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Visions and Missions in the Alternative Protein Industry: Perspectives of employees, directors, and investors

Bakalářská práce

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podpis

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Abstract

Alternative proteins are an emerging transformative food technology with the potential to address some of the world's pressing issues including climate change, animal welfare, pandemics, and food security. The industry of meat alternatives is young but rapidly developing, with a growing need for skilled talent. The theoretical background of this work draws on the existing Science and Technology Studies (STS) techno-optimism research, as well as the concept of mission drive, which has been examined predominantly in the context of nonprofit organisations. This project has investigated people within different layers of the global alternative-protein industry, including entrepreneurs, employees in start-ups, investors, and law experts. Semi-structured interviews looked at the participants' career journeys, reasons they decided to go into the industry, their perceptions of the industry and expectations for their future within it. Using thematic analysis, the results point to a strong mission drive of the participants, a tension between the industry competitiveness and the mission, and the issues of mission alignment during job searches. Compared to the available literature describing techno-optimism, the participants fit the picture in some aspect, but differed in their lack of strong entrepreneurial drive and their awareness of systemic solutions. Despite the very strong mission drive perceived across the industry, there was still a need to often compromise on it, which did not appear present in research on nonprofits.

Keywords: alternative proteins, techno-optimism, start-up, entrepreneurship, career, mission-drive, recruitment process

Abstrakt

Alternativní proteiny představují novou transformativní potravinářskou technologii, která má potenciál vyřešit některé z nejpalčivějších problémů lidstva, včetně změny klimatu, špatných životních podmínek zvířat, pandemií a zabezpečení potravin. Odvětví náhražek masa je mladé, ale rychle se rozvíjí a roste v něm potřeba kvalifikovaných pracovníků. Teoretická východiska se opírají o výzkum tématu techno-optimismu v Science and Technology Studies (STS), a také o concept "mission drive", který byl zatím zkoumaný především v neziskových organizacích. Tento projekt zkoumal jednotlivce v různých vrstvách průmyslu alternativních proteinů po celém světě, včetně podnikatelů, zaměstnanců ve startupech, investorů a právních odborníků. Semi-strukturované rozhovory byly zaměřené na pracovní pozadí účastníků, jejich důvody pro vstup do tohoto průmyslu, jak tento průmysl vnímají a vidí v něm svou budoucnost. Skrze tematickou analýzu se ukazuje důležitost mission-drive, napětí mezi soutěživostí průmyslu a posláním (mission) a také problémy se shodou poslání (mission alignment) během hledání práce. Ve srovnání s poznatky dostupné literatury týkající se techno-optimismu, účastníci se jim v určitých aspektech podobali, od literatury se ale lišili kvůli svému nedostatku "podnikatelského ducha" a také tím, že si byli vědomi důležitosti systémových řešení. I přesto, jaký důraz dávali účastníci na mission drive napříč odvětvím, popisovali stále potřebu dělat ústupky. Tato potřeba se liší od popisu podobných situací v literatuře o neziskových společnostech.

Klíčová slova: alternativní proteiny, techno-optimismus, startup, entrepreneurship, kariéra, poslání, nábor zaměstnanců

1. Introduction

The global food system is likely to undergo significant changes in the near future in order to deal with climate change effects and population growth (Vermeulen et al. 195). Climate change is already contributing to a higher crop insecurity (Ericksen et al.), and the growing population is driving the demand up year by year (Tian et al. 294), expected to peak at 10-11 billion people around the end of this century (Adam 462). With the economic growth in the Global South, meat consumption has been increasing, especially in China and India (Sans and Combris 106). Animal agriculture is responsible for 14% of global carbon emissions annually (Friel et al.), comparable to all transport emissions combined, including aviation and road transport (Ritchie). The United Nations' Food and Agricultural Organisation projects that between the years 2000 and 2050, total meat and dairy consumption will increase by 102% and 82% respectively (Sans and Combris 106). If the world keeps eating as much meat per capita as it is eating now using the same resources, the impacts on the world's biodiversity and global warming will be significant and hard to reverse (Godfray et al.).

Besides contributing to climate change, high-intensity factory farming meat production presents other major risks such as zoonotic diseases (Espinosa et al.), antibiotic resistance (Caniça et al. 41) and animal welfare (Anomaly 246). The majority of human infectious diseases originate from animals, and factory farming increases the risk due to the high density of animals, genetic similarity, and live transports (Espinosa et al.). This risk fully showed itself during the recent COVID-19 pandemic, which likely originated from a meat market in China (Worobey 951). Over the last decades, antibiotic use in farmed animals has grown and now makes up 75% of the total antibiotic use in the EU and the USA. The consequences of this use are an increased antibiotic resistance, leading to global health concerns in humans and animals, the threat of food insecurity, causing significant economic losses (Caniça et al. 41). Finally, there is a concern about the welfare of factory-farmed animals. In order to produce as much meat, eggs and dairy as fast and cheap as possible, current farming practices have optimised the farming process to be highly efficient. Some of the common practices include restricting the movement of pregnant and nursing pigs so much that they cannot turn around in their crate, placing hens in cages with less space than

one A4 paper per bird, and breeding such fast-growing chickens that their legs break under their own weight (Anomaly 246).

It is now clear that humanity needs to change their meat consumption - but how, and what are the options? Meat is an efficient source of protein, and its use in different cuisines carries cultural significance, which makes calls for reduction hard to implement. Meat consumption also varies significantly around the globe (Wisevoter). The top consumers of meat are usually countries with developed economies, typically from the Global North. The highest consumption is recorded in Hong Kong, the USA and Australia at around 120-140 kilograms per capita annually. Compared to that, India has the lowest number with less than 4 kilograms. Other countries on the bottom of the meat consumption list are mostly from the South Asian and African regions. Meat consumption is typically connected with economic growth, and when people's incomes increase, the proportion of the food budget spent on animal-based proteins rises with it (Sans and Combris 106). While meat consumption in developing countries is rising rapidly, a lot of the Global North countries have seen stagnation or even a decline, with the UK seeing a strong decrease in consumption (Stewart), as well as Argentina (Goyeneche).

As of now, countries of the Global North eat more meat than countries of the Global South. The situation is similar in the case of alternative proteins that aim to replace meat products. Most of these alternatives and also the producing companies are also consumed and located in the Global North, where they are slowly being normalised and widely available (Mylan et al.). If the aim is to reduce meat consumption, focusing on the countries that consume the most meat and that have access and can afford the alternatives without compromising their necessary protein intake (the Global North) makes the most sense. However, as future projections show, much more of the meat consumption will happen in countries of the Global South that have either already seen strong growth (China, Brasil) or are expected to in the next decades (Sub-Saharan Africa). This poses an interesting question - can meat consumption be decoupled from economic growth?

Concerns have been expressed about how the demands of the Global North towards less economically developed countries to reduce carbon emission or meat consumption can be harmful for their vulnerable populations (Vetter). Jha and Yeros discuss exploitation of the global South by countries of the Global North (262). The rise of transnationalisation of agriculture has led to what the authors describe as the strengthening of imperialism, leading to adverse effects on small farmers, disproportionately so in the Global South. Most of the

value generated in agricultural production is captured by large transnational corporations located mostly in the Global North. The phrase "global land grab" has been used in this context to denote the land transactions that happen largely in regions where transnational corporations can exploit the local corrupt or indebted governments (Borras et al. 209). The increase of foreign private control over large parts of agricultural land can lead to higher food insecurity, when the locally produced food is exported to richer countries and the local population has less control over the resources of their countries (Daniel 25). It is important to highlight and understand this context of global food production and the accumulation of power in the Global North when discussing the issue of current meat consumption levels. Whichever technology, policy or other kind of solution might be implemented, it is crucial to be mindful of the intended and unintended impact this can have to further the exploitation of the Global South. Any solution to this issue needs to be beneficial for the world's poorest and not improve the food system in the Global North at the expense of the Global South, as it has been happening recently. The possible solutions in the context of political systems are discussed in more detail below.

There are various levels on which meat reduction can be addressed. Within the boundaries of the current globalised capitalist system that most of the world's economy is based on, incentives such as subsidies, support for the development of specific technologies or placing restrictions and additional tax burdens are used to achieve change. Outside of this system, other options have been described that prioritise addressing climate change in more radical ways.

The concept of Degrowth challenges the dogma of the need for economic growth and suggests that a different political-economic system with significantly lower use of resources can provide good living conditions for the world's population (Kallis 291). One of the arguments is that economic output and resource use seem to be fundamentally coupled, which necessarily means that strong ecological policies will have to accept slower economic growth. This idea has been developed into various policy suggestions, which include boundaries for income, lower working hours, and favouring socially and ecologically responsible companies. There is an ongoing discussion whether capitalism can function without growth. The anthropological perspective can be useful to understand the possibilities of Degrowth through the study of other, non-capitalist and non-growth reliant cultures (Kallis 291).

Richards has taken a look at the rising phenomenon of eco-fascism (69). The Global South has been blamed for contributing to climate change due to population growth, migration or fossil fuel usage, despite the data pointing towards Global North countries as the major emission producers per-capita. A violent connection between white supremacy and climate concerns was made in several terrorist attacks in the last 15 years, when several mass murderers described themselves or their actions as “eco-fascists”, “green nationalism” or cited fears of overpopulation in their manifestos, while disproportionately targeting people of colour in their attacks. Richards further shows that ideas cited in these manifestos are entering the discourse on less radical platforms.

This project does not aim to explore the more radical possibilities for climate politics. The system this project is situated within is the current capitalist system, specifically the landscape of “techno-optimism”, a view that technology can be the solution to the world's problems and make it a better place (Danaher 54). Techno-optimism has been criticised in academia due to the negative unexpected effects new technology often brings. Some issues techno-optimism offers to solve are systemic, and the people coming up with technological solution do not have a deep enough understanding of the underlying problem and address the effects rather than the causes (Rostain 93). Guthman and Butler look at the emerging techno-solutionism in the food industry and observed that some tech entrepreneurs who enter this space lacked a clearer understanding of the problems they are trying to solve (10). Interestingly, their study concluded that compared to digital technologies, which are detached from the actual biological processes of food production and unlikely to address agriculture’s largest challenges, alternative protein development as a solution is in close alignment with the problem it is trying to address. Despite the critique of academia, the industry and the political system are often accepting of techno-optimism. Arguments for techno-optimism are often retrospective, examining the change in disease control, democracy, GDP, childhood mortality, and many other criteria that are used to evaluate the betterment of people’s lives (Pinker). These changes are attributed in large part to technological innovation. In cases of future techno-optimism, there is a range of severe future threats that can arise (and have arisen before), from climate change to existential threats emerging from unknown new technologies (Danaher 54), and they are part of the reason why future techno-optimism is prone to more criticism.

Instead of simply asking people to reduce their meat consumption, techno-optimists see the solution in offering alternatives to meat that do not require the consumer to need to

alter their behaviour strongly. Alternative proteins are an umbrella term for plant-based, cell-cultivated, and fermentation-derived products that aim to replace conventionally produced animal meats (Sexton et al. 47). While the alternative proteins industry has grown rapidly over the last decade, certain technologies are still in need of technological progress and scale-up before their products can become viable (Ye et al.). Besides the necessary technological progress, the industry is also limited by finding skilled talent to work in alternative protein companies (Stephens 32). Based on a recent survey conducted by the Good Food Institute (Good Food Institute, *Alternative Protein Startups*), more than half of the surveyed companies had difficulty hiring technical talent. People with backgrounds in biology, biochemistry, bioengineering, process engineering and other relevant fields might choose to go to other, more developed and better paid industries, such as the pharmaceutical industry.

To better understand the people in the alternative protein industry, this thesis takes a qualitative look at the paths of 12 different professionals. The participants include employees (scientists, engineers), founders and directors of companies (mostly new start-ups), investors who choose which start-ups in the industry to invest in, and experts in alternative-protein related policy and intellectual property law. This project allows for a new kind of insight - it adds a new perspective on mission-driven for-profit organisations next to the existing research on mission-driven nonprofit organisations and for-profit businesses. The qualitative approach through in-depth open question interviews is able to complement existing quantitative, survey-based information that exists about the needs of the alternative protein industry. The thematic analysis uses a flexible approach, where emerging themes can be analysed whether or not they were predicted at the start of the process. With the selected sample of various roles and backgrounds, the results paint a broad picture of a new industry, showing many different paths, reasons, and visions that participants have about their past, current and future work in alternative proteins. Anthropological literature has been examining new developments in technology through the lens of STS for decades and its insights are well applicable to new food technologies. As will be discussed in the next section, this industry is expected to grow and aims to address some important environmental and social issues. It is therefore a worthwhile effort to bring in this additional qualitative anthropological perspective.

2. Theoretical background

2.1 The alternative protein industry

Traditionally, soy products such as tofu and tempeh have been a staple in a large part of Asia for centuries (Sadler 250). They became popular with the rise of vegetarianism in the West in the 1960s (Zhang 702). As He et al. have noted, many customers are however not satisfied with products that do not resemble meat in flavour and texture, and since the 1980s, meat substitutes such as plant-based burgers and sausages have been on the market. Many of the currently sold plant-based alternatives have been developed to resemble animal meat products as closely as possible, including the appearance of raw meat and blood (2639). Plant-based meat alternatives currently make up around 2% of the protein market, and a market report by the Boston Consulting group and Blue Horizon Corporation projects that in 2035, they can take up 11-22% (Morach 125).

Fermentation-based products (also called microorganism-based alternatives) have been around since 1985. They utilise two technologies, filamentous fungi to grow a solid-state protein, and various microorganisms such as algae suspended in liquid from which a specific protein is extracted. The latter is known as precision fermentation. Their advantage is that by targeting a single specific protein, they can replicate specific properties of animal products, such as foamy egg whites. For this reason, they are also commonly added to plant-based meat substitutes (Morach 125).

The year 2013 saw the development of the first ever cell-cultivated hamburger, grown entirely *in vitro* in lab conditions, which cost $300,000 to create. This burger was produced by Mark Post from Maastricht University, who then went on to found a company called Mosa Meat, focused on commercialising this technology (Chriki 7). After almost a decade of investments and development in cellular agriculture growing rapidly, the first products are finally on the market (Morach 125) - SuperMeat's cultivated chicken in Israel, EatJust's cultivated chicken in Singapore, and most recently Bene Meat brought a cell-cultivated pet food to the EU market (Lopatka). The cost to produce these products is still orders of magnitude higher than animal meat products, mainly due to the gaps in scaling up the technology. Predictions show that with further technological development, cell-cultivated products could reach price parity with animal meat products in early 2030s, so within the next 10 years (Morach 125).

There are currently nearly 2000 companies operating in the alternative protein space, with more entering every month (Good Food Institute, *Alternative Protein Company Database*). Around 500 of them are registered in the United States, almost 400 in Europe and over one hundred in the United Kingdom, which means the majority is located in the Global North.

The industry has seen a strong growth ever since its beginnings, with an increase in funding, number of companies, range of products and consumer interest. Despite the recent dip in consumer demand and the following cool off on venture capital funding, there are strong projections for future growth (Good Food Institute, *A Deeper Dive*), with an expected annual growth rate of 19% globally over the next ten years (Foodmanufacture).

While plant-based alternatives have gained popularity, there is a significant portion of meat eaters they have not managed to reach. Providing a cell-cultivated meat product, identical in composition, nutritional value and taste to conventional meat, could help decrease consumption of animal products among people who do not find plant-based alternatives suitable. Several studies have looked into the attitudes of customers towards cell-cultivated meat, with most studies reporting that 50-66% of respondents would be willing to try the product, and around 30-50% saying they would eat it regularly instead of conventional meat (Zhang et al. 434).

The two most commonly discussed bottlenecks of the alternative protein industry are funding and talent constraints (Stephens, *Bringing cultured meat to the market* 155). During the last decade, finding skilled talent has potentially become the limiting factor (Stephens, *Join our team 32*). Based on a recent survey conducted by the Good Food Institute (*Alternative Protein Startups*), more than half of the responding start-ups had difficulty hiring technical talent. With the expectation of significant growth of the alternative protein industry, the Climateworks Foundation and the Global Methane hub project that 83 million jobs could be generated by 2050 (ClimateWorks). According to the Good Food Institute, the success of this prediction will also depend on workforce development.

Due to the alternative protein industry still being in its early stages, a lot of the infrastructure necessary for talent development is not in place yet. Only a handful of institutions currently include alternative proteins in their curriculum for relevant degrees such as Biology, Biochemistry or Bioengineering, with Tufts University (Tufts) and Israel Institute of Technology Technion establishing dedicated research centres for alternative

protein technologies (Technion). More support is also coming in from governments across the globe, as Denmark just published the first ever plant-based national action plan to help transition the country towards a more plant-based system (GFI Europe). Various roles are needed across the industry, from entrepreneurially driven company founders, managers, and directors to oversee operations, staff and science, technically skilled people to create products and develop new technologies, and people skilled in marketing and commercialisation of the products. As the industry is very young and has been developing quickly only over the last years (GFI APAC), there can be various reasons why over half of surveyed companies struggle to hire technical talent. The alternative protein industry has a large number of start-ups (Good Food Institute, *Alternative Protein Startups*), which can appear as a less secure place of employment compared to more established industries with stable players. Graduates from biology and biotechnology related degrees in general often pursue opportunities in the pharmaceutical industry, which also seems to be facing some talent recruitment challenges (PharmExec). Another possible reason could be the lack of awareness about the industry and its opportunities. As described above, the industry is very young and most training and academic institutions do not include alternative proteins in their curriculum and so many students can likely graduate without knowing and considering this option.

Understanding the backgrounds of people in different roles across this industry, how they learned about alternative proteins and what lead them to pursue this path can bring new and necessary insights into how to help bring more talent into this industry.

2.2 Mission Drive

In recent years, some for-profit corporations have tried to include social and environmental responsibility into their governance and mission. Many ideas have been proposed on how to successfully achieve this, and several have been implemented. Different types of organisational structures have been described based on their characteristics and leadership (Laloux). The most developed type are “teal organisations”, which are self-managed without a hierarchical pyramid with a distributed leadership and can be both nonprofit and for-profit. Another way to account for corporate responsibility in the current system is Environmental, social, and corporate governance (ESG). ESG is a set of considerations that can be used to inform investment decisions for individual corporations,

challenging the idea that only the company's financial performance should matter when deciding which companies to invest in. With more weight being put on the companies' behaviour towards their ESG responsibilities, individual organisations have started internal ESG reporting (Li et al.). Many companies have however been called out for "greenwashing" - reporting strong ESG data but having a bad ESG performance. Currently, a lot of the self-reported ESG data is unaudited, with no regulatory guidelines or international governing body (Yu et al.). There is potential for ESG to become even more widespread and have more impact on investing into socially and environmentally responsible companies, but currently there are many improvements needed. In recent years, another kind of organisations have emerged, that describe themselves as noncapitalist, following the previously described concept of degrowth. An example of this are networks that have been set up in Spain and Italy, which act as umbrella organisations to promote local currencies, producers, and eco-commune housing projects. They are based on democratic membership and self-management (Chiengkul 81). Another term gaining popularity have been the so-called "mission-driven" companies. A mission-driven business can be defined as a business that strategically aims to produce financial returns alongside intended social or environmental benefits (Maretich et al.). It is therefore not a nonprofit, but rather a business that has other goals alongside its profitability. Mission drive is common among businesses in the alternative protein industry (Biltekoff and Guthman 58), which is why this concept is explored in more detail in this section.

The additional commitments to social and environmental goals present a unique challenge as businesses try to grow and secure funding, while simultaneously preserving their mission. There is a common timeline that most successful start-ups go through. Mission-driven companies usually start with one or a few founders who have a vision to use a business to benefit a society in a specific way. In the "angel" stage, the start-up has some early investors, often acquaintances or mission-aligned investors. When the business has shown some growth potential, investors outside of the closer circle can become interested and the company can reach out to venture capital investors. As Biltekoff and Guthman describe, the investors are likely to be neutral about the mission of the business (58). The so-called "mission-drift", abandonment of intended social and environmental values, can happen during this growth process in a space where profit-focused and impact-focused values exist next to each other.

The distinction between a mission-driven business and a conventional, profit-only driven business shows further reaching impacts for the behaviour of mission-driven founders, and also mission-driven employees. It has been shown that leaders of small businesses with strong ethical frameworks do make different strategic decisions on the basis of their ethics (Quinn 119). For mission-driven nonprofit organisations, the hiring practices have also been shown to differ compared to for-profit organisations (Usanova et al. 3879). In the recruitment process, all mission-driven nonprofits in this study agreed on mission alignment of potential employees with the organisation as a prerequisite to be considered for a job. Some organisations valued both mission alignment and performance. This study by Usanova assessed nonprofit organisations and there do not appear to be similar studies for value-blended mission-driven businesses. There are likely to be differences between how mission-driven nonprofits and mission-driven for-profits behave and choose their employees, since they have different goals and rely on different streams of funding (charitable fundraising vs investing) (3879).

Aside from company leaders, the employees themselves can be mission-driven and seek out jobs in such organisations. Studies in various countries and across different industries have shown that employees who purposefully seek out mission-driven jobs are willing to take a lower-paid job (Fehrler; Serra 309). Besides being willing to take less money and do more unpaid overtime, they also consistently put in higher efforts (Fehrler and Kosfeld 99). This suggests that there is a subgroup of workers who look for mission-oriented jobs even at a cost to them.

There is also a number of mission-driven investors in the alternative protein space. Impact investing is a type of investing that uses financial investments for social and environmental goals (Saltuk et al.). Blue Horizon is an example of an "impact investor" with the mission to accelerate a global transition into a sustainable food system (Blue Horizon), and the majority of surveyed investors in this industry are driven by ESG and positive impact (Good Food Institute, *A Deeper Dive*).

It is clear from the available literature that mission drive can have significant impact on behaviour of people in all types of roles involved in alternative protein start-ups, from the efforts and satisfaction of employees, strategic decisions of executives to the funding decisions of investors. Considering the aforementioned widespread problem alternative protein companies experience looking for skilled talent, and the evidence that certain workers prioritise mission alignment over higher pay, exploring the importance of mission

drive across the alternative protein industry could bring new qualitative understanding to how people behave in this industry.

2.3 Science and Technology Studies

In anthropology, the field of Science and Technology Studies (STS) examines history of technology, science and philosophy and focuses on social science research of modern problems that come with technological progress. Bruno Latour, an early figure in this field, conducted an ethnographic study in a medical laboratory, focusing on how scientific facts are created (Latour). STS explores not only current technology and science, but also focuses on the history and philosophy of science, starting with Thomas Kuhn's book The Structure of Scientific Revolutions in 1962 (Kuhn).

Alternative proteins have been discussed through the STS lens more recently. Broad has written about metaphors in alternative protein innovation, among others identifying a "meat is made" metaphor, attempting to decouple meat production from animal farming (919). Broad also describes the motivations of advocates, entrepreneurs, scientists, investors, and food industry professionals in the alternative protein industry. They appear to be motivated by a belief that current animal agriculture poses various problems (as summarised in the introduction section) and see technological innovation as a necessary step in transforming the food system. Some of the professionals interviewed specifically mentioned their mission-drive, with one entrepreneur explaining that founding an alternative protein company was a part of his activism, and he would not aim to start a business for other reasons (Broad 919). Another study by Sexton examines the creation of edibility of alternative protein products, which are being positioned by their creators as both ethically better and also familiar and comparable to conventional products (586). Biltekoff and Guthman also noted that STS research identifies imaginaries of the public as one of the important factors in development and regulation of new technologies (58). They describe a type of the mission-oriented new-tech entrepreneurs, who are looking for techno-fixes for what they believe to be pressing problems. Techno-fixes are often criticised in social science literature for looking to uphold the status quo and avoiding addressing the socio-ecological conditions that allow for these problems to develop (Johnston 620). In the case of alternative proteins and more so cultivated meat, the techno-fix here is to simply change the meat without needing to change consumer habits and preferences.

A large part of the anthropological literature on the topic of alternative proteins or cultivated meat focuses on consumer acceptance research through focus groups (O'Keefe et al. 412), surveys (Wilks and Phillips), and experiments (Bekker 245). Wilks and Phillips point out the barriers to a wider acceptance of cultivated meat. Their research identified a high willingness to try the product, but a relatively low expectation of it fully replacing conventional meat in people's diets. The acceptance of cultivated meat varied based on certain demographic criteria, with men being more open to it than women, same with liberal-leaning respondents. A commonly cited fear was the unnaturalness of the product. This ties into some of the critiques of techno-optimism, as it appears that even if the technology of cultivated meat was successful and widely available, it is possible the customers would still reject it and the technology would fall short of its goal to address the meat consumption problem.

Another angle in social science and humanities literature has been the ethics (Schaefer 188), legality (Johnson 1), and politics (Lee) of cultivated meat products. Schaefer highlights possible ethical concerns associated with cultivated meat, from its disrespect to nature and animals, to reducing the farmed animal population, and even considering the hypothetical issue of cannibalism through cultivated human meat (188).

Researchers have also looked into the media representation of alternative proteins, with Hopkins focusing on how media reacted to the first cultivated meat product. He identified an unjustified focus on vegetarians as future consumers, despite that fact they are a small share of the market and have even expressed less interest in cultivated meat products than meat eaters (264). Neil Stephens has examined hiring videos of one of the first cultivated meat start-ups, Memphis Meats (32). His analysis focused on recruitment videos on YouTube aimed to attract new potential employees. Stephens also mentions the change in talent needs in the cultivated meat industry, as it has developed into a venture capital funded start-up landscape, and notes that it appears to potentially be a bigger constraint than funding (32).

This project turns inwards into the alternative protein industry as perceived and experienced by its participants who are creating it. While alternative proteins have been covered from the STS perspective, the literature is not extensive and does not come close to the spotlight that has been given to the issue of consumer acceptance. As has been identified throughout the background section, there is a gap in the qualitative research that would combine the STS focus on food-tech entrepreneurs and the concept of mission drive in for

profits and its impact on entrepreneurs, employees, and investors throughout the sector. Both quantitative surveys and qualitative research have pointed towards a need for more skilled talent in the industry, and an in-depth understanding of people's journeys into the industry is a useful next step to help address this need.

3. Methods

3.1 Participants

3.1.1 Demographics of the participants

The empirical part of this project is based on 12 semi-structured interviews with people working in the alternative protein industry across various roles. The exact roles of some of the participants can be hard to limit to one. In smaller start-ups it appears common to for example cover the role of a founder or director and also be the head scientist.

Five of the participants are co-founders, currently working in executive and director roles in alternative protein start-ups. Two participants are working as investors at an impact-investment fund. Three participants are employees at alternative protein companies of different sizes. Two participants work in the legal industry, focusing on intellectual property and product regulations.

The interviews were anonymised, and a classification sheet was created with the demographic details of each participant, including position, gender, years of experience and country of origin. This information is shown in Table 1 below.

Table 1. Demographic information of participants

Participant ID	**Position**	**Gender**	**Years of experience**	**Country of origin**
P1	Co-founder and CSO	M	~7 years	The Netherlands
P2	Co-founder and CSO	F	~5 years	USA

P3	Employee, former investor	F	~4 years	UK
P4	Lawyer	M	~25 years	USA
P5	Investor (co-founder)	F	~15 years	UK
P6	Employee	F	~1 year	USA
P7	Co-founder	M	~2 years	USA
P8	Project engineer	M	~1 year	USA
P9	Co-founder	M	~4 years	India
P10	Investor	M	~5 years	USA
P11	Co-founder and COO	F	~4 years	Hungary
P12	Law consultant (co-founder)	F	~3 years	France

3.1.2 Reasons for selection

Selecting participants across various roles had several purposes. The variation allows this project to explore the industry on several levels - leadership vs employee, start-up founders vs investors that fund them, the creators of the product vs people who establish the product in the existing regulatory frameworks.

The inclusion of groups of start-up founders and employees is also significant for the reasons outlined in the background section. While literature suggests that hiring practices in mission-driven nonprofits differ from for-profit companies, this topic has not yet been explored in mission-driven for-profit companies. Looking at the importance of mission

alignment expressed by the founders and the experience of employees when looking for a job allows this project to fill this gap in literature.

3.1.3 Inclusion criteria

The inclusion criteria for participation in this project are to be working in the alternative protein industry. Initially these included executive/director level company leader, skilled employee (such as a scientist or engineer working on alternative protein products), or an investor. As the project progressed, connections were made to people interested in participating in the interviews who were in different roles in the alternative protein industry, such as in different legal roles. Their contributions were useful for the project and allowed additional insights, so their interviews were included. Exclusion criteria are people who do not consent to an interview or do not work in the aforementioned roles.

3.1.4 Participant recruitment

Participants were recruited with the purposeful and snowball sampling techniques. The purposeful sampling technique is used in qualitative research to identify and select people who are knowledgeable and experienced in the investigated topic. This technique is very different from random sampling, where the sample is supposed to be generalisable and avoid bias in selection (Palinkas, 533). It is suitable for this project, as it allows for finding a depth of understanding. The participants were recruited based on the inclusion criteria. Some of the recruitment was done based on previous contacts in the industry, other participants were found through databases of alternative protein companies or through a LinkedIn search. Then where possible the snowballing technique was used and the participants were asked if they know of any suitable participants who fit the criteria. Each person contacted who showed willingness to participate was sent an email or a message with more information about the project.

3.2 Interviews

3.2.1 Sample size

The interviews were conducted during 2023, starting in July and finishing in early December. The timeline was originally expected to be shorter, however the recruitment

process took longer than expected, as many people who were contacted did not reply, were not interested in participating or arranging the interview took quite a long time. However, it was important to conduct enough interviews, considering that many different roles and experiences are examined in this project. Finding the appropriate sample size in qualitative research is not defined by the necessary number to get a statistically significant result like in quantitative studies, but much more subjective and context-dependent. The goal of choosing the sample size in qualitative research according to Sandelowski is to find a sample size small enough to manage the material and large enough to provide a "rich and textured understanding of experience", which is subject to the researcher's judgement and research goals (179). Some more specific guidelines for thematic analysis talk about 6-10 interviews for small projects and up to 400 for large projects (Clarke and Braun). The number of 12 participants can be sufficient for this project, considering that purposeful sampling was used, with higher occurrence of themes expected. During the interview and analysis process, it was found that with 12 interviews new codes were stopping to emerge and data saturation was reached. This meant that adding more participants was unlikely to provide new insight and was not necessary.

3.2.2 Interview set-up

All interviews were conducted remotely via different video call softwares, the choice mostly depended on the preference of the participant. The interviews were recorded using the Open Broadcaster Software (OBS) (Bailey).

3.2.3 Interview questions

The interviews were semi-structured, with a prepared list of questions that were asked but not shown to the participant. The interview outline was generally followed, but some participants had limited time for the interview and did not get to answer every question.

First questions were around the participant's background, asking them to describe their career path from education up until their current job. At this point, the participants either shared how and why they got into the alternative protein industry, or the next question asked them about it. Depending on whether the participant was an entrepreneur (a start-up founder), another question was asked about the aim behind starting the business and more general questions about what exactly the company produces. Participants were asked about

whether their role includes recruitment and hiring, and if yes they were asked to describe how they value mission drive and mission alignment of potential employees. For participants not involved in hiring people, questions were asked about how much mission alignment between them and prospective companies mattered to them when looking for a job. The next section focused on the participants' perceptions of the industry, asking about the collaboration and competition in the field. The final part included questions about the future of the industry, whether the participants plan to continue their careers there and how optimistic they are about the industry's development.

The full set of questions used is listed below, it should however be noted that with the semi-structured interviews, there were various follow-up questions or different phrasings, depending on how the interview was evolving.

- Individual background
    - Can you tell me about your professional journey, from university until your current role?
    - How did you become acquainted with the alternative protein sector?
    - Why did you decide to start your company? (if applicable)
- Business background
    - Can you tell me what your company/the company you work for does?
    - How would you describe the goal of the company?
- Hiring
    - What role do personal motivation and mission alignment with the company play in a potential employee? (if applicable)
    - How do you attract new employees to the company? (if applicable)
    - When you are applying for a new role, what role does the mission of the company play for you? (if applicable)
- Perceptions of the current state of the industry
    - How competitive is the alternative protein industry in your opinion?
    - How collaborative is the alternative protein industry in your opinion?
    - What would you say is missing from the industry?
- Perceptions of the future
    - How do you expect the collaboration in the industry to change in the future?

- What share of the market do you think the alternative protein industry will have in 2030?
- Do you see yourself leaving the alternative protein industry in the future?

3.2.4 Research questions

The aim of the interview questions was to provide understanding for the research questions as listed below.

RQ1: Why do people pursue careers in alternative proteins?
RQ2: What role does mission drive and mission alignment for employees and companies in alternative proteins?
RQ3: What are the perceptions and attitudes towards the current state of the alternative protein industry by people working in it?
RQ4: What are the perceptions and attitudes towards the future of the alternative protein industry by people working in it?

3.3 Analysis

After the interviews were conducted, the videos were transcribed using the transcription function in Microsoft Word (Simonyi). The transcripts were cleaned up manually wherever the transcription was not perfect. The data was then analysed using the thematic analysis approach. A thematic analysis is a method used for identifying and analysing patterns of meanings (so-called themes) in qualitative data, such as interviews or focus groups (Braun and Clarke). The process of identifying these themes starts with generating codes, which can be seen as the smallest building blocks that capture an interesting feature within the data and could be relevant for the research question. Themes emerge when codes share a concept or a core idea. The themes help present the observations made by the researcher in the data. It can be used to capture both explicitly stated and underlying meanings. One of the main benefits of thematic analysis is the flexibility it offers. It can be used on various sample sizes, for different kinds of data, and allows for a flexible approach and shaping of the research question during the analytical process.

An example of a thematic analysis conducted on the alternative proteins topic is a study done by Ford et al (190). They examined young consumers through focus groups, from

which the data was analysed using a mixed inductive-deductive thematic analysis approach. The analysis identified and mapped out changes in consumption habits and perception towards sustainable food consumption.

The coding for the thematic analysis was done using NVivo (Lumivero), a software tool widely used in social sciences for qualitative analysis. NVivo does not replace the researcher in conducting the analysis, but rather offers easier organisation and sorting of the data (Dhakal 270). NVivo was used during the analysis specifically for coding the data and grouping the codes into themes. In total, 62 codes were identified within the data, with 253 segments of text encoded across 12 interview files.

Several themes were identified under each research question. Five reasons were repeatedly mentioned by participants for going into the alternative protein industry (the environment and sustainability, animal welfare, being vegetarian/vegan, food security, and impact). Three themes centred around the role of mission drive (compromising between the mission and skills of employees, mission as an important factor during hiring, and goals of the products created by the start-ups). When talking about the participants' perceptions of the current industry, the themes can be separated into subgroups - firstly, the themes relating to collaboration and competition in the industry (conflict between the mission and investments, the industry being secretive and competitive, and the industry being collaborative and sharing), secondly, four themes were identified that mention what the industry needs and is missing (institutional support, growth, collaboration, money), and finally, another theme emerged, which was recession. The perception of the future of the industry fell into four themes (staying in the industry, future collaboration, industry growth, and decreased optimism). The themes will be explored in detail in the results section below.

3.4 Positioning

It is important to mention the researcher's position and connection to the topic examined in their work. I personally knew one participant from my previous studies at a university and would describe our relationship as acquaintances or distant friends. I did not know other participants before their involvement in this project. However, most of the participants are familiar with or involved in the community of Effective Altruism, which I am also active in. In short, Effective Altruism is a philosophy and a set of frameworks that aim to maximise doing the amount of good in the world with limited resources. This group

is mostly active in the Global North and majority white and male, and the kind of people that social science literature often describes as “techno-solutionist” (Morozov).

From my anecdotal observations, I would expect active involvement in this group to influence which areas to work in and what to prioritise in one’s own career. I also think that me being a part of this group helped when contacting potential participants and made them more likely to respond positively. I believe this is reflected further in the selection of the participants - I did not purposefully try to recruit people who are parts of the same communities and have similar beliefs to me, but the commonalities probably made it easier to find the participants and have their interest to join.

My personal beliefs also relate to the topic of alternative proteins. I am a vegan and a consumer of alternative proteins and would like to see this industry succeed and help replace conventional animal meat products. While my personal views were not openly discussed in the interviews and my goal was to ask open questions that are posed neutrally and as objectively as possible, it is still likely that my beliefs informed my decisions around what questions to ask, how to ask them, and how to respond to participants’ answers. I am probably more optimistic about this new technology as a solution to what I view as a problem (the current system of animal agriculture) because of my personal beliefs. The selection of the topic for this work was influenced by me wanting to contribute to understanding and ultimately helping the alternative protein industry.

4. Results

The results section will be structured following the participants' journeys, exploring the participants' backgrounds, their first encounter with the alternative protein industry, their reasons to go start working in the industry, their perceptions of the current state of the industry, including openness to collaborating and the role of mission-drive. Along with describing the themes that emerge from the analysis of the interviews, the results are discussed, connected to the literature in the background section, and interpreted.

While gender is a part of the demographic information, participants will not be identified by gender when discussed individually. This is mainly for maintaining anonymity in the relatively small sample size.

Through this process, the research questions will be addressed based on the data shared by participants in the interviews.

4.1 Backgrounds of the participants

Most of the participants who directly work on creating alternative protein products have an educational background that is related to their current role, such as biology, biotechnology, food technology, nutrition, or biochemical and mechanical engineering. In the case of one participant who joined the industry and co-founded a start-up around 20 years into their career, their education in the medical field was less relevant to their current role. Two participants who are both founders of their start-ups mentioned obtaining a PhD focused on engineering of human cells.

Three participants noted that their decision to work in the alternative protein industry influenced their further education and they opted to get a master's degree in synthetic biology, large-scale muscle cell production, and food technology. In the case of the other participants, it appeared that their choice of university degree happened before they considered working in the alternative protein industry.

The participants working in impact investment did not study in the field directly related to finance or economics, their degrees were in law and nutrition. Both of the participants working in the law industry previously studied law. Five of the participants joined the alternative protein industry straight out of university without gaining substantial work

experience in another field. Three participants started their companies during or right after their university education or PhDs.

Seven participants have previous work experience outside of the alternative protein industry. The participants working on creating alternative protein products mostly have experience in related fields, such as the pharmaceutical industry and bioengineering. The participants working in investment have previous consulting and policy work experience, and the participants currently working in law have worked on different topics besides alternative proteins at the start of their career. One participant is still in postgraduate study and is working in the alternative protein industry before going back to finish their studies.

The participants' demographics reflect the trends of the alternative protein industry discussed in the background section. Out of the 12 participants, only one person was from a Global South country, with the rest being from the USA, UK or EU. All of the participants were currently living and working in the Global North, with their companies being based in Global North countries as well. This was expected since most registered companies are located in the USA, EU or the UK, but also due to the nature of participant recruitment. It was more likely that with the snowballing method, more connections to participants will be found in the UK where the research was conducted from, or in countries with a shared language like the United States.

4.2 First encounter with the alternative protein industry

The first encounters of the participants with alternative proteins varied across the group. The participants also approached this topic differently, one person mentioning the first time they came across the idea of replacing animal products without knowing that this was a real possibility:

> "I also love mice and I don't want the mice to have to die in order to be the snakes. And so my little 12 year old brain was like, well, why can't we just grow mouse meat and then feed the snakes mouse meat? And then that way the snakes get to eat and the mice don't have to die. We're just growing mouse meat. So the first time, I actually thought about cellular agriculture was as a little girl and I wanted to just feed my pet snake [...]. Why can't we just grow rhino horn? So then we then I started looking into that a little bit more and I found out that there was a company that was already

pursuing that. I was like, oh my gosh, this is so cool. And then that's kind of what got me into the oh, they're growing rhino horn. And then actually, some people are starting to grow meat too."[1]

Several participants were working or studying in a different space but realised that their skills could be used to work in alternative proteins. This mainly included participants with specific biotechnological skills working in academia in an adjacent biotechnology field.

"During my PhD, you know when the big lockdown happened, we couldn't go to the lab for a few months. I had some spare time and that's when me and my co-founder decided to create the company. [...] And that's when we started talking and we realised that some of the technologies that were used for my brain neuroscience research, could be relevant for cultured meat as well. And that discussion eventually led to the formation of our company."[2]

"[I] moved into academia, mostly cardiovascular research in different universities and ended up in tissue engineering of blood vessels for bypass surgery. And then sometime in 2007 or 2008 or so, I by coincidence got in touch with the people who are working on an academic perspective on cultivated meat at that time … and I got involved in the project and got caught by it and essentially, it's tissue engineering now for a different purpose, for making meat."[3]

One participant mentioned reading about the first cultivated burger and becoming so excited about the idea, that they decided to do a master's degree and go into the alternative protein industry. Both of the participants working in law saw the topic of alternative proteins as an area in which to specialise due to their personal interests, without needing to drastically change careers. A participant who works in impact investing has a policy-focused career background, during which they explored different opportunities to focus on meat reduction and sustainable food policy, before going into investing.

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[1] Transcript P2, 00:09:07
[2] Transcript P9, 00:05:42
[3] Transcript P1, 00:01:55

When asked about their background and career journey, three participants also mentioned being a long-term vegetarian or vegan. This information seemed to be included by the participants as an explanation for why the participant was interested in alternative proteins when they first encountered the industry. One participant mentioned looking at a move to alternative proteins as an experiment to see if they can combine their personal and professional passions. Another participant explained that they have been a customer and consumer of these products for many years, before viewing the industry as an option for their career. The third participant mentioned being vegan when explaining how in their previous career in policy they took the initiative to organise a conference about the environmental implications of meat. This was their first experience they mentioned relating to their current career in alternative proteins. One other participant noted that they had tried to be vegetarian during their university years but could not afford it at that time.

The first encounters had something in common for all the participants interviewed. When finding out about this industry and realising it is a possible career path for them, the participants showed excitement because working on alternative proteins related to something they cared about personally or perceived as a problem to be solved. From wanting to avoid feeding mice to their snake, being a vegan or vegetarian, to finding a niche to specialise in as a lawyer, it seemed like none of the participants learned about this industry without already perceiving that there is a problem to solve, environmental, ethical or else. After the participants encountered the alternative protein industry for the first time, they then all made a decision to find a role in this space. The reasons why they chose to do so are discussed in the next section 4.3.

4.3 Reasons for joining the industry

Table 2. Reasons for joining the industry

Reason	**Participants mentioning the reason**
Environment and sustainability	5
Animal welfare	4
Being vegetarian/vegan	4
Food security	3
Impact	2

Most participants mentioned the reasons or motivations for going into their current role or starting their company on their own when talking about their professional journey. In cases where that did not happen, a further question was asked specifically about their motivations. Many participants mentioned multiple reasons. As can be seen in Table 2, the most frequent theme was a concern for the environment and sustainability. One participant recalls scuba diving and seeing the environmental destruction in Bali and coral reefs dying, which is why they went vegetarian and decided to help animals with their work. Two second most frequent reasons mentioned were animal welfare and being vegan or vegetarian. Three participants mention animal welfare, animal rights or saving animals without going into much detail. In contrast to that, the fourth participant mentions direct experience from their time studying to be a veterinarian.

> "I was studying to be a veterinarian, and when I started working on farms and mind you, these were animal welfare approved organic, family-owned local, just, you know, old McDonald had a farm kind of vibes, but I was still witnessing just incredible amounts of inhumane treatment and really, really difficult decisions. And I was unfortunately involved in some of these really terrible procedures that are done on animals. I don't know if they're done much in Europe anymore, but they're certainly very much still done in America. And I know that all around the world, a lot of the conditions that animals are in when they're being raised for the food industry are just absolutely atrocious. So when I kind of witnessed that and was also involved in that, I realised that I didn't want to become a veterinarian anymore, but that I really wanted to dedicate my life to removing animals from the food chain, and that brought me to cultivated meat."[4]

Not only were they impacted by seeing inhumane treatment of animals on farms, but they directly participated in that during their veterinary education, which made them reconsider this career path and led them to actively working against animal agriculture. This level of personal experience did not appear in most other participant's motivation, possibly to a lesser degree in the case of the environmentally concerned participant witnessing environmental destruction described above.

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[4] Transcript P2, 00:01:35

Four participants mentioned being vegan or vegetarian as a motivation for their career choices. Two of the four participants include the word "personal" when talking about their veganism, adding that this specific aspect was their personal passion or personal point of view, next to either another ethical consideration or their professional interests.

> "From a personal point of view, I decided to specialise in that field because I've been vegan for four years and I didn't see myself working, for instance, for a meat or dairy company because I couldn't really look at myself in the mirror knowing I would contribute to an industry that I would like to see disappear one day. [...] And I also want to contribute to creating a more inclusive food system because I think if you don't eat the mainstream diet or like a normal diet, it's very hard to socialise and just travel."[5]

Interestingly, there does not seem to be literature available on how being and becoming vegetarian or vegan shapes people's career motivations and choices. This topic could be further explored in future research. Some existing studies look at the impact of a vegan transition and lifestyle on interpersonal relationships (Markowski and Roxburgh 1) and also the bias and discrimination of vegan candidates during the hiring process (Adamczyk and Maison 425).

The final two themes that were repeated among the participants was food security and impact. Both of these reasons were mentioned without any further detail, personal experience, or specific explanations about what this means to them. In general, reasons for going into the industry reflected the commonly mentioned problems that the current food system is facing, namely climate change and environmental destruction, animal welfare and food security. Two of the participants were working in medical research when they decided to apply their skills to alternative proteins, changing from an area that is already seen as helpful to others. One stated that their medical research was aiming to replace animals used for pharmaceutical experiments, so switching to replacing animals for meat just allowed them to do the same thing on a much larger scale. The other medical professional said they were motivated to change industries after decades of working in medical research for

[5] Transcript P12, 00:01:25

environmental and food security reasons and did not mention whether they felt like their previous work had a comparable positive impact.

Interestingly, none of the participants mention wanting to start a business or become entrepreneurs as a motivation to found a company, and two participants even said that they did not want to start a business. One of the founders interviewed described how it was never a goal in their life to start a business, and how they dreaded it initially.

> "You know we did start a business in 2016, but I kind of dreaded that because I thought it would make my life more complex and it actually didn't. But it was never really my goal in life to start a business. It was really the cause and the environmental potential, environmental impact and a couple of other impacts by the way, not only environmental, but again that was the foremost motivation that basically led me to start a company, to start working on it at a larger scale."[6]

The other participant left a company they co-founded, when they realised it was not the right fit for them. They were interested in the science rather than running the company and continued their alternative protein career in various roles as an employee. This lack of entrepreneurial drive was also previously described by Broad in one case where an entrepreneur noted that they only started a business as a part of their activism (919).

As shown in the interviews, participants overwhelmingly mentioned having external motivations for joining the alternative protein industry and talked about more big-picture concerns such as the environment and animal welfare. However, one participant shared that their primary two goals were to move to a specific city and have a full-time engineering job to gain experience after graduating. Their secondary motivation was to have a job with a positive impact, however that was *"a bit on the back burner relative to just experience"*.[7]

Next to veganism and vegetarianism as described in the previous section, another social movement was mentioned three times in the context of familiarity with alternative proteins. One participant named the effective altruism movement next to animal welfare as their motivation to want to work in impact investing for alternative proteins. A start-up

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[6] Transcript P1, 00:04:00
[7] Transcript P8, 00:09:29

founder described how they came across effective altruism in university, during a time when they were trying out different projects. They did not elaborate further on how effective altruism impacted their choice to pursue alternative proteins but found it important enough to mention. A biotech start-up employee described being *"pretty highly involved in effective altruism"*[8], adding that alternative proteins are a highly discussed topic in that community. Interestingly, the three participants who mentioned effective altruism have very varied backgrounds and work in different roles, as an investor, a founder, and an employee.

In the sample, there are five co-founders of companies. As was shown in the background section, for example in the literature published by Guthman and Butler (1) and Biltekoff and Guthman (58), technological innovators in the alternative protein industry are often described as "entrepreneurially driven". Many of the start-ups are based in Silicon Valley, known as the hub of techno-optimism and utopian thinking. None of the participants mentioned planning to start a business or being motivated to enter the industry because of the entrepreneurial opportunities. There are some reasons why the participants do not seem to fit the broad description from other literature. They could be choosing not to mention their entrepreneurial drive in order to emphasise their altruistic motivations. Not a single participant is also based in Silicon Valley, even though it is likely that many of their funding sources are based there and can still have an influence on the decision making of the companies. Being based outside of the Silicon Valley could mean being under less influence of the heavily entrepreneurially driven community, and becoming an entrepreneur outside of that environment can be more likely influenced by other factors, such as the reasons mentioned by participants. As mentioned in the methods section, the participant selection has likely led to people joining who are a part of the Effective Altruism community, people who are typically techno-optimist while also motivated by their desire to improve the world. Being open to donating their time for the interview can also indicate altruistic motivations, since it was communicated during participant recruitment that this project aims to help the alternative protein industry. It appears that the profile of all co-founder participants (Global North, prestigious education, techno-optimists) fits the description for alternative protein entrepreneurs present in STS literature, while the main reasons mentioned by them to join

[8] Transcript P8, 00:07:40

the industry did not appear entrepreneurial driven, but rather mission-driven to address what the participants perceive to be large world problems.

4.4 The importance of mission drive in the industry

After talking with the participants about their personal journeys and motivations that led them to their current roles, the concept of mission drive was explored in more depth in the context of mission alignment between an employee and a company. Three main themes were identified (Table 3).

Table 3: Role of mission drive in a job

Theme	**Participants mentioning the theme**
Mission alignment is important when hiring/being hired	10
Goals of the company	10
Compromising between mission alignment and skills	5

4.4.1 Importance of mission alignment between employee and the company

One of the main topics this project looked to explore is how important mission drive is for both the participants in the executive and director positions in alternative protein companies, and for the employees who go through the recruitment process in these companies. All six of the participants who are involved in hiring employees said that mission alignment plays a role in the selection process. One founder mentions that they dedicate the final interview to getting to know the applicant's attitudes, mission, and motivation. Another founder mentioned that the whole team is mission aligned and it is important to keep hiring that way. One of the law professionals also emphasised the importance of the motivation of the clients they choose to work with, saying that they would probably not work with major conventional meat producers if they wanted to enter the alternative protein space.

Participants who went through the job search process and were hired by alternative protein companies generally thought that their own mission drive was important during the

process and even could have been the deciding factor. One of the participants even said that they were hired because of their mission drive despite their skills lacking.

> "I would say like 100%, 90%. I mean I've been interested in working in venture capital, I did like an apprenticeship when I was in school, but the only reason I got hired is because I was focused on the space. [...] Because otherwise, I mean, I didn't have the skill set to do the job."[9]

They then explain that many people in similar roles have more specific and prestigious education, while this participant believed that in this case, they got the role thanks to their mission drive and subject-specific knowledge of the alternative protein industry, despite missing some of the usual requirements. Similarly, another participant believed that their enthusiasm and passion for the company's work led to them moving from part-time to full-time at the company, even though there were no explicit checks for mission alignment when hiring.

There was only one instance of a participant experiencing no importance given to mission alignment during the hiring process. This participant first mentioned being hired by companies that value mission alignment highly, then went onto describing a situation where their mission drive was not only fully unimportant to the company, but the company was actively distancing themselves from having a mission outside of *"*business*"*.

> "Mission. I think there's a very high variability in that. [...] I've been in situations in which I was being hired and my alignment and how much I cared about animals and the environment was high up there as something that was highly valued with the hiring company. And then I've also been hired by another company that told me directly on interview one, we don't care about animals, we don't care about the environment. We don't care, this is not among our priorities. We're doing hard science and we are pursuing an important business opportunity. And when you communicate about our company, we don't want you to talk about animals and environments. [...] In that company I was the only vegan. I wouldn't say I was

[9] Transcript P10, 00:09:32

> discriminated against as being vegan, but I've been in situations in which there wasn't any vegan food on the table. [...] Later on it became very apparent to me that it was also something related to the priorities and personalities of the founders and the culture that they wanted to install there, and also the kind of approach that they have to hiring. And I must say I wasn't the only employee who cared about the environment or animals, and those people also eventually left that company. So I think it was part of the culture that the company wanted to establish."[10]

This example appears to be less about a mission-driven company not valuing mission alignment highly, but rather a company in the alternative protein space that would not be described as mission-driven, not valuing hiring mission-driven employees. Overall, outside of the last example, the experiences of the participants overwhelmingly show that companies and employees place large importance on mission drive. This matches up with the available information in literature (Biltekoff and Guthman 58) and also corresponds to expectations mentioned previously, about more mission-driven people being more likely to join the interview. This type of research does not mean that a generalisation is possible across the industry, but there are some other possible reasons why the participants specifically have experienced such a strong focus on mission drive. As outlined previously (Quinn 119), in the current research on start-ups, the mission-drift happens often during the growth of a business, where outside investors who are not mission-aligned enter the picture. The participants we talked to who have founded or work at start-ups mostly work at organisations that are under 5 years old and are in the phase of development, not having commercialised any products yet. The number of employees is still relatively low, and it is possible that in these early stages, the mission drift that can occur has not happened yet, but might happen later. There is also the question of what influence investors and outside funders have on the mission drift, which will be explored in later sections.

4.4.2 Compromising between mission alignment and skills

A sub-theme that emerged among five of the participants on the topic of mission alignment was the need to compromise between finding an employee with excellent

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[10] Transcript P3, 00:20:02

technical skills and finding a mission-aligned employee. Two participants explicitly stated they would prefer mission alignment over skills, as it is easier to train someone but hard to change their values.

> "So far we've been lucky in that we've only had people join and that are very mission aligned. I will say in the past I've worked with people who are incredibly talented but not mission aligned and in the end it's, you know, in the end I feel like there's only so. How to say this? If I had to choose, I would choose mission alignment over talent because you can teach skills, you can teach talent, or you can [...] find another strength for them. [...] But it's hard to teach the mission and the vision and the values, but you can find the strengths in people and put them where they're best suited. So yeah, I would say values over talent any day."[11]

In the quote above, the participant also recalls negative experience working with people who were not mission-aligned. In contrast to that, another founder describes the difficulties of finding people with very specific expertise and skill depth who are mission aligned. Due to the nature of their company, they look to hire people with very niche skills and have had to compromise on mission alignment in the past. They do include some questions focused on value in their hiring process, but put less weight on it. This founder describes their team as career-minded and academic curiosity-minded. Despite the necessity of this, the participant admits that they want to put greater importance on mission drive in applicants, stating that *"if we had more mission-driven people, it would definitely help"*.[12]

Overall, it appears that the value placed on mission alignment varies among the founders interviewed. No participant thinks that it is unimportant, but three out of the five have felt the need to compromise when looking for specific skills in the past, or would be willing to. One participant also mentioned that the relative importance of skill versus mission depends on the position within the company, with the leader's mission drive being much more important than positions with less decision-making power and influence.

This need to compromise on mission alignment shows some similarities and some differences to what the literature showed in case of nonprofits looking for employees

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[11] Transcript P2, 00:16:42
[12] Transcript P9, 00:16:20

(Usanova et al. 3879). In this study, all of the studied nonprofits take mission alignment as a necessary part of hiring any employee without exception. Compared to that, specific skills are often not considered crucial, and the training is done on the job in these nonprofits. From the interviews, there were some participants that described a similar situation of heavily valuing mission over skills. However, the difference was that three out of five founders have mentioned compromising and the value placed on skills was higher than in nonprofits. As described in Section 4.4.1, two employees of alternative protein start-ups had the impression that their mission drive significantly helped them get their position. One of the possible reasons why there is a compromise on mission alignment which did not seem present in the nonprofit study is the fact that the participants' roles require highly technical skills and often specific scientific education. This limits the level to which the start-ups can teach new employees the skills and a certain level of education and training is likely necessary for many of the roles in alternative proteins. This is even more prominent in start-ups that rely on developing new technologies and innovating on the edge of current technology, where highly specialised skills are necessary. Considering the required technical skills, it might be surprising how strongly mission is prioritised, especially when looking at the available surveys that show that over 50% of start-ups are struggling with finding technically skilled employees (Good Food Institute, *Alternative Protein Startups*).

4.4.3 Personal sacrifice

So far, the results have generally shown that participants mention environmental and ethical reasons for choosing a career in alternative proteins and find it important that the company and its employees share a common mission. While these reasons and goals could be described as altruistic, only one participant mentioned anything relating to some kind of a "personal sacrifice".

> "It's an industry that is nascent, there are not a lot of jobs, and working at a start-up is not fantastic. I took over a 50% pay cut. I still don't make as much money as I used to make seven years ago, of course. So there's this situation in which if I want to be mission-aligned that I may not live in that big of a house, where I cannot do as many things as I wanted to do. So there is a certain aspect of personal sacrifice that is kind of linked to being here, that sometimes is exhausting. And sometimes that does cross

my mind. If I was working for this or that company, I would probably be making three times more. And I would be also pursuing some personal satisfaction."[13]

In this example, the participant describes a conflict between mission and earning more money. They see their move to alternative proteins as a reason for a significant drop in earnings and feel certain exhaustion and also a lack of personal satisfaction. The participants were not directly asked about whether they felt they were making any trade-offs or personal sacrifices. Of course, that could be the reason why only one participant mentioned it, however it is interesting that it did not come up when participants were mentioning their reasons to join the industry, which were mostly altruistic with the aim to solve what they perceive to be important world issues. It could be that the participants do not perceive their work to have any or a non-significant element of sacrifice, after all many of them are working in for-profit companies, either in growing biotechnology start-ups, in investment or in the law industry. All of which could be considered prestigious jobs, with a certain risk level associated with the start-up positions, as mentioned in the quote above.

The topic of personal sacrifice of employees in the nonprofit sector was explored in the background section and showed strong evidence that some employees seek out mission-driven jobs even if it comes at a financial cost to them, while putting in more time and effort (Fehrler; Serra et al. 309; Fehrler and Kosfeld 99). Besides the single example above, interviews in this project did not point towards the participants feeling like they are making a personal sacrifice. However, the fact that the participants did not feel the need to mention it can also be because the questions asked were not directly related to the topic, or because there might be a level of personal sacrifice felt by some participants that is not significant enough to be mentioned.

Considering that this topic was brought up by one participant and current literature suggests that mission-driven nonprofits profit from employees willing to make a personal sacrifice, it could be interesting to explore this topic further. Dealing with a need for more employees in this sector could be easier if there was more data on whether working in the alternative protein industry was associated with a feeling of personal sacrifice, and whether

[13] Transcript P3, 00:49:18

that could be a motivator for employees like in the nonprofit sector or a barrier preventing more skilled people from entering the space.

4.4.4 Goals of alternative protein companies

After talking about their personal mission, participants were also asked about the goal of the company they have founded or work for. Asking this question resulted in a very different type of answer in most of the participants. While their motivations were mostly big-picture and not explored in detail (see Section 3.3), the company goal was overall described as a specific change of the industry. All of the goals mentioned are listed in Table 4 below.

Table 4. Company goals

Goal of the company	**Participants mentioning the goal**
Bring quality products to the market	1
Consumer outreach	1
Decentralising the industry	1
Lower cost	**4**
Remove animals from food chain	1
Scale-up	**3**
Become a source of all input for cultivated meat production	1
Sustainable food system	1

The level of detail can be attributed to each company being focused on a specific product, ingredient, equipment, or opportunity. It is not surprising that two participants who decided to join the alternative protein industry had the same motivation stemming from a concern for the environment, but now have a different company-specific goal, with one

working on producing a bioreactor for cultivated meat production and the other working on creating an essential ingredient to provide to other alternative protein companies.

Despite the level of detail, two themes formed across the participants' responses. The cost of alternative protein products, and cultivated meat in particular, was mentioned in four interviews. The high costs are seen as a major bottleneck to the products being sold in regular shops next to conventional animal meat.

> "The main goal is to help cultivated meats become more affordable, so that they can eventually be sold in grocery stores, cost-competitive with traditional meat."[14]

The question of scaling up the production appeared three times, twice right next to lowering the price. Following basic rules of economies of scale, achieving price reduction is not possible without having a large-scale production system.

4.5 Perceptions of the current state of the alternative protein industry

4.5.1 Mission drive of other companies

When talking about the industry in general or other companies in the space, five of the participants noted the mission drive of others, believing that the industry is in majority mission-driven.

> "Well, not all of us, but the majority of people running these companies are doing it for mission aligned reasons"[15]

The participants also believed that the impact investment companies working in this field are mission-driven and can influence the investments being given in line with their mission.

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[14] Transcript P8, 00:12:59
[15] Transcript P2, 00:22:15

> "I think because of the mission-drivenness of it and because the people who are also mission-driven have money and they can kind of put money behind those words, the potential here is better than in other sectors."[16]

The shared attitude among the participants was that the alternative protein industry stands out compared to other industries, and most participants not only believe in their own mission drive, but in other companies working towards the same mission. There were two instances of a participant explicitly saying that some companies are not mission-aligned. Both of these examples came from personal experience, one was discussed in Section 3.4.1 where the participant felt hostility towards their veganism and animal-focused mission. The other case was based on how secretive and uncollaborative some companies have behaved when approached by the participant's company. The topic of collaboration and competition was represented in the interviews and formed several strong themes, which will be discussed in the following section.

This perception of high mission drive not only in participant's individual companies and own attitudes, but across the whole industry again corresponds to the literature (Biltekoff and Guthman 58).

4.5.2 Perception of collaboration versus competition in the industry

The open-ended question asked the participants how they feel about collaboration and competition in the industry among different companies. As outlined in the theoretical background (Section 2.2) one of the premises for this project was that the alternative protein industry is on average mission-driven, likely more than other industries. This led to posing a question about whether this high level of mission drive leads to more collaborative and less competitive behaviour, motivated less by the success of one's own company but rather the success of the whole industry. Three themes were identified around this topic and are listed in Table 5 below.

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[16] Transcript P4, 00:25:32

Table 5. Themes of collaboration and competition

Theme	**Participants mentioning the theme**
Conflict between mission and investments	9
The industry is secretive and competitive	8
The industry is collaborative and sharing	7

Both companies who rely on and receive the investment money and the investors who choose where to invest it have expressed a strong sentiment of being limited by the principle of how venture capital investing works.

The two participants who work in impact investing feel a conflict between their personal mission and the role as investors. One investor noted that:

> "Yeah, it's difficult because I'm speaking as a VC [venture capitalist]. But I'm also speaking as someone who's very passionate about the sector. So that's why maybe I'm giving a few mixed messages as well, because just looking sort of more broadly at the success of the sector. I think that for the success of the space it's important, but start-ups have difficulty because VC's want to see that they own their IP [intellectual property]. And that makes the company investable. So it's quite conflicting I think and that's why we need to see more of it going into universities, into the public space."[17]

The other investor explained that there is little financial incentive for the investors to encourage collaboration among different companies in the field, as investors "bet" on a handful of companies winning against the rest of the industry. At the same time, they mentioned that it would make sense to encourage collaboration for the sake of better progress of the whole industry, noting a conflict between their success as an investor and their mission to improve animal welfare. As mentioned previously, there is an expected tension between the investors' priorities and the company's mission based on the existing literature, as described for example in a the study by Biltekoff and Guthman (58). They see the difference

[17] Transcript P5, 00:14:34

between the priorities of investors and start-ups to be based on the difference in mission and expect most investors to not be mission aligned. Meanwhile both investors interviewed and the investment companies they work at are strongly mission-driven and do have the same goals as the start-ups they are funding. This points towards the system of investment not allowing for mission drive to be prioritised above profit and leading to a situation that appeared uncomfortable for both investors interviewed. It is possible there is more space for compromising and achieving both goals of profit, which are necessary for an investment company to exist, and the mission these impact investments were started with. However, in a set-up with two competing and conflicting goals, there does not seem to be a way to avoid this tension.

Intellectual property was highlighted by the participants as a way to keep certain technologies and inventions in the hands of one company, making them more competitive and attractive for investors. Participants working in alternative protein companies expressed feeling under pressure from investors to get and keep the funding. While some of them acknowledge that there are mission-aligned investors, the investors' mission drive is not as strong as their need to get a return on their investments.

> "They're [the investors] also mission driven [...] But they're not charities. They need to see a return on their investment and that's where business kicks in, I guess. And business principles kick in."[18]

The observation by participants working in start-ups further confirms the tension expressed by investors themselves, the fact that even the presence of a strong mission drive does not avoid conflict between making a profit and advancing the mission.

Next to the conflict between funding and mission, the participants have observed a lot of competitiveness among the companies. There is a shared feeling of a "race" to bring products to the market, and each company is trying to win this race, which contributes to more secrecy and lower appeal of collaboration. Sharing their work with another company appears like a significant risk to the participants, because it could allow someone else to become more successful using their own idea. One participant describes their personal

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[18] Transcript P1, 00:12:26

struggle with being confronted with the secretive attitude among alternative protein companies.

> "It's devastating because a lot of the folks that we got early on into these high profile companies, we don't only love the space, we fucking love science. And you know what scientists love to do, they love to talk about science. [...] And it was just absolutely devastating that you couldn't do that with other people in the space. Even when you went to a conference, you couldn't talk about a lot or nothing of what you were doing with other people because you just can't, right? "[19]

Nine participants mentioned the competitiveness and secrecy of the industry, but at the same time eight participants also described the willingness to collaborate and share information with competitors. Most participants talked about both aspects, appearing frustrated that the competition limits collaboration, while also giving examples of positive collaborative experiences and beliefs that the alternative protein industry is special in the willingness to collaborate.

> "I feel like this industry is probably more collaborative than any other industry that exists. There is quite a lot of open discussions, primarily facilitated by New Harvest[20], to be honest, but I think people are generally more open than in other industries"[21]

When recalling positive experiences of collaboration, the participants usually shared their stories in more detail, explaining that there are different platforms for sharing that already exist, recalling the help they received from competitors when their company underwent difficult personnel changes, or talking about very mission-driven investors. When talking about their own willingness to collaborate, most participants started their answer by stating that they are willing to share or collaborate with others. This broad statement was

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[19] Transcript P2, 00:24:28
[20] https://new-harvest.org/ New harvest is an organisation that supports the commercialisation and development of cultivated meat.
[21] Transcript P11, 00:10:42

then followed by explaining the limitations of why they might not be able to collaborate on certain issues.

> "Yeah, I think [company] is very willing to collaborate. I think there's of course IP protection issues…"[22]

> "We want to share with everyone, but we want to get fairly compensated for that sharing."[23]

Overall, the participants talked about collaboration and competition in the industry for similar amounts of time and mentioned both similarly often. There was not one of the themes being represented significantly stronger and most of the participants who talked about this seem to perceive a conflict between mission and individual company success. The decision not to share or collaborate was mostly seen as a necessity for the survival or success of the company, or something that was pushed on them by the need to attract investments.

There is a similarity between the tension expressed by investors and the tension felt by founders and leaders of alternative protein start-ups. In both cases, participants express willingness to do more collaboration and sharing, but feel limited by things outside of their control. In order for the for-profit organisations to survive, they have to either make a profit or show potential for future profit by outcompeting the rest of the field through their original innovation.

4.5.3 What is missing from the industry

The alternative protein industry is very young, especially the cultivated meat sector, which is almost fully in the pre-commerialisation stage. Working in a developing sector showed in the participants' comments on what the industry is missing and what they see that needs to develop. Four themes emerged and are summarised in Table 6 below.

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[22] Transcript P6, 00:14:46
[23] Transcript P9, 00:24:20

Table 6. Themes describing what is missing from the industry

Theme	**Participants mentioning the theme**
Institutional support	8
Collaboration	7
Growth	5
Money	4

Eight of the participants commented on the lack of support given to the industry by the government and academic institutions. They felt that some of the collaboration issues mentioned in the previous section could be overcome with having a sort of "neutral ground" of a university or a research centre. This would remove a lot of the risk that companies perceive when talking about sharing information directly with their competitors. Governmental support was seen as important on two levels, firstly having policy that promotes innovation and commercialisation of novel foods and secondly a higher availability of governmental grants. One participant specifically mentioned dissatisfaction with where governmental subsidies are going in food production. The participants also mentioned several examples of how they already experienced a level of academic support, but it appears that the current level is still much lower than what the participants see as important for the success of the industry. This is despite the starting trend described earlier in section 2.1 of more universities and governments investing into training and development of alternative proteins, most of the initiatives are very recent and probably have not yet impacted most start-ups and employees.

Most participants also agreed that more collaboration is needed. This is not surprising, given that as shown in section 3.5.2, they see themselves as open to collaboration but limited by external factors. One participant mentioned that it would make sense for the whole industry to collaborate, given that they do not want to compete with each other, but with the whole conventional meat market.

> "Personally, I definitely would prefer more collaboration. We should view the industry as competing in the trillion-dollar meat market, not just among each other."[24]

Several participants also believe that the development would accelerate if there was more collaboration.

Two other themes that came up were growth of the industry and money. The need for growth was mostly mentioned in the context of scaling up production, bringing products to the market and needing more companies. It is interesting that despite the growth of the industry in the recent years outlined in Section 2.1, including more funding, new products on the market, and a growing share of the protein market taken up by alternative proteins, the participants still felt like the growth should be faster. It would be interesting to explore how realistic these expectations of growth are and whether the people within the industry are able to make more accurate assessments of the industry, or whether they might be overly techno-optimistic and possibly unrealistic in their expectations.

Limited sources of money were already mentioned and are perceived as a reason for competition among the companies. The difficulty of fundraising was brought up by several companies, and one of the investors pointed out that some of the money has run out across the whole industry and there is less money to go around, compared to a couple years ago. The topic of recession and funding cuts came up as another theme and will be discussed in the next section.

4.5.4 Recession

Three participants brought up the impact of the economic recession on the alternative protein sector. The terms used were "recession", "economic turmoil", and "unfavourably changing climate". This was mentioned in connection with money, specifically less funding and more cautious investors. The other connection made was the impact on companies, with many closing down or being acquired, or if surviving then being more cautious and less open to collaboration.

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[24] Transcript P6, 00:28:26

However, looking at the previously discussed available data, most future projections made with this current dip in mind still expect strong growth for the future and did not view this trend as unique to the alternative protein industry, but rather as a part of the global economic climate. Despite these predictions for growth, two of the participants who mentioned the recession connected it to feeling less optimistic about the future of the industry. Attitudes towards the future of the participants within the industry and the industry itself will be discussed in the next section.

4.6 Perceptions of the future

The final focus of the interviews were the participants' attitudes and perceptions around the future of the industry and their own position in it.

Table 7. Perceptions of the future of the industry

Theme	**Participants mentioning the theme**
Staying in industry	9
Future collaboration	7
Industry growth	7
Decreased optimism	3

4.6.1 Staying in the industry

Ten participants in total talked about their personal career plans and whether or not they see themselves staying in alternative proteins. Nine participants want to stay in their current role or relatively close to it. Oftentimes, they showed uncertainty around which exact role or focus they might want to work on, but they were certain about following the broader mission that brought them into this space.

> "I don't know if I'll stay in finance or whatever, but I'm certainly going to stay in the alternative protein space and animal space"[25]

> "I think I'd just like to be involved in a few more projects that support the environment, maybe sort of staying involved in VC [venture capital] to an extent, but also just working a bit more holistically."[26]

Only one participant was less sure about continuing their career in alternative proteins long-term, saying they do occasionally consider leaving and are not sure at this point.

> "To be honest, there are times that I have considered [leaving] [...] There are times in which I still consider it."[27]

The flexibility and openness towards changing roles but staying within their mission can indicate two things. Firstly, they might not be as committed to their current role and might have doubts whether to stay in the same position in the future. Secondly, they seem more certain about staying in the industry they believe allows them to pursue their mission, whether they want to stay in one specific role or not. This willingness to keep pursuing the mission while exploring different roles was already shown in some of the participants background stories - one participant went through several scientist positions before co-founding a start-up, another left a start-up they started to pursue employee positions, and one is in a temporary position to test their fit before finishing postgraduate education. This commitment to mission was shown in some employees of nonprofits, who seek out mission-driven jobs on purpose, even if it comes at a cost (see Section 2.2).

The background section described the mission-drift that is associated with the growth of a mission-driven company (Biltekoff and Guthman 58). If the whole sector keeps growing, it seems reasonable to expect more people will be attracted purely by the opportunities without being directly mission-driven by a specific social or environmental cause. The participants in this project were overwhelmingly mission-driven, but that cannot

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[25] Transcript P10, 00:33:10
[26] Transcript P5, 00:35:53
[27] Transcript P3, 00:49:00

be expected to be generalisable to the industry now, but possibly even less so later. Whether the mission drive plays a role for a large part of the industry could determine the behaviour of industry leaders and shape the industry, such as the extent of future collaboration, which will be explored next.

4.6.2 Future collaboration

The majority of the participants have optimistic attitudes towards more collaboration happening in the future. Some of them mention specific instances of how their companies work towards this or come with specific ideas for how they believe this can be achieved. The concrete suggestions include lobbying the governments together, licensing more technology to competitors, creating a shared pool for intellectual property of multiple companies, and joint ownership of new technology. Next to specific ideas for more collaboration, the participants also share a sentiment about the necessity of the industry working together.

> "I hope it will become more collaborative because I think that's a necessity right now, just because of the environment [...] people can't raise money, start-ups can't raise money right now. "[28]

Despite the conflict between competition and collaboration in Section 4.5.2, there is continuous optimism towards the industry changing. It is not within the scope of this project to assess whether the industry will indeed become more collaborative, but this optimistic attitude can be looked at in the context of techno-optimism. If the participants appear more optimistic about collaboration in their new-technology industry than seems to make sense given the current state, it could point toward the aspects that are often a point of critique about techno-optimism. For example, not having a deep enough understanding of the problem they are trying to address and avoiding addressing the underlying systemic issues. In this case, the systemic issues appear to be the uncompromising drive for profit generation under the capitalist economic system, which promotes competition and disincentivises collaborating. None of the positive expectations around collaboration mentioned by the participants expected a change in the current capitalist system itself, but were rather focused

[28] Transcript P5, 00:10:10

on changes within the system. On the other hand, when the participants were listing what they are missing in the industry, the most mentioned issue was institutional support from the government and universities - the participants do seem to view changes on the public system level more important that for example more money or more talent in the industry. This points to a level of understanding that more regulation of the system, even without a significant change of the system itself is necessary. One of the critiques of techno-optimism mentioned by Guthman and Butler (10) was that food biotech start-ups with their techno-fixes do not consider other potential solutions such as enhanced regulation. In contrast to that, the participants in this study mentioned governmental support many times.

4.6.3 Industry growth

The shared optimism is also visible in the participants' anticipation for industry growth. They believe that production costs will go down and will be attractive thanks to its environmental benefits. Consumer attitudes and rising concern for ethical eating were mentioned by two participants. Five interviews included numerical estimates for how much the alternative protein market share will grow compared to the total protein market. All of the participants expect that alternative proteins market share will grow significantly in the next decade. One participant reflected on the past development of the industry as a reason for their optimism.

> "You look back seven years ago, the products that I have in my fridge, that was not in the grocery store seven years ago. [...] There's always big growth and there was always consumer hunger for new products."[29]

The current predictions for the market share the participants' optimism (see Section 2.1). People working in the alternative protein industry, believing that it aligns with their mission to help the world, are of course not an unbiased sample of experts that should be relied on for predicting the future. Optimism in the case of the broad industry future is expected and does fit in with the other examples of optimism that the participants showed

[29] Transcript P4, 00:56:23

around their own future in the industry. However, there were several examples where participants were less optimistic, which are explored in the next section.

4.6.4 Decreased optimism

In contrast to the optimistic predictions and intentions of most participants to stay in the industry, there were three participants that expressed a decrease in their optimism for the future. In two cases this was connected to the current economic climate and recession, as described in Section 3.5.4. The participants noted a slow-down in the industry and a frustration with the lack of visible change.

> "I am a little jaded by this, and I think that's because [...] we pinned so much hope to these products, you know, a few years ago we were like, well, if these products are better and they're better for animals and the environment and you know, they're as good as, then everyone's going to buy them and everyone's gonna eat them. Repeat purchase drops off by 75%, so people aren't. [...] Just anecdotally, when you go to the supermarket, you just look at the meat aisles and you look at the vegan aisles."[30]

The third participant who mentioned being less optimistic previously also shared that they are considering leaving the alternative protein industry. They describe their excitement and optimism about this new technology when learning about it 7 years ago, compared to now.

> "To be honest, I don't know. I remain obviously still optimistic because I'm still in this space. [...] I'm less optimistic about cultivated meat than I was when I was reading the South China Morning Post article on my phone while taking my coffee one time, almost seven years ago."[31]

A field as young as the alternative protein industry is expected to experience some volatility, regardless of past growth and optimistic future predictions. The current economic situation seemed to be the main reason two participants decreased their optimism and

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[30] Transcript P5, 00:34:24
[31] Transcript P3, 00:44:56

acknowledged that there might be more obstacles along the way towards replacing conventional animal meat. Many of these are being explored in current anthropological literature, from consumer acceptance to legality and ethics (see Section 2.3). The industry will keep evolving outside of just technological progress, and will have to deal with external influences, such as the global economy, political climate, and public reactions to the products. It will be interesting to observe how external events might influence attitudes and optimism within the industry, considering that the current recession seems to have had an impact on multiple participants.

5. Conclusion

This research aimed to investigate the reasons why people in various roles choose to enter the alternative protein industry, how important mission drive is for them in their position, and how they perceive the current and future state of the industry. Through a qualitative analysis of 12 semi-structured interviews, it was shown that the most common reasons for pursuing this industry related to environmental and ethical concerns about the current meat industry. These concerns can be defined as individual missions of the participants. The mission drive was shown to play an important role across the spectrum, with start-up founders considering it commonly during the hiring process and employees seeking it out in their job search, similar to what the available research has shown in mission-driven nonprofits. As expected with competing priorities of mission-driven for profit organisations, strong tension and conflict were identified between the mission drive and external and internal drives for success of individual companies in their pursuit to secure funding and find qualified employees. This conflict was experienced even in cases where participants felt the environment was fully mission-aligned, suggesting that this conflict is an inherent part of managing mission drive and profit making simultaneously. Despite the conflict, most attitudes of participants towards the present and future development were optimistic, with expectations for growth of the industry. Participants want to stay in the industry and keep following the mission that drew them into the field in the first place, either in their current position or while pursuing other opportunities.

Looking at how this project can help understand and address the shortage of skilled staff, the role of mission drive was highlighted repeatedly. The importance placed on mission drive from both businesses and employees, and the issues that were mentioned when mission alignment was missing, shows that it is likely to be worth purposefully selecting for this alignment. This might however further limit the available pool of candidates. One possible development of being selective for mission is that a clear divide will occur (or might already have occurred) of companies where both leadership and employees are mission-driven, and companies where neither are. One other advantage of the importance of mission drive can be seen in the openness and flexibility that participants have shown, suggesting that as long as they are following their mission, they are more willing to try various positions in the industry. The participant in this project were drawn to the mission of alternative proteins and some of the went back to university or completed further training to be able to enter the industry. If companies want to target highly mission-driven individuals (which the

participants' companies do), they could try to target areas where there are likely to be more mission-driven people. This could be through vegan or vegetarian groups, during university when people are open to learning and exploring their futures, or through groups like the Effective Altruism community. These communities were also all named by participants as places where they first leaned about alternative proteins. Showing the alternative proteins industry as an option early on at the start or ideally before the start of people's careers also allows them to focus the rest of their education or training towards improving the technical skills needed.

Considering the stated willingness of the participants to collaborate more and not only prioritise their own success should be explored more in further research. Even within the bounds of the current economic system and for-profit organisations, there are possibilities to work towards a more mission-focused industry, some of which have been suggested by the participants. More academic and public places of collaboration, investments that support groups of collaborating companies instead of individual successes, and more governmental support were all perceived as important for the success of alternative proteins. Exploring this topic further could help reduce the friction that participants feel between the competition and collaboration, and also reduce the waste of resources that inevitably happens when companies are working on the same products simultaneously and secretly. Given that this is a very young industry with a high number of mission-driven organisations, exploring new paths towards a more efficient, collaborative, and mission-focused industry could be easier now, before the possible growth and dilution of the mission drive.

Looking back at how the participants fit into the techno-optimistic view of the alternative protein industry, this project revealed some interesting insights. In general, there seemed to be a lack of entrepreneurial drive as a motivator to go into the industry, for some participants entrepreneurship was even a possible downside. The participants also noted some systemic changes that were important for the success of the industry, differing from the common criticism that techno-fixes avoid addressing underlying systemic change. While the participants were not suggesting radical social or political change, they were aware that just the existence of the technology they are developing is not enough to address the problems of meat consumption. There were also many areas in which the participants fit the common views and criticisms of techno-optimism. The participants did not talk about possible risks of the new technologies, remained optimistic about the future despite negative

observations about the current state of the industry, and believed that new food technology is the way they can best contribute to their environmental and social missions.

To summarise, this research provided unique insight into the views of twelve mission-driven individuals, who are navigating a for-profit, techno-solutionist industry, while working towards addressing what they view as world's pressing problems. The interviews revealed the conflicts that come with competing priorities and showed differences and similarities between available research in mission-driven nonprofits and for profits, adding a new understanding to how individuals deal with such conflicts.

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