long-term and positive impact on people and the environment.”. However, as the quote from one interview at the end of the last section on sensual valuing makes clear, selling is part of the company’s structure. The company frames it as a tool to impact health and the environment. Thus, making money through selling insects is an essential part of the company’s doings. In all of the material, the company members never described their motivation to found an edible insect company as based on making economic profit. But in the end, selling edible insects is what the company strives for. Selling is connected to all other valuing practices. For example, promoting healthy or environmentally-friendly insects aims to create values that convince consumers to buy

insects. Or, making insects tasty, which is seen as the ultimate convincing tool enhancing willingness to buy. All of its marketing strategies and tinkering have the objective of optimizing sales. So far, the company offers its products at its online shop, at gym halls, and the burger patty at a large-scale supermarket. Nonetheless, its products did not make it into the mainstream yet. Thus, the company keeps tinkering to find the right strategies, communication tools, and sites where it sells its products efficiently:

> *"I rather say we have to go where we don't have to convince people anymore, and that's just more the issue. At the end of the day, it's all about impact. Of course, impact comes from scaling and reach, and of course it's hard to do that when you have four product categories with 21 products and none of them make it into the mainstream.".*

In the cooking class and in one interview, the company stated that its ultimate goal is to be the market leader in Europe one day. These statements show that improving and increasing sales of edible insects is a major activity the company is working on.

> *"Our company has the goal to become the European market leader and to further expand and lead the market in the coming years. In ten years, insects will be a fixed part of the menu and we will be active throughout Europe and will also market our products throughout Europe and hopefully be eaten by consumers on a large-scale. A lot will certainly have to happen. But we are motivated to continue on this path and to lead the market.".*

Linked to the objective of increasing sales is the wish for market growth and price decrease. At this point, the concept of *co-modification* can once more illustrate the logic behind the connection between sales growth, market growth, and price decrease. The company aims to increase sales, automatically demanding bigger production sites and growth in the market.

> *"If a big industrialisation of the subject hopefully does happen, it would definitely be cost-effective. In a time when everyone is looking at wallets, that's a very interesting aspect. Because they are very cheap to raise if you do it on a large-scale.".*

The company argues that if production got large-scale and more efficient, the price of insects could decrease. One member mentioned that farmed large-scale insects could potentially be very cheap proteins. This brings me to one observation that surprised me throughout my research. When I bought insects for the first time, the price of 125g of 19,90€ appeared to be very expensive. Throughout my research, no participant in the cooking class or interviewee mentioned the price as a deficit, although I expected this to be part of my findings. As I asked about obstacles and deficiencies of the market, I think there would have been space to comment on the price. However, as the quote above shows, the opposite – framing insects as cost-effective – was stated. Only on the FAQ website the company answers how the price comes into being: "Edible insects are bred specifically for human consumption. The breeding farms are still small and not automated. Insects are therefore currently relatively expensive. If

the demand for edible insects grows, more can be invested in research and development." This statement confirms the entanglement between sales growth and market/production growth. Even though I did not have this in my empirical material, I can imagine that the relatively high price of insects might be an additional factor that makes the integration of insects more difficult – following the logic: Why should someone buy and eat something they find disgusting and is expensive on top.

A last economic valuing that leads me to the next *register of valuing* is linked to the concept of a circular economy. On its webpage, the company values that insects have the potential to be farmed in circular systems. "Insects are an important component of the circular economy, and today around 2/3 of the feed for insects comes from side streams (e.g. surpluses from agriculture, vegetables, old bread, brewer's grains).". Concerning the topic of circular economy one team member said:

> *"The topic has so much potential because it closes cycles and does not create a new chain and dependency at the other end of the world. Instead, it enables us, as is customary in nature, to transform residual material into a raw material again on site. The issue of waste and rubbish is also socialised. There is a rubbish bin where you throw something in and it is collected. That doesn't work either. That is already a false pattern that has to be broken up again.".*

Moreover, the insects the company gets from Dutch insect farms are already reared in circular systems on waste streams. However, the company values insects as having the potential to be reared on waste streams. This valuing stands not as one that can be defined as appreciating insects as part of an efficient economy but also as contributing to changing economies. Put differently, insects contributing to a circular economy also links them to being valued as a gamechanger.

6.2.6 Valuing Change

"I always like to say that from a system science point of view it is a gamechanger. That is the core argument for me. It's a very rational one, a very economic one.". This quote by a team member of the company illustrates further the points of connection as insect's efficiency is considered worthy of improving economic systems. On the website, insects are called a gamechanger on several pages. On the Mission page, for example, it is written: "We work with real gamechangers." The naming is not only due to its potential to contribute to an efficient circular economy but also due to its environmental benefits as a sustainable animal protein alternative. The company frames insects as part of the solution to rendering diets and food systems more climate-friendly and resilient. The company values insects' integration into European food culture as revolutionary. Moreover, the company promotes its burger as world-

changing as it writes on the webshop: "Can a burger change the world? If one can, it's ours!". This marketing is further emphasized by the visual way the company presents the burger. On the burger depicted on the webshop sticks a white flag with the slogan "EAT FOR FUTURE". This can be interpreted as a sign of revolution and conquest. The real burgers the company sells at its events and the pop-up store has a similar flag.

In addition, to the wording of insects as gamechangers, and the visual presentation of the burger as revolutionary, the company presents its doings in the past as rebellious, revolutionary, and moving. It calls itself a pioneer that puts lots of effort into educating consumers and policy-making to foster change. The webpage states: "As a pioneer, we have been working since 2011 to establish insects as a sustainable source of protein for human nutrition in Europe." As already mentioned at the beginning of the analysis, the path as a pioneer was not an easy one. The company said that no one had waited for the issue of entomophagy. It had to deal with much rejection and "no"-sayers. On top of that, the company's activity selling insects since 2018 meant defying the legal situation. In the cooking class, one team member shared that the company also received some threats to be reported due to its illegal sale. Besides the wording like gamechanger, pioneer, first mover, and calling the company a movement, the illegal activities also testify that the company values insects as a changer.

6.2.7 Valuing the Experience

The last *register of valuing* is strongly consumer-oriented. During the cooking course, I interviewed the participants, asking them what their motivation was for attending the cooking course. One answer from many, among others, was related to social experience. In other words, some valued experiencing something new with family or friends or got the cooking class as a birthday present. For example, one participant answered:

> *"[…] I wanted to do something together with a friend. After my older son said that he wouldn't go, I took my younger son with me. We just want to enjoy the evening together and try something we wouldn't normally try.".*

On the one hand, the participants value the social experience of the cooking class. This is often associated with a certain openness towards the topic of eating insects. On the other hand, the company is also keen to ensure that the participants have a good evening:

> *"The core element of a cooking class is to have a good time. […] I come from a more upscale gastronomic background and I wanted to take it up a notch. That's why we only serve wine, beer and water. There are four courses and we prepare the whole thing with the people, whereby they can also stay seated, after a certain point.".*

Creating a good, cozy atmosphere is part of the company's persuasion strategy. One company member said that they could convince even participants who attend the cooking course with great skepticism towards insects through a pleasant conversation with wine or beer. The cooking course is an example where I was able to experience the described homely atmosphere, and I imagine the company also tries to create this atmosphere at other events.

Even in the online shop, sentences like "Curious? Try our products right now!", accompanied by a button with a hyperlink "TO THE SHOP", encourage people to try and buy. Here, a connection happens between encouraging people to try insects and buying them simultaneously. The company is aware that many Europeans approach the topic cautiously and that a good eating experience must be created before they are willing to integrate insects into their everyday cuisine. This is tried to be created through events, positive atmospheres, and convincing taste. The company also offers entry-level products such as a bar of chocolate with a few mealworms as toppings. The goal is to get people to repurchase and eat again through a positive experience and convincing arguments. Creating positive social experiences, whether online or at events, is a strategy to modify perception and overcome disgust in customers is often associated with a certain openness towards the topic of eating insects.

6.3 Valorizing and Valuing as Practices of Caring and Not-Caring

As insects are not at all a regularly eaten food in Europe, strategies to integrate insects include a lot of tinkering, adaption, and trial and error. All of the tinkering actions in practices of valuing and valorizing described above imply care work. Caring about healthier, more environmentally-friendly, and responsible diets was the team's initial motivation to find an edible insect company and care for its integration in Europe. However, the described doings in this analysis are all linked to caring as [c]aring is an activity in which valuing is implied—both caring about and caring for have a 'good' at their horizon. At the same time caring indicates efforts that are ongoing, adaptive, tinkering and open ended." (Heuts & Mol, 2013, p. 129). As caring is a practice of valuing and valorizing, I want to connect this term to the feminist approach of Puig de la Bellacasa (2011), who pays attention to the marginalized and alternative human-insect-relations in care practices. As I aim to draw a comprehensive picture of how the Austrian company enacts insects as *good to eat*, it seems crucial to dedicate one section to what I identify as being not or less cared for. I do not seek to moralize whether the company's enactments are good or bad. Instead, these elaborations should foster attentiveness to reflexively thinking about how things are done and how they could be otherwise. To explain my approach with the words of Puig de la Bellacasa (2015) on soil care:

> *"It involves unpacking what is actually done under the name of 'care'. My readings of tensions around notions of soil care in this article is marked by a feminist politics that brings attention to ethico-political questions about such matters as who cares for whom and what forms of care are prioritized at the expense of others –". (p. 707).*

I do not want to presume to be able to find all the practices of valuing and *caring* the company does not enact. On the one hand, I identified these marginalized and alternative practices by re-reading the FAO report and going through the literature in my State of the Art. This method needs the awareness that it also has world-making effects. Meaning, by deciding to identify "neglected things" (Puig de la Bellacasa, 2011, p. 100) through re-reading the FAO report and the literature I work with in this thesis, I immediately marginalize alternatives – literature and practices I did not come across and therefore did not include it here. Nevertheless, as I could find practices the company does not care for through the chosen method, I am convinced my findings are enough for the scope of a master's thesis (Puig de la Bellacasa, 2011; 2015).

As a western institution, the FAO published the groundwork report on entomophagy in 2013. This report brings together a comprehensive overview of how new western science on entomophagy values insect eating as healthy and environmentally-friendly, as well as illustrating how insect eating is done worldwide. In other words, the report not only gives information about nutrition values and numbers and how much fewer resources insects need, but it also describes which species are eaten worldwide and which harvesting techniques are practiced. In summary, wild-harvesting, semi-cultivation, and cultivation are the three categories of techniques. The last cultivation category is sub-categorized as industrial and household cultivation. While describing what kinds of harvesting methods are practiced, the report gives additional opinions on problems of overharvesting and issues of a lack in well-developed cultivation strategies. It is not that the report judges whether industrial cultivation or household cultivation is better than wild-harvesting or semi-cultivation. It informs, gives examples, and states what techniques are beneficial and effective and which are harmful to environments and species populations. In its authorization procedures of eleven insect species, the EU goes on the path of striving for large-scale industrial farming. Even though farming sites are still small-scale, the approach of standardization is currently being enacted. When talking about other harvesting methods, such as wild-harvesting, semi-cultivation, and household cultivation, one company member said critically:

> *"You just have to the benefits of insects and deal with this topic in a scientifically sound way. But that is part of our knowledge society, that knowledge is not necessarily... That a critical approach to knowledge is also a topic in itself. It is part of our culture that everything has to be examined to prove its marketability, although more people globally eat it every day than not. And it has always been part of the diet in the most diverse cultural circles... from the menu. That is always the western doctrine, which does not exist in many other countries of the world. There are over*

> *2000 species of insects that have been proven to be consumed globally. The fact that a handful of species are now on the EU's list of Novel Foods is also odd.".*

As the quote shows, at least one of the team members thinks critically about the Western approach of integrating edible insects, comparing the 2000 species worldwide eaten without any regulations to the strict EU way of standardizing eleven insect species. Even if one team member made this critical account, the company follows the path of the EU and dissuades European consumers from collecting insects in the wild. On the FAQ page, the company writes:

> *"These [insects] come from controlled, hygienic and safe breeding farms in Europe and Austria. We also advise you not to collect insects in the wild and then eat them. Insects are important for our ecosystem and many species are protected. Furthermore, insects from the wild are unhygienic and not safe food."*

During the cooking class, one company member mentioned the HIVE as a kitchen aid developed by an Austrian to rear insects at home on a waste stream. He said that he uses it at home. When one of the participants asked about the HIVE and how to rear insects himself, the company member suddenly advised the participant not to use it as it needs much tinkering and care and is complicated. The conversation led to the team member offering the participant a price reduction and pointing out the benefit of the company's easy-to-prepare products. Moreover, as mentioned in part on economic valuing, the company hopes for large-scale industrialization of insect farming and then to become the market leader. To conclude, in its doings, the company strives to integrate edible insects through methods of large-scale industrial cultivation. It talks against household cultivation, and even though the company seems to reflect on the procedures of standardization in the EU critically, it also advises not to follow methods of wild-harvesting or semi-cultivation.

Another aspect the company claims but does not fully practice is transparency. On the Mission website, the company states:

> *"We communicate 100% transparently. If we cannot yet achieve one of our standards for a product, we communicate and justify this openly and present concrete plans for improvement. Furthermore, we are open and grateful for your ideas and feedback and are always open for personal exchange.".*

On the one hand, the company makes transparent where it gets its scientific information from. Moreover, it makes transparent which countries its insects come from. However, just naming it does not make it fully transparent. I would argue that transparency is, for example, created through giving insights into farming practices, naming concrete production sites, and showing how price comes into being. On the subject of transparency, one team member stated:

> *"And then we are also behind creating transparency with regard to where and how the production really takes place. Because most people have very little idea about*

insect breeding. But this is also a topic that we will certainly have to address more broadly, in the sense of providing more insight into how it works.".

This statement shows that not doing does not always imply not caring. However, even if the company cares for transparency or alternative ways of harvesting, what has real world-making effects, in the end, are its active doings.

7. Conclusio

In this thesis, I analyzed how an Austrian edible insect company enacts insects as *good to eat*. In order to approach the enactments the company puts forward – including human and nonhuman actors – I gathered empirical material from three methods: Website analysis, interviews, and participatory observations. Furthermore, my research design of analyzing different modalities (text, visuals, and product flavors) in the empirical material has the purpose of extracting the practices that value and make insects *good to eat* comprehensively. I structured my analysis in three sections. In the first, I described the valorizing practices – meaning the processes of market creation and making insects a commodity which the Austrian edible insect company enacts. In the second section, I identified *registers of valuing* to illustrate the values the company tries to stabilize and how it does it. These *registers of valuing* have to do with valuing the healthy self, valuing sustainability, valuing what is to be natural, sensual valuing, economic valuing, valuing change, and valuing the experience. In the third section, I took a different perspective on my empirical material to ask not only about the care practices that are part of the company's enactments but also about what it does not care for in its doings. In this conclusive section, I summarize the findings I perceive as most relevant. Additionally, I set my main findings in context to the discourse around entomophagy. I do this in order to take an analytical and, to some degree, critical stance on the contradictions and tensions I identify in the company's doings as well as the overall discourse of entomophagy in the EU.

The company's initial motivation to start a business selling edible insects in Europe is grounded in the wish to change unhealthy eating habits and render food systems more climate-friendly. As the company members are very convinced about edible insects being a healthy and sustainable alternative protein source, they wanted to do something to integrate them into Europe. Although founders' initial engagement with edible insects is rooted in education, they believe the most significant impact comes not from talking about insect eating but actually practicing it. This belief brought them to start a business that sells edible insect products, as offering actual insect food seems to be one step closer to integrating the impactful activity of eating insects in Europe. However, as the legal and cultural situation is not favorable in Europe, the company has been tackling two main obstacles: The lack of regulations towards edible insects in the EU, and the disgust of European consumers towards insects. In other words, the company has been involved in creating a market and making insects considered food. These activities include practices of creating, enhancing, improving, valorizing and co-modifying. As the roots of the company members lie in educating about insects, they integrated practices of informing and educating about the environmental and health benefits

of insects into their marketing. In order to build trust in customers, the company legitimizes the facts presented in its marketing in three ways. Using scientific and institutional references on its product packaging, website, and in the stories, the members tell at events is a first way of gaining credibility. By hyperlinking to the FAO report on the company's website and translating the reports' scientific facts on the resource efficiency of insects into stylish graphics, the company aims to create credibility. Using the trustworthiness of the FAO in order to gain credibility can be framed similarly to the case of Penders and Nelis (2011) on using scientific studies in the marketing of Unilever R&D. The interesting thing is that personal statements of consumers and ambassadors often repeat these facts – stabilizing the credibility of such "international knowledge institutions" like FAO even more (Miller, 2007). Legalizing edible insects in EU markets is a second influential factor for legitimization. This activity is not carried out by the company, though it is engaged in trying to educate and convince policy-makers. The use of ambassadors as personal legitimization is a third way. As mentioned, these ambassadors often re-confirm the scientific facts presented by the company, that it took from the FAO report. The use of ambassadors as personal legitimization is a third way. As mentioned, these ambassadors often re-confirm the company's scientific facts, which it took from the FAO report. The way ambassadors value the scientific facts is done personally, linking insects' health or environmental benefits to their own lifestyle. To sum up, putting forward legitimized facts on the benefits of edible insects is a strategy of making consumers ready to give insects a try.

However, education alone does not convince consumers long-term. The company clearly stated that good-tasting products are the key factor that makes consumers value insects as *good to eat*. Thus, a vital practice of the company is to create good-tasting products with clear messages in its marketing to establish insects as *good to eat* food among European citizens. Taken together, to change this unfavorable situation to one in which insects are eaten and sold, the company's valorization practices included processes of *co-modification* (Asdal, 2015; Asdal & Cointe, 2021). To make this more precise, the company has been striving to modify the unfavorable legal and cultural situation in a relational matter. One key objective of the company is to modify consumers' perceptions of insects. By educating and creating good-tasting products, the company strives to change the heads and tongues of Europeans. This is not easy or done with a linearly planned strategy, as also the diverse results of the consumer behavior studies in the State of the Art show. The company modifies insects into products that are perceived as good-tasting. These modifications of insects happen through creating a range of products that cover popular international dishes and flavors – like burger patties or ready-mixes such as brownies and falafels. However, as the experiment by Tan et al. (2016)

shows, insect food must be exceptionally good compared to conventional food in order to be eaten repeatedly. Furthermore, the company stated that even if it convinces consumers to eat insects, a challenge is to make them eat them regularly. Thus, the modification process of creating good-tasting insect products is not separated from the company's target group. The company's product creation and marketing follow the strategy of co-modifying food that sells and is eaten. Thus, the company always has the target group in mind while creating products and marketing. This leads to practices of tinkering and some tension the company faces. On the one hand, the company follows its initial motivation of changing European cuisines to be more environmentally-friendly and healthy in a large-scale manner. Therefore, the company develops a broad range of internationally popular products with diverse flavors that targets a broad definition of consumers. On the other hand, the company increasingly notices that the target group that works best – not only now but perhaps long term – are health-conscious athletes that also, to some degree, care about environmental issues. Focusing more on the sports niche by creating products, marketing, and retail addressing this focus target group might moreover be strategically wise as the company fears big food companies taking over the market in the upcoming years. However, the company still pursues the dual path of targeting a broad mass and athletes as it allows it to stay adaptive to what works best. This dual way creates a slight ambiguity in the company's doings. Moreover, the company does not only sell products with processed insects but also pure ones. This is a strategy not advised by consumer behavior studies (Caparros Megido et al., 2016; Hartmann & Siegrist, 2016; Menozzi et al., 2016). However, the company still sells it because it believes pure insects are an educational tool, raising awareness of entomophagy. Linked to the company's belief to focus more on the sports niche in the future, it also thinks the future of insects lies in processed foods. These contradicting strategies the company currently follows might be connected to the company's goal of becoming a market leader, which speaks for targeting the broad mass. These practices of co-modifying its strategies according to what works best in business terms demonstrate the market logics the company follows. It shows that even though the company clearly communicates its caring objectives to render European cuisines healthier and more environmentally-friendly, market logics are not secondary in its doings. Otherwise, the company would, for example, not be too worried about big companies taking over the edible insect market as this could also lead to more Europeans eating insects.

By pointing out these tensions between business logic and the initial motivation of rendering more healthy and sustainable diets in Europe, I want to show the complexity and ambivalence in the company's enactments. This does not aim to judge that the company valuing practices do not one hundred percent align with its initial mission but rather show that

valuation practices are also contextual, situational, complex, and paradoxical. The company is itself co-modified by the place and culture it acts in. Even though it sometimes acted against the law, it mostly aligns with the EU path of integrating a market for edible insects. By this, I mean that the company values the standardization of farming structures established in the EU, as it considers them hygienic, controlled, and safe for human consumption. On its website and in conversations I observed, the company talks against alternative ways of breeding and harvesting edible insects – particularly wild-harvesting and household cultivation. One company member gave contrary statements by calling it odd that 2000 species are eaten worldwide, while the EU has to prove that eleven insect species are safe for consumption by calling wild harvesting natural. However, the doing of the company aligns with the overall path taken in the EU – which follows the establishment of controlled (large-scale) industrial farming. This alignment can be similarly understood as Winickoff and Bushey's (2010) findings that the FAO's and WHO's *Codex Alimentarius Commission* gives standards and guidelines for regulating food and thereby executes epistemic and legal authority. This authority of the EU clearly co-modifies how the company enacts insects as *good to eat*. One could argue that the reason for the company's hope for the establishment of large-scale industrialization is that this allows a more efficient and more extensive integration of edible insects, which could have more significant health and environmental benefits. Nevertheless, the market logic behind that cannot be ignored in this hope. Furthermore, advising against using the HIVE – a household cultivation kitchen aid – shows that the company follows the EU market logic of building an efficient, industrially controlled market infrastructure for edible insects. In other words, even though eating insects is still an unusual practice in Europe, the company aims to establish it in a way oriented toward the market logics prevalent in European cultures. Therefore, one main takeaway of my thesis is to show that the path of establishing a scientifically legitimized, standardized, regulated, and industrialized market for edible insects in the EU is clearly reflected in the doings of the company – in other words, what the company cares for in its materialized activities.

> *Care is political, messy and dirty, not an innocent category, and even less so in technoscience. Care is a necessary everyday doing, but it can also become a moralistic regime of power and control. (Puig de la Bellacasa, 2015, p. 707)*

Investigating how entomophagy is done not only at the small size of an insect company but also throughout Europe can foster responsibility and reflexivity. What is visible is that Europe follows a path of scientific legitimization, standardization, regulation, industrial cultivation, and control. Similar to the question Ponte (2009) raises regarding the fishery ecolabel, one could ask whether the EU procedures of regulating eleven insect species is an efficient method that

matches the initial objective of rendering food systems more climate resilient. However, one argument that often circulates in the discourse of entomophagy is that integrating entomophagy in European cuisines is important, as Western diets play a leading role in international cuisines. In other words, even though insects are eaten in other parts of the world, they might lose attractiveness compared to popular Western food (Mancini et al., 2022). Assuming that this assertion is effective in the future, the way how Europe practices and wants to practice insect eating could have worldwide consequences. This is not to say that harvesting methods other than industrialized cultivation will die out. It also does not mean that industrial cultivation is worse than other forms of harvesting. Raising attention to alternative ways and indigenous harvesting methods by describing how entomophagy is currently done in Europe can nevertheless prevent the careless spread of a too powerful, marginalizing western, science-based logic.

To sum up, this thesis aims to show what relationally influencing modification – called co-modifications (Asdal, 2015; Asdal & Cointe, 2021) – of various entities occur in establishing a market of Novel Foods – in my case, edible insects. Earlier STS work on Novel Foods mainly investigate the ontology-making and promissory discourse of Novel Foods. Studies by Jönsson (2016), Jönsson et al. (2018), and Stephens and Ruivenkamp (2016) look at the materiality of Novel Foods, how they are visualized in order to make investors believe that they are viable products in the future, and how they relate to established foods. I take a slightly different stance by framing my investigations of the materiality of the Austrian company's edible insect products and its marketing as market creation processes. Instead of linking Novel Foods to STS discourse of ontology-making and promissory discourses that earlier work on Novel Foods do, I link my research to *Valuation and Evaluation Studies*. Similar to Asdal's (2015), and Asdal and Cointe's (2021) work on the codfish, I do not ask about insects' ontology but rather how it becomes a commodity. In other words, whereas ontological questions would ask "what edible insects are and what they can do" – a question raised by Stephens and Ruivenkamp (2016) regarding IVM – I pay attention to the processes that aim to make insects considered as *good to eat* among European citizens. However, similar to work on the ontology of Novel Foods, I included the materiality of modes other than language in my analysis. The method of MCDA allowed me to include various methods and materials in my research to answer how the edible insect company makes insects considered foods through various marketing streams. The comprehensiveness I tried to achieve by comparing my findings to the epistemological and legal framework allowed me to arrive at one main finding: Namely, that the EU's legal framework has a strong influence on how the Austrian edible insect company co-modifies insects in its activities. Thus, what makes this thesis unique is how it is

not only placed in the discourse of *Valuation and Evaluation Studies*, Novel Foods, but also in the topic of epistemic and legal authority occurring in practices of market creation of Novel Foods. Even if I did not go deep into the topic of epistemological and ontological power of food regulations, my findings might inspire future work to shift the focus to this aspect. For example, as the FAO report is such an influential groundwork, future research could pay closer attention to the power of the FAO report, how it came into being, who was involved in the making, and what power structures it puts forward (Van Huis et al., 2013). Another research topic could more closely compare EU regulations on insect farming to the FAO report. To conclude, as my research shows that the company is clearly influenced by legal authority, investigating how regulations come into being, what is valued and what is neglected might foster even bigger responsibility and reflexivity on how a market for edible insects is done and how it could be done otherwise.

8. Appendix

EC	European Commission
EFSA	European Food and Safety Agency
EU	European Union
FAO	Food and Agriculture Organization
FAQ	Frequently Asked Questions
GM	Genetically Modified Food
ipiff	International Platform of Insect for Food and Feed
IVM	In Vitro Meat
MCDA	Multimodal Critical Discourse Analysis
MQ	Main Question
SQ1	Subquestion 1
SQ2	Subquestion 2
STS	Science, and Technology Studies
UN	United Nations
US	United States
WHO	World Health Organization

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