In search of a future meaning of man-made meat

On how Cultured Meat entrepreneurs use framing and how this affects the dominant frames of policy-makers

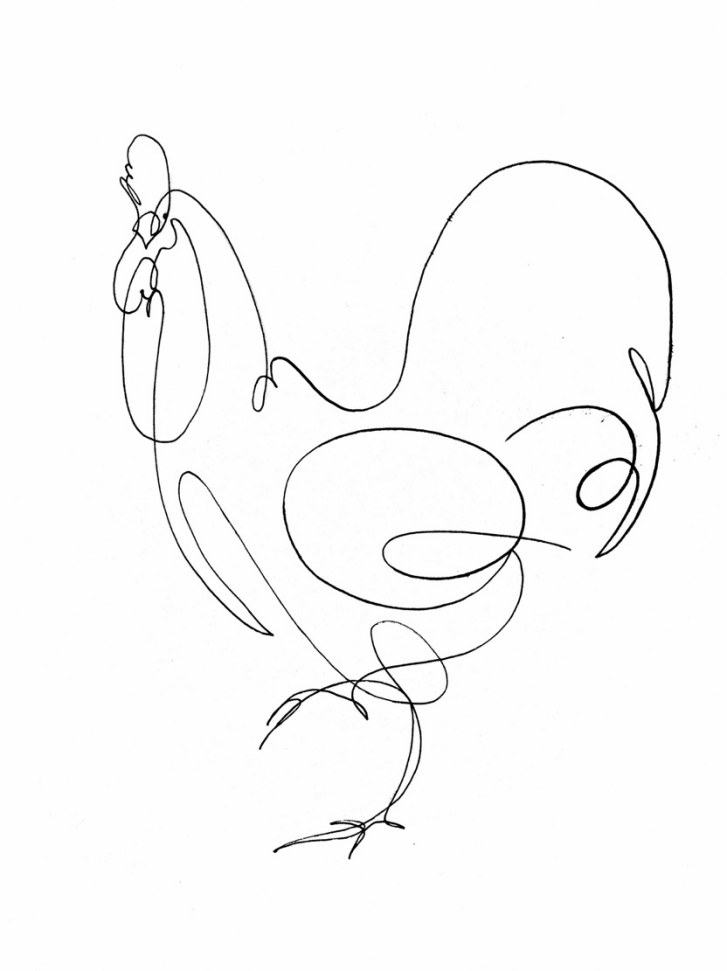

Illustration by Loutje Hoekstra

-Imagine a future in which, on a summery night we will barbeque in the garden and eat chicken nuggets and duck chorizo sausage while the exact animals we eat are happily scrabbling in the grass at our feet-

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Abstract

Cultured meat (CM) is an innovation that regards the promising production procedure of meat through cell-culturing in a laboratory, rather than through livestock farming. In the past, its development had strong governmental support in the Netherlands, however, its market introduction promptly stagnated due to the absence of fitting regulations. In the process of compiling regulations, CM requires a continuous redefinition of what can be defined as meat and whatnot. Previous research has shown that the understanding and consumer acceptance of CM is influenced by the frame with which CM is presented. As a result of this, how CM is framed may also have an influence on the understanding of CM as a "meat" or "non-meat" product in regulatory terms.

Therefore, this research questions how frames influence the image and prospects of CM among policymakers and CM entrepreneurs by investigating the occurrence of frames from the webpages of Dutch CM entrepreneurs and the Dutch second chamber debates of policymakers.

Through applying a grounded theory analysis and framing theory on firstly, the webpages of CM entrepreneur Mosa Meat and Meatable, and secondly, the political debates from the Dutch second chamber of January 20, 2020, it is found that CM entrepreneurs and policymakers frame CM differently. A total of seven frames was found, of which the frames of the CM entrepreneurs focus on the transformative and world improving capacity of CM, though the policymakers' frames focus on the innovative market value of CM. Additionally, CM entrepreneurs classify CM as "meat", though policymakers have no classification of the identity of CM as a "meat"- or "non-meat"- product and perceive CM rather as a supplement than as a substitute. The frames from previous research were found to be represented within the findings of this research and an additional frame is being suggested. In sum, the results suggest that there is a low understanding of what CM is with policymakers and more insight into the production process is needed from the CM entrepreneurs.

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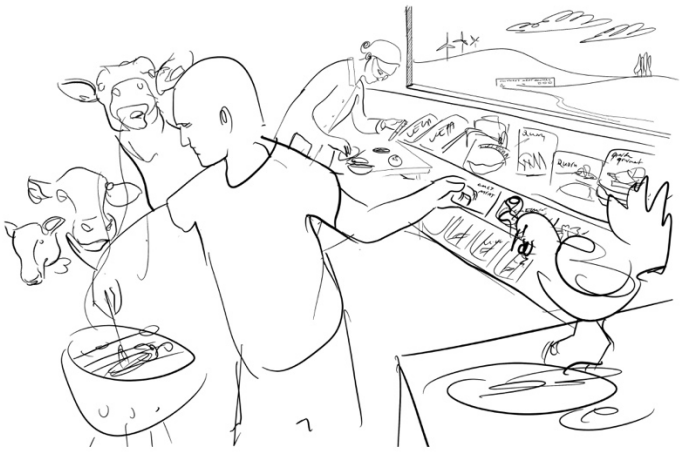

Illustration 1 creative rendering of the CM entrepreneurs' frames, by Loutje Hoekstra

Chapter 1. Introduction

The fresh, new, promising and unknown:

Since, in 1999 the first patent on tissue culturing was settled, scenarios of consuming 'meat grown from a petri dish' have flourished into actual burgers, sausages, paté and even fish products that have been cultured in a laboratory. This meat does not involve the killing of an animal. Instead, a biopsy of the animal's tissue is taken and under controlled laboratory conditions, these cells are grown into a considerable size of tissue (Gaydhane 2017). Known under the names of Cell-based meat, invitro-meat, clean meat and cultured meat (CM[1]), this 'meat grown from a petridish' is actual meat and is no longer solemnly a fantasy, but has turned into a reality. In 2013, at a price of $300.000, Mark Post from the University of Maastricht presented the first CM burger, which was subjected to a live tasting and gained enormous media attention (bbc.com, 2013 ; Stephens, 2016: Zhang, 2020). This was the start of Dutch CM enterprise Mosa Meat. Later, in 2017, US CM enterprise Just Meat, in short "Just", launched their Duck Chorizo sausage, a sausage made of a single duck cell that has been grown into tissue that is spiced and shaped into a sausage (Dagevos, 2019).

Great promises accompanied this sausage, such as it being victimless meat, having more sustainable and safe production methods and opening-up a new world of possibilities regarding food design, experimentation, and questions regarding our relationship with meat and its meaning (Arshad, 2017; Bhat et al, 2015; Hopkins & Dacey, 2008; Johnson, 2019: Stephens, 2018). CM could be a sustainable and more ethical alternative for conventional meat, which is not only a source of greenhouse gas (GHG)

[1] For clarity purposes Cell-based meat, In vitro-meat, Clean meat and Cultured meat will be called CM in short.

emission but also a major cause of resource and water depletion, food-borne pathogens and zoonic pandemics, such as BSE and recent Covit-19 (Bonny et al., 2015; de Sadeleer, 2020 ; Specht, 2018). According to the Food and Agriculture Organization of the United Nations (FAO), the meat industry alone consumes 8 percent of all water, 30 percent of land and is accountable for 14,5 percent of anthropogenic green house gas emission, which is more than all the transportation sector together (FAO). Replacement by CM could overcome resource problematic, fight drought, hunger and animal suffering and could be produced at places that normally don't lent themselves for agricultural practices. Considering these opportunities, it seems to be an incontestable morally justifiable step of mankind deeper into the Anthropocene.

— Meat from a Petri dish…

However, CM is a peculiar, high-tech product. The underlying technology is unusual in food production, and mostly applied in the medical field. Though our association with conventional meat always regards its animal source, CM is made of living cells, that develop, grow and multiply, without being attached to a conscious being. This aspect is both promising and frightening. The 'great unknown' that accompanies CM creates consumer resistance, regulatory misfits and legal insecurity (Stephens, 2010; Van der Weele, 2019). As with many new foods, neophobia- the fear of the new- hits hard with CM (Siegrist, 2013). Where conventional meat is being perceived as natural and has a deep cultural embeddedness, CM has also been named "Frankenfood", due to its synthesized characteristics and can be described as an 'undefined ontological object", that has not been existent in history and is not conform the ways we understand and categorize meat (Ruby, 2011; Stephens, 2010). Aside the previously mentioned optimistic sounds, there is also some critiques and doubts expressed, such as; subjection of the environmental superiority of CM to ambiguous views concerning its accurateness[2], ethical fears persisting of food alienation, technological abuse and animal welfare, and lastly, the endangerment of employment opportunities and culture though the loss of agricultural practices (Lynch, 2019; Mattick et al., 2015; Tuomisto, 2014; Verbeke et al., 2015; Woll, 2019; Van der Weele, 2019).

The development of CM is not straightforward. In an attempt of categorizing, the names given to CM and the accounts of what it will achieve changed though time (Stephens, 2019). When the name shifted from 'in vitro-meat' to 'cultured meat', during the Dutch Meat Consortium in 2011, this was a sign of its distancing from the scientific background it originated from (Stephens, 2019). In 2016, again the prevalent name changed into "clean meat", enhancing its 'capacity to lead conversations into a positive direction' and referring to its ethical characteristics (Stephens, 2019). Due to critique from the livestock industry, who complained on 'clean meats' implicit suggestion that conventional meat would be 'unclean' in 2018, the name changed into 'Cell based meat' (Stephens, 2019). Interestingly, the reaction of the meat industry might be considered as a competition based act, which would indicate CM's close categorization to conventional meat. As Sexton (2019) states "Alternative proteins", such as CM "have been consumed more as narratives than as tangible, eat-able foodstuffs". This nicely illustrates how the naming, the set of promises and the framing of CM have paramount importance. They are the most tangible aspect of CM and the only "facts" to rely on. One could say that CM is more

[2] The suggested greenhouse gas emissions per unit of CM produced differ significantly though Life Cycle Assessments of CM (Lynch, 2019).

than just a high-tech innovation. In its development and the rethinking of its identity it is a social construct that reflects our understanding of the meaning of meat (Johnson, 2019).

— Is on its way

According to Dutch politicians, the substitution of stake and spareribs by its cultured, laboratory based alternative is now on its way and expected to enter the Dutch meat market within five years (Nos.nl, 2020). Throughout the years, the Netherlands has had a prominent position in the development of cultured meat. With it being the cradle of the first patent in CM, having much pioneering university based research that was running on governmental subsidy[3], positive media engagement and representation including informative programs and challenges[4], the Netherlands used to be a welcoming environment for this peculiar product (de Vre, 2013; Hosselet, 2017; Stephens, 2019; Van der Weele, 2014).

— Jet, it is forbidden.

However, its market introduction doesn't go without hurdles. Though CM entrepreneurs were winning more and more legitimacy with the public[5], the consumption of CM was suddenly forbidden by firstly the Dutch Food Safety Authority and secondly though the Novel Food Regulation in 2018 (Bryant, 2018; *Answer to Question No E-001992/19. (2019, June 18)*). Suddenly, the road to our plates was cut.

The Novel Food Regulation (NFR) came to work on the first of January 2018 and aims to ensure "the effective functioning of the internal market while providing a high level of protection of human health and consumers' interest". It concerns all products for human consumption that have not been consumed and sold within the European Union before 1997, and obviously also concerns CM.

In order to surpass the NFR, the goods of interest need to be tested and approved by the EFSA and all EU member states individually must approve on the specific product and the associated rules for production and consumption (esfa.com; Kennislink.nl). The EU authorization procedure starts with the initial application of the product, which can be done by anyone. Thereafter, excessive testing and research is started, to ensure safety of the product. This process also concerns product naming and labelling, which is dependent on the products perceived properties (Verzijden, 2019). Therewith, this legal naming determines the applicable labeling and regulatory standards on the national level.

However, this step is in general a complicated case with CM. Alone within the NFR is remains unclear what specific class CM belongs to (Seehafer, 2019).

To begin with, the classification of CM as 'meat' or 'other than meat', which is decisive for the regulatory framework regarding food hygiene, is still undefined. There has not even been scientific consensus on what can be determined as "meat" and "non-meat" or whether CM is a product of animal origin or not (Chriki, 2019: Stephens, 2018). Secondly, CM may also fall under the classification of genetically modified products, since some production procedures of CM require genetic engineering (Stephens, 2018).

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[3] In 2005, the Dutch Program of Sustainable Food Systems (PSFS) provided 2 million euros for research into CM at the Dutch universities of Amsterdam, Eindoven and Utrecht (Stephens, 2019).

[4] In 2006, the Dutch television program 'Noorderlicht' presented a challenge to find a "better" name for CM, which at that time was often called '*reageerbuis vlees*' i.e. In vitro meat. Winners of this challenge were '*La Brund*', '*kreas*' and '*Happy Meat'* (de Vre, 2013).

[5] From a systemic overview on consumer acceptance of CM a growing willingness to try CM was found with the public, however only a small proportion would choose it over conventional meat or meat alternatives (Bryant, 2018)

To bring CM to market, CM requires not only the expensive procedure of the application, but also is in need of continuous redefinition of what can be defined as meat and what not, and separation and classification of different production procedures to lastly have legal breakthrough. European CM producers likely will have to "learn by doing" though the EFSA applications (Verzijden, 2019).

— Public and regulatory understanding of CM

The legal constraints CM is facing are a primary barrier in CM's further development, since it limits the space for experimentation and is a major hurdle towards its legitimacy, since complying with the law remains one important factor for beliefs of appropriateness (Stryker, 1994). Therefore, the support of the government is decisive in CM's development towards a legally and socially accepted and welcomed product. Therewith, the eventual breakthrough is not solemnly dependent on the NFR, but also local authorities that are responsible for regulation and practice, and need to bend over issues of safety, fraud and ethics (Stephens, 2018).
In the process of dealing with the legal constraints and searching for ways to gain legal approval, CM entrepreneurs need to interact with policy makers, the public and the media to communicate their points of view, construct an understanding of what CM is and influence the policy making process. In this relation between the policy makers and CM entrepreneurs the created understanding of CM is decisive for the product positioning of CM on the political agenda, since, in absence of any similar examples, this understanding is the only thing one can build upon its judgement (Sexton, 2019). Accordingly, the aligning of this understanding, in terms of finding consensus on the meaning of CM, is a step towards mobilizing allies and resources.

Recent research found that the specific framing in stories concerning CM affects consumer receptivity (Bryant, 2019). Framing consists of the selecting of certain aspect of a perceived reality and make these aspects more salient in a communicating text (McGrath, 2007). Framing also is the process of discriminating between different options (Kohler-Koch, 2000). How CM is framed therefore strongly affects how it is perceived and welcomed. Through an experimental setting, Bryant (2019) found that when CM is framed as "socially beneficial", "high tech" or as being the "same as meat" the "high tech" presentation caused significantly more negative attitudes towards the concept of CM with individuals in the US, compared to when presented with the frame emphasizing CM being "socially beneficial' or "same as meat" (Bryant, 2019).

During political debates and decision-making procedures, the way CM is presented and bespoken i.e. framed might strongly influence outcomes in a similar way as it does influence consumer receptivity.
As Stephens (2018) states 'Terminology is important in framing how things are understood, and this contestation over what it is called reflects both the ambiguity over what it is, and the political sensitivities of how different groups want it to be positioned.' Different scholars have described the effect of framing in both politics and entrepreneurship (Khan et al. 2007; Kohler-Koch, 2020) However, how exactly policy maker's receptivity of CM within politics is affected by CM's framing has not been researched yet. To address this research gap, I here ask:

- *How do Dutch CM entrepreneurs **and** Dutch policy makers use framing to make sense of CM since the coming into effect of the NFR?*

In search of a future meaning of man-made meat; how stories are decisive for the future

Frames embody the beliefs on the outlook of CM and have an important function since they determine what kind of conceptual models of CM will prevail and why some gain precedence over others (Kohler-Koch, 2000). Insights into what frames occur under CM entrepreneurs and what frames are handled by policymakers within politics shed light on the different perceptions on the set of promises of CM. Therewith, frames are one of the determinants in the policymaking procedure and future of CM.

Understanding this can help at bridging the communication gap between entrepreneurs and politics and accelerate the development of CM. With the development of CM, the progress of successfully developing sustainable meat alternatives is stimulated, which is essential within the EU's striving towards climate change commitments (Froggart and Wellesley, 2019). This does not only apply on the physical level of finding an alternative for meat but also concern the gathering of ethical understanding of the meaning of meat, meat consumption and the replacement of meat consumption. Herein, findings of this research may sustain an institutional shift that guides towards a sustainable future and results might do a suggestion of what is needed for CM entrepreneurs to mobilize politics through the aligning of visions. On the theoretical side, firstly, understanding framing on both the part of the entrepreneur and the policymaker can extend the literature on framing and centralize the concept of framing within the theory of institutional entrepreneurship and legitimacy. The literature on framing is a growing topic, and its role is more and more being scrutinized within the notions of lobbying (McGrath, 2007), the creation of legal institutions (Kohler-Koch, 2000) and path-creation (Garud & Karnøe, 2001). Herewith, it examines the role of framing within the broader field of transition studies. Secondly, it examines to what extend Bryant's (2019) research findings of the effect of framing on consumers can be applied on policy makers.

The Netherlands is an interesting case to study the topic of framing around CM since CM developers and politics have been closely related throughout the years. Since the coming into effect of the NFR, restaurants and the NEMO museum that had just bought CM products from CM entrepreneur Just Inc. had to be stored it in the freezer until further approval of the Dutch Food Safety Authority and ESFA. It seems that hitherto, no application of CM has been done and, from a recent outcome of parliamentary debates around CM, it seems that Dutch CM entrepreneurs can no longer count on the support of the Dutch parliament as before. A change in the Dutch political engagement in CM development appeared when Dutch minister Schouten of Agriculture, Nature and Food quality judged "let the market figure it out" (Nos.nl, 2020). The proactive and stimulating statue of the Dutch politics has turned into a rather passive background, and the 'social construction of CM' that previously was closely related to political activity has shifted to the liberal market. A fortiori, shedding light on a changing approach towards the future of CM.

Guiding sub-questions this research aims to answer will consist of:

- What frames can be found from CM entrepreneurs and policymakers?
- How do frames of CM entrepreneurs and policymakers differ?
- What is the meaning of the persistent frames- what are the consequential outlooks?
- How do these outlooks differ between CM entrepreneurs and policymakers?

Chapter 2. Theoretical background

2.1 The broader positioning of framing

Contrary to traditional entrepreneurs, the paradigmatic shift, i.e. the change in the 'modus operandi' that accompanies the introduction of CM and CM makers' interest of bringing CM to the market, requires an institutional change that consists of a change in behaviour, on the consumer-, producer- and regulator side. To succeed, current institutions consisting of the rules, norms and beliefs regarding conventional meat need to be reinvestigated and new institutions need to be established that can accommodate CM. Therefore, CM entrepreneurs can be understood as institutional entrepreneurs, which is in line with Maguire's (2004, p.657) definition of institutional entrepreneurship as the "activities of actors who have an interest in particular institutional arrangements and who leverage resources to create new institutions or to transform existing ones".

A part of the process of creating new instructions, as institutional entrepreneurs do, is determined by the actions of gaining legitimacy. Following the conceptualization of Suchman (1995), legitimacy is 'a generalized perception or assumption that the actions of an entity are desirable, proper or appropriate within some socially constructed system of norms, beliefs and definitions' (Suchman, 1995). Accordingly, the perceiving of the new systems of norms, beliefs and definitions as 'the right thing to do' and/or the new 'given' is essential for the institutional change (Suchman, 1995). These perceptions are socially created by the individual actors of society and subjectively sensed. Consequently, these perceptions are possessed by the collective audience and objectively judged (Suchman, 1995). Therefore, in the building or changing of an institution, the process of gaining legitimacy needs to occur with the audience, but since many institutions are under the direct or indirect control of central or regional government getting legal approval is as important (Shavinina, 2003). It can be noted from recent articles, that in the case of CM this is even decisive (Nos, 2020).

Within political arrangements, the process of building legitimate institutions is a permanent process between actors involved in the functioning of the institution (Kohler-Koch, 2000). Herein, actors pursue interests that they consider to be efficient and to be a common good. The belief of what is efficient and/or appropriate is rooted in belief systems consisting of historical legacies and myths that are both open to new interpretations, rather than in systematic reasoning (Kohler-Koch, 2000). Here, we find that language, and specifically framing as a medium to transfer belief systems has an important function in transmitting the arguments of legitimacy (Patiwael, 2020).

2.2 What is framing?

Framing is '*a way of selecting, organizing, interpreting, and making sense of a complex reality so as to provide guideposts for knowing, analyzing, persuading, and acting. A frame is a perspective from which an amorphous, ill-defined problematic situation can be made sense of and acted upon*' (Rein and Schön 1991: 263). The notion of "ill-defined problematic situation" perfectly refers to the CM debate, wherein both the current- and the future meaning of this product is still under construction.

Through the highlighting of characteristics or emphasizing specific notion topics or aspects of interest can be pushed to the front, which also makes that framing is a process of discrimination; different options i.e. competing frames can be given the prominence that can lead to different worldviews and create different social realities (Entman, 1993; Kohler-Koch, 2000; Rein and Schön, 1991). This process of discriminating between different frames follows a context-specific decision-making heuristic that is dependent on the attributes of the specific problem (Kohler-Koch, 2000). Stories and the subordinate subjects are evaluated on their internal coherence, rather than on external validation (Kohler-Koch, 2000). Therewith, framing can also add to what could be perceived as more legitimate or less legitimate (Patiwael, 2020). Also, framing is a sequential process where the very first frame can influence the focus on a particular definition and/or guide in the selection of the following choice of action (Kohler-Koch, 2000). Here the notion of framing gets an important feature: "Framing colours the nature of the options which may stimulate consensus or dissent. It is as important for the successful processing of decision-making as it is for the substance of the output" (Kohler-Koch, 2000), meaning that today's frame might stir the direction of tomorrow's outcome.

The literature on framing can be found in different strands of research. Framing influences the legitimacy process of new products (Patiwael, 2020), it has actively been used by entrepreneurs in general (Khan, 2007) and the cultured meat industry to position their new product towards potential customers. In the same way, it can be expected that framing is an important mechanism that entrepreneurs use in lobbying activities to position their new products towards policy-makers. I describe the characteristics of frames with three different actors (1) institutional entrepreneurs, (2) Policymakers and (3) lobbyists.

— 1. Framing with institutional entrepreneurs

According to Khan (2007), institutional entrepreneurs frame strategically and articulate change projects in particular ways to 'define the grievances and interests of aggrieved constituencies, diagnose causes, assign blame, provide solutions and enable collective attribution processes to operate' (Khan et al, 2007). Garud & Karnøe (2001), in their writing on path-creation, describe how different actors in a technological field enact their realities and ascribe specific meaning to objects based on their frames (Garud & Kanrøe, 2001). According to them, three stylized frames can play a role in technological development:

(1) The **production frame**, consisting of beliefs on the future potential in terms of form and function of a technological trajectory. In their writing Garud & Karnøe (2001) give the evolution of the Post-it as an example. The technological potential of the Post-it, a before non-existent product, is expressed thought the newness of the molecular structure of the glue and the technological possibilities this 'not-so-sticky-glue' could give (Garud & Kanrøe, 2001). The emphasis that is put with the molecular beauty of the glue, when looking at it through the microscope, implicitly articulates the potential that the material contains (Garud & Kanrøe, 2001).

(2) The **use frame**, consisting of meanings that can be given to the artefact when in use. The use frame with the post-it could be projected on the following event in which the

meaning the artefact could have was tested in the unconventional setting of a choir, where the Post-it was used to put non-permanent marks into the song-book (Garud & Kanrøe, 2001). However, for the case of the Post-it, the ascribing of the meaning of its use was very flexible during its development and therefore changed dependent on the opposite party and any expression of what meaning the product could have would be an example of a use-frame.

(3) The **governance frame**, consisting of ideas on the value of the technological trajectory for stakeholders and ideas on what financial instruments may stimulate the development (Garud & Kanrøe, 2001). The value of the Post-it firstly was expressed during the discussions with patent attorneys that firstly rejected the patent request. However, eventually, they managed to convince the patent attorneys that they had discovered something new and valuable (Garud & Kanrøe, 2001). Such governance frame could be the expressing of the need for support, with the promise of developing an artefact that matters.

— 2. Framing with policymakers

Frames can be conceptualized as 'schemata of interpretation' which in the words of Goffman (1974, p.21) provide 'access to understanding otherwise hidden institutional barriers and constraints in policy-making, which relate to differences in knowledge, values, and beliefs that are represented by different frames used by policy actors'. Another characteristic of framing in constructing legitimate institutions within the political arena is described by Kohler-Koch (2000): Frames function as a matter to summarize, simplify and stylize the issue to overcome time constraints that are present within the political arena (Kohler-Koch, 2000). According to Kohler-Koch (2000) things that can turn into such a summary i.e. frame of the issue are:

1. **A parsimonious cognitive model** — this is a simple model that pins down principles and causal beliefs, accordingly it represents highly charged values. As an example, Kohler-Koch (2000) refers to Fischer's Humboldt lecture. Herein such a parsimonious cognitive model is proposed by Fischer, the German federal minister in 2000, when he presented a blueprint, including the necessities of a fundamental reformation to approach the future as an easy to understand the model that delineates the challenges to be met for the future of Europe (Kohler-Koch, 2000).

2. **A reminder of positive experienc**e — this is a reference to a previous experience, which due to its positive character takes the role of the optimistic representation and option of the subject of interest. Again, this is exemplified by Fischer, who's proposed model specifically stimulates positive memories (Kohler-Koch, 2000).

3. **A link to internalized categories of traditional thinking** — this refers to linking the subject of interest to issues on the agenda and to normative aspirations. An example hereof is the acknowledging and dramatizing of the difficult times the EU is facing and proposing and engaging with plans of action (Kohler-Koch, 2000)

4. **An indication that experts and opinion leaders share the concept'** — this refers to the strengthening and legitimizing of one's point by citing the shared understanding of one's own and other actors, as for example, Fischer did by linking the demands of important leaders of European integration to the agenda (Kohler-Koch, 2000).

A concept is most likely to become a frame of reference when it displays the latter characteristics (Kohler-Koch, 2000). The last notion is that the concept must be 'present', meaning that actors need to be aware of it i.e. it needs to be dominant to not be ignored by those who would rather not take notice of it (Kohler-Koch, 2000). A concept is dominant when it is related to points on the agenda or is in line with previous agreements (Kohler-Koch, 2000).

— 3. Framing with lobbyist

McGrath (2007) describes the importance of **framing in the interaction of actors and political structures** concerning **lobbying**: "*frames [then] form the basis of how a particular policy issue is viewed, and thus influence how that issue will be dealt with by policymakers: lobbyists (on all sides of any issue) will attempt to frame or* ***define the issue in such a way as to suggest that their particular perspective is the correct one*****.**" (McGrath, 2007). With the use of a particular/right frame, on one hand, new practices can be justified as valid and appropriate and on the other, causes can be diagnosed, blame can be assigned and solutions can be provided (McGrath, 2007). An example of such acts, where the wording has a great role in positioning the issue, can be found in the battle to restrict smoking in public spaces. Here proponents of the ban called the bill 'The clean indoor air bill', though the opponents called it 'The smoking restriction bill'. Alternatively, the same is the case for the abortion debate, where two labels dominated the discussion 'pro-choice' vs 'pro-life' and 'pro-abortion' vs 'antiabortion'. In these examples, specifically, the wording has a great role in positioning the issue and assigning implicit blame (McGrath, 2007).

2.3 Towards framing CM

Framing functions as a communication tool to stir and mobilize actors and resources. In the case of CM, this means that CM entrepreneurs use language in such a way that it can control a situation up to some extent. Due to CM entrepreneur's dependency on gaining legal approval, they can be perceived as the mediator between non-regulatory actors and regulatory actors and therefore are put into the position of the lobbyist.

The analysis of CM entrepreneurs' frames could provide insight into what beliefs they have on the future development of CM, the meaning of CM as a consumer product and how CM could provide value. Accordingly, it could shed light on their current needs and future envisioning of capabilities and regulations, both in an explicit and implicit manner. The same is the case for the policymakers' frames. The analysis of the occurrence of frames in policymaking can function as a tool to shed light on institutional barriers that might not be obvious on the first view. In sum, similarities and differences can be identified that can help at defining a common vision.

Due to the setup of this research it is not possible to take over existing research, as of Bryant (2019). However, it lends itself well to develop new frames and subject these to the knowledge above theory on framing can offer. In the discussion, this research will reflect on its findings in relation to the frames of Bryant (2019). This will highlight in which regards the found frames in policy-debates on CM overlap or, respectively, differ from frames used towards/by policymakers, institutional entrepreneurs, and lobbyists. Additionally, it compares to findings of previous consumer acceptance research.

Chapter 3. Methodology

3.1 Data and empirical approach

This research uses the Cultured Meat development in the Netherlands as an illustrative case to explore the role of framing in the decision making concerning the legalization of CM. I will first analyze the occurrence of frames with (1) with Dutch CM enterprises Mosa Meat and Meatable and (2) Dutch politics, as represented in the Dutch parliamentary debates.

The data for this research consists of webpage content from the current webpage of Mosa Meat and Meatable and the relevant written documentation of parliamentary debates from [20-01-2020 to 12-01-2017].
For the analysis of Dutch CM entrepreneurs Mosa Meat and Meatable, a webpage analysis using grounded theory will be conducted.

Webpages
This research has the novel approach of analyzing webpages instead of looking at specific events. With the rise of the internet, one of the most common methods of information-seeking is through an internet search. Next to publications on the topic of interest that are presented by the search engine, the webpage of the party of interest is often presented high up in the rankings of suggested sources and is one of the first sources to be consulted. In particular in the case of CM, since yet CM entrepreneurs are the most knowledgeable actors about CM. Webpages function as the perfect medium to share information, knowledge and opinion, and particularly to express one's standing. Additionally, different types of readers need to be addressed through webpages, for which reason it is expected to find the most condense and inclusive presentation of CM here. Since marketing webpages often exaggerate their vision to ensure the transfer of their message to the reader, it is expected to find expressive frames here.
Due to the aim of gaining understanding in how CM entrepreneurs use framing it is, from the latter, assumed that webpages are the right data to investigate to find stylized positionings of CM in the frames.

Parliamentary documents
For (2), Dutch politics, data from the parliamentary debates will be obtained from tweedekamer.nl. Tweedekamer.nl is an open-access data portal of the Dutch government where all spoken and written debated and agreements are published in the form of 'parliamentary pieces'. A parliamentary piece is a written piece that is exchanged between the Dutch government and the Dutch parliament. Parliamentary pieces mostly concern certain bills, but it may also concern a specific subject, therefore, the investigation of parliamentary pieces, as unmuted writings about the debates within the parliament seems to be the most accurate representation of what is being thought and said within Dutch politics.

3.2 Sampling

The data for (1), the Dutch CM enterprises will consist of webpage content i.e. text and images of firstly the most recent webpage version of MosaMeat.com (respectively May 13, 2020) and Meatable.com (respectively July 17, 2020). Secondly, the Wayback Machine will be used. The Wayback Machine (https://web.archive.org) is an Internet archive that gives access to all archived versions of webpages over time. Using the webpage URL of the webpage of interest (in this case Mosameat.com and Meatable.com) and selecting a date range, a calendar gives an overview of all dates changes, the intensity of the changes occurred to the webpage and accordingly gives access to the former webpage version. The webpage versions that are labeled to have significant changes will be analyzed. Significant changes in the webpage content for Mosa meat.com are 73 changes [between June 26-2018 and May 13-2020] and for Meatable.com are 47 changes [between august 5-2018 and July 17- 2020]. The investigation of significant changes is conducted as a method of purposive sampling in which the aim lies to find maximum variation in what frames appear.

For (2), the Dutch parliamentary debates similar gathering of data is the case. Using search terms "cultured meat" and "in-vitro meat" in the searching tool on the webpage of tweedekamer.nl, 192 documents are yielded, but since many documents only fall under the initial selection due to referring to a previous or coming debate, but are themselves not dedicated to discussing CM, 14 documents were found relevant after rapid scanning (see Appendix 2).
The most recent and extensive debate (2020D11156 of 20-01-2020) will be used as the first document to be analyzed. The analysis of the documents after the most recent debate serve, as with the data for (1), to maximize variation of possible frames. Therewith, it aims for theoretical data saturation of the expression of the topic within the Dutch parliamentary debates and to give the most representative findings as possible.

3.3 Methodological approach

Due to the multimedia character of webpages, consisting of strategically positioned text and images, the complexity of political debates, and the rhetoric within the text, using computer-aided word coding may not give sufficient insight into the occurrence of frames. A method that creates a more explanatory theoretical framework and that can provide abstract and conceptual understandings is needed. Due to its inclusiveness, this research will apply Grounded Theory (GT) to produce an explanation of the social phenomenon investigated.

Grounded theory

The Grounded Theory refers to a set of procedures as constructed by Glaser and Strauss and aims at providing a framework for doing in-depth qualitative research (Bryman, 2012; Strauss, 1994). Following Bryman (2012), applying GT consist of the following elements:

- Theoretical sampling; this is a sampling method to find the most accurate representation of the diversity of categories and concepts. It differs from other sampling methods in terms that it is focused on finding units for generating theoretical understanding and therewith theoretical saturation is reached (Bryman, 2012).
- Coding; this refers to the practice of breaking down the data into components and parts (see next section).
- Theoretical saturation; this refers to the collecting of data until no new components in terms of categories and concepts are found anymore. Lastly, it includes the concept of constant comparison, which refers to the maintaining of a close connection between data and conceptualization.

The coding element consists of three stages (1) open coding – through a process of labelling passages in the text from the primary data, without presumptions, a succession of codes is made (2) axial coding – here codes are being interconnected to refine and differentiate concepts into categories through the linking of concepts to contexts, consequences and causes and (3) selective coding - this is the stage in the data analysis where core concepts are identified, and then abstracted, yet empirically GT is generated.

Bringing in framing theory

During the axial coding, in the second stage Strauss (1994) allows for having the data interfere with theoretical knowledge, which was formerly kept at a distance of the entire GT procedure. I will use my knowledge of framing, as attained from Kohler-Koch (2020), Garud&Karnøe (2001) and McGrath (2007) in the process of interconnecting codes and making sense of the codes that are found. To do so, the proposed frames have been translated into lenses though which the data is approached. This approach does not change the theoretical concept, but means to gives a clearer understanding of how the theory is applied.

To execute this extensive analysis, Atlas.ti text analysis program, as provided by Utrecht University will be used.

3.4 Reliability

Due to the qualitative and interpretivist approach of this research, I will try to cover the reliability and validity of the data and findings in the following way. Firstly, all data is publicly available, which strengthens the external reliability. Accordingly, a step by step explanation of the process, neat process description to keep track of the coding process and thick data description should enable understanding and replicability of the testing method. Due to the research its interpretive point of view, naming the exact arguments for the interpretation and having a second reader, with whom close communication concerning the findings and interpretations is maintained will help at strengthening the credibility and theoretical sensitivity. Confirmability is enhanced through memoing and listing possible meanings to the words and subjecting the text to the optional meanings.

3.5 Validity

In terms of construct validity, reassessment of the codes during the full duration of the GT process means to prevent from subjective interpretations. Compared to using computer-aided word-cluster analysis, the use of human coding has as an advantage that it gives a denser and more content related coverage of the data, which strengthens both construct and content validity (Matthes & Kohring, 2008). In the specific context of this research GT seems to be an appropriate research method. Though GT can be applied with the complete distancing of any theory, I will apply the theoretical knowledge of Kohler-Koch (2020) and Garud & Karnøe (2000) during the axial coding stage. This will not only help at coding for frames in specific but also raise construct validity.

Since the parliament is obligated to publish all debates, in its uncorrected form as soon as possible, sampling validity is ensured by the parliament's documentation method. However, since through the searching method, it is found that not all documents which refer to the word “kweekvlees” are relevant, further sampling validity is ensured through giving precise arguments for leaving out documents from the eventual data of analysis. Regarding the sampling of data from the Wayback machine, the similar procedure applies, since it is expected that this method which already does a more precise investigation of every data unit gives sufficient depth and reason for differentiating relevant data from non-relevant data. Lastly, all documents of Tweedekamer.nl are written in the Dutch language. To maintain consistency and close relation to the exact word use, during the coding process Dutch language will be used. The translation into English will only take place after the last phase of the analysis and will be a direct translation from the Dutch findings into the English language.

Chapter 4. Research findings

4.1 Findings from the CM entrepreneurs

The initial analysis was conducted on the most recent webpage version, which is the version of September 5, 2020. To execute GT to the data, the webpage's content was downloaded using an open-source webpage-to-pdf converter and the resulting documents consist of both text, images and layout.

During the first investigation of both webpages, all content, consisting of text and images was interpreted and coded into codes such as: "reduce animal suffering*",* that applies to quotes that express this motive, for example *"– for many in our team the main reason – was to help reduce the suffering of animals." (MM 26:15).* Or the code "CM is produced by taking a sample", with the quote *"The burger was harvested directly from cow cells"* (MM 9:6). A total of 305 codes was generated that were arranged into code-groups. The code-groups function as overarching themes of the codes inside and help to gain an understanding of the matter. As such, a code-group that consists of all codes that concern animal wellbeing was created, and similarly code-groups for all codes that regard regulations, images or plant-based proteins were created. In parallel, the codes were also grouped to fit with the proposed frames of Garud & Karnøe (2001) and McGrath (2017), which were translated into: the production-, use-, governance- and lobby lens. The findings of applying the lenses also can be perceived as to fall under code-groups.

To shed light on what is found to be remarkable and to get familiar with the content, I will first go into the general, rather descriptive findings. To do so, the findings follow the logic of asking questions that are aiming to gain insight into the matter: "What is CM?", "Why make CM?" "How to make CM?", "When to expect CM?"- and "Who makes CM?". Table 1 gives an overview of these question and the codes that answer these questions.
After presenting the general findings, the findings from applying the framing lenses of Garud & Karnøe (2001) and McGrath (2007) will be presented and a set of found frames will be proposed.

4.1.a General findings

To introduce into the findings, the first question that comes to mind is "**what is CM?**". Through the coding process, it was found that CM is identified as enjoyable, clean, tasting better than normal meat, part of a healthy diet, a new production method and peculiarly as "your meat". But most of all, it is identified as 'the same as meat' and has a core position on our plates. It is distinct from conventional meat since it does not harm animals and it is distinct from other meat alternatives by being not plant-based. Therewith, it is presented as the ideal conventional meat alternative for those who do not want to become vegetarian.
Interesting are the different distinctions of the role of animals that can be found: CM does not harm animals, CM does not kill animals and CM does not use animals. These expressions are used in a different context, as an apparent aim to illustrate what role animals (still) have within the CM production procedure. When CM is depicted against the background of the conventional meat industry 'CM does not kill animals is used', in the context of its production procedure 'CM does not harm

animals is used', refereeing to the cells puncture that is taken from the animal one wants to grow CM from. In the context of FBS (Feutal bovine serum) however, 'CM does not use animals' is used, to refer to the argument that the CM production procedure does not make use of FBS, which is obtained from unborn calves, anymore. With this point, the topic of CM being clean and being an innovative scientific method becomes relevant. It is argued that CM does not use growth hormones, nor genetic modification or antibiotics. This is due to the 'natural process' under which CM is produced, in the strongly regulated and controlled environment of a laboratory setting.

When looking at the codes that answer the question "**who are the makers of CM**?", an interesting aspect herein is the identification as science-based actors and innovators. They frequently mention their relation to the University and both enterprises refer to means that express their expertise and professionalism.
Now that the product and the makers are identified, one may question 'why?' CM is a relevant product? When looking at the codes that answer the question "**why CM?**" we find a certain structure of reasoning. Apart from promoting CM as a tasty and accessible product, its superiority to conventional meat can be summarized in three steps: CM does not harm animals, it is healthy and it is good for the environment. These three topics are often presented in one sentence or even in three images that are positioned alongside each other, which gives them a trinity character. Based on this trinity, the positive aspects of CM are described. These positive aspects are reflected in the goals of CM: minimizing animal suffering, avoiding climate change by minimizing the impact of making meat and satisfying the growing demand for meat and healthy proteins and securing human health.

Concerning "**when (to expect) CM**", CM is proposed to be available and affordable for everyone and to become a popular product that is produced on the large scale. With respect thereto, it is expected to commercially launch CM within the coming 2 to 3 years, at the (almost) same price as conventional meat and on an international level. The major challenges, as to be found under "**how**" are the scalability of CM, which is also presented as the subject to which the most research and development is dedicated now. This also consists of the striving for cost reduction and the removal of animal components from the production line.

Questions	What is CM	Why make CM	Who are the makers of CM	How to make CM	When to expect CM	Where to expect CM
Codes	enjoyable taste better than normal meat "your meat" same as meat loving meat alternative for non-vegetarians not plant-based clean no growthhormones no antibiotics no genetic modification not using FBS (anymore) part of a healthy diet healthy popular affordable available without harming animals no slaughter no animal components	prevent animal suffering minimize environmental impact provide meat for growing population	Science based Experts Start-up University related	new production method make beef and pork mix fat & muscle tissue natural proces up-scaling cost reduction developing animal-free serum overcoming regulatory uncertainty	same price as meat in 2-3 years	international

Table 1 Codes from the CM entrepreneurs, organized after guiding questions

4.1.b Images

As mentioned earlier, the webpages also contain images. These images are spread over the entire webpage and give a lot of character to its appearance and first impression. As such, Mosa Meat introduces itself with the image of a hamburger and a reference to the maker of the first CM burger, though Meatable presents itself with a picture of an imposing mountain landscape that is accompanied by the slogan: "*We want to satisfy the worlds appetite for meat without harming people, animals or the planet'.* With their first opening sentence, a tune is set for the identity of the companies.

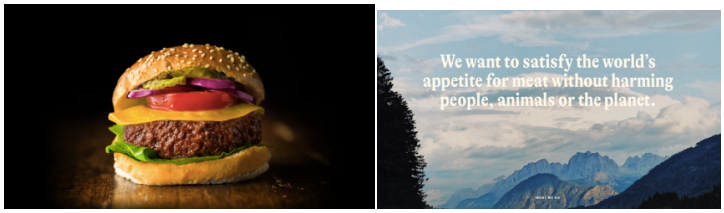

Image 1a Hamburger from the webpage of Mosa Meat; b Opening page of the webpage of Meatable

I will present a review of the findings from collecting and analyzing the images since the identification of CM also applies here. The omnipresence of images on both webpages is the same, however, the identity of the images differs strongly. Mosa Meat's webpage is dominated by pictures of Hamburgers and conventional-looking meat products, though on Meatable's webpage, the image of meat is absent. Instead, illustrations of happy looking animals accompany the slogans, as can be seen in image 2

Image 2 Illustration on the webpage of Meatable

Interesting is that, though Meatable has no literal pictures of meat products, both webpages contain aspects in their images that remind of McDonald's typology: A conventional, good looking burger, depicted against a black background which gives it an iconic character. And the logo of Meatable, that consists of a 'M' in a central position. Image 3, above left shows the McDonalds logo with next to it the logo of Meatable (above right). The similarity of the typical 'M' of McDonald's and the 'M' of Meatable is clear. Also, the similarity between the McDonald's burger and the burger of Mosa Meat is obvious.

Image 3 above left: Logo of Mc Donalds, above right: Logo of Mosa meat, down left: Hamburger of Mc Donalds and down right: Hamburger of Mosa Meat

An exception hereto it the logo of Mosa Meat, as can be seen from the image 4 below. The graphic in the logo rather reminds of a schematic representation of cell culturing.

Another aspect of the images found on the webpages that draws attention is the strong presence of images from nature on both webpages. This nature typically looks non-European and consists of wide imposing mountains and skies, with little human traces. The only image of nature that shows human traces is a picture of a burned and cut down forest with a cloudy sky in the background. Colours of the image are dramatized and slightly under-saturated with grey tones that contrast the brightness of the previous image. The images below (image 4. a-c) show the latter image (a) and the images of the landscapes (c-d)

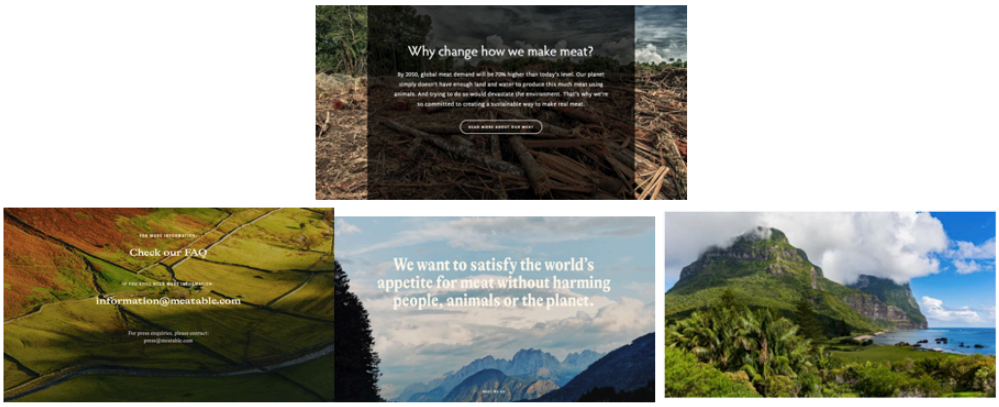

Image 4 above the image of a cut down forrest, down images of imposing landcapes

Remarkably is the absence of images that show the production process of CM. On the webpage of Meatable, any representation hereof in the images is absent. The webpage of Mosa Meat only presents images on the production in their webpage section on “how is it made”. The images that can be found on the production process are no real photographs, but consist of strongly abstracted computer animations, in which even the most literal represented thing; a cow, is given the abstracted, plastic-like identity.

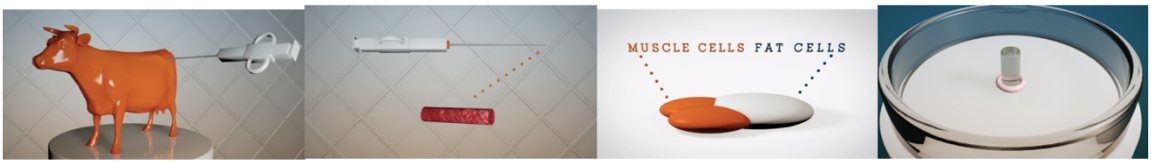

Image 5 stills from the animated video explaining the production proces with Mosa Meat

4.1.c. Frame findings

Now that the general identity of CM has been described, we can start to consider the more specific findings concerning what frames are present and what is their content. The three lenses of Garud & Karnøe (2001) were used: the production, use and governance lens, and the lobby lens of McGrath (2007). The codes were clustered again to fit with these lenses; codes that gave indication of production expectations were organized with the production lens, codes that indicate a meaning of the artifact when in use were organized under the use lens, codes that highlight value for stakeholders or address financial instruments were organized with the governance frame. Codes that blame, justify or assign a solution were organized under the lobby lens. The following section will present the findings of this process. Additionally, the wheel in figure 1. can be used as a map to navigate through the findings. The most outer ring (R4) gives the quotes. One ring inwards (R3), the codes that belong with these quotes can be found. Then (R2) gives the code-groups, which as mentioned before represent overarching themes. In the core (R1), the resulting frames can be found.

Production lens –

It was found that the following codes gave information fitting with the production lens, which embodies ideas and promises on the potential of CM*: Changing how food is made, taking a sample, mixing fat and muscle tissue, process with conventional food processing technologies, based on a scientific method, efficient way of producing food, save animals* and *have a smaller carbon footprint*.
This identity is strongly represented with the following quote *"Our mission and driving motivation is to revolutionize the way we produce meat so that we can satisfy soaring demand with meat products that are healthier, better for the environment and kinder to animals." (MM 6:10).*
When put into words this means CM will be made by **taking a sample and mixing fat and muscle tissue** that is further **processed with conventional food processing technologies**. It is a method that was found through **science** and will be a **more efficient way of producing food** that will **save animals** and **have a smaller carbon footprint**.

Use lens –

Applying the use lens, which reflects the meaning of the product when in use, the following codes were found: *same as meat, tasty, natural, healthy, liked, available, affordable, clean and harm-free*.
As Mosa Meat propagates: *"Cultured meat is the same as conventional meat so it's just as safe and healthy - potentially more so."* (MM 1:19) i.e. CM is **the same as meat**: it is a **tasty**, **natural** and **healthy** and it is **liked**, **available** and **affordable** for everyone. It is **clean** (does not use antibiotics, growth hormones and GMO) and **does not harm animals.**

Governance lens –

The governance lens highlighted all codes that could indicate a matter of value for stakeholders or give an (indirect) indication of a (financial) instrument needed for further development. The following codes fitted with this lens: *problem-solving capabilities, growing meat demand, resource depletion, climate change, investments, institutions, expertise, expanding, scaling-up, regulatory uncertainty, available in the coming 2 years*. Putting these codes into words it means CM has **problem-solving capabilities** (that are also acknowledged by references such as '10 key divers of rural change) and addresses three urgent matters**: growing meat demand, resource depletion, climate change**. It has

proof of concept through **investments** of leading actors, overarching **institutions** that acknowledge CM's potential and the enterprises' great in-house **expertise**. Dutch CM entrepreneurs are **the first** to make CM and have successfully **expanding** companies. The challenges consist of **scaling- up and regulatory uncertainty**. It will be **available in the coming 2 years**.

Lobby lens –

Lastly, the lobby lens was used, that identifies actions of blaming, justifying and providing a solution. Codes of which the content was found to be fitting with this were: *conventional meal industry, growing meat demand, lack of non-vegetarian alternatives, FBS use, limiting land use, deforestation, GHG emission, diseases, harming animals, bypassing animal slaughter and not having dirty livestock housing and use of antibiotics.* Putting these codes into words one can understand that CM entrepreneurs compare their practices with the **conventional meat industry**. They justify their practices by addressing the **growing meat demand, lack of non-vegetarian alternatives, FBS use** for research purposes and **limiting land use**.

They blame the meat industry for **deforestation, GHG emission, diseases and harming animals**. They provide a solution by **bypassing animal slaughter and dirty livestock housing** and the related need to use **antibiotics**.

Defining the CM entrepreneurs' frames

Based on the assembly of found codes and the specifics of the applied lenses four frames were identified. A frame covering the character of the productions prospects as found through applying the production lens is the "**new production method**" frame (E2). This frame covers the most represented code-groups of animal-free- and efficient production, which in turn contain the codes that fall under this frame. The second identified frame is the "**same as meat**" frame (E1), which identifies CM as meat, and includes the codes coming from applying the use lens. These two frames originate rather literally from the lenses. However, from the governance lens and the lobby lens, overlapping topics were found. The overlapping topics regard proofs of concept of CM, such as "being the first" and having investments from renowned parties, and notions of urgency, such as climate change, growing meat demand and problems caused by the conventional meat industry. Due to the overlap, frames are this time not formulated purely from the lens but are generated based on the addressed topic. This results in the "**expertise**" frame (E3), that covers all content that is a proof of concept of CM and the "**problem solving**" frame (E4) that represents all content that proposes CM as a solution.

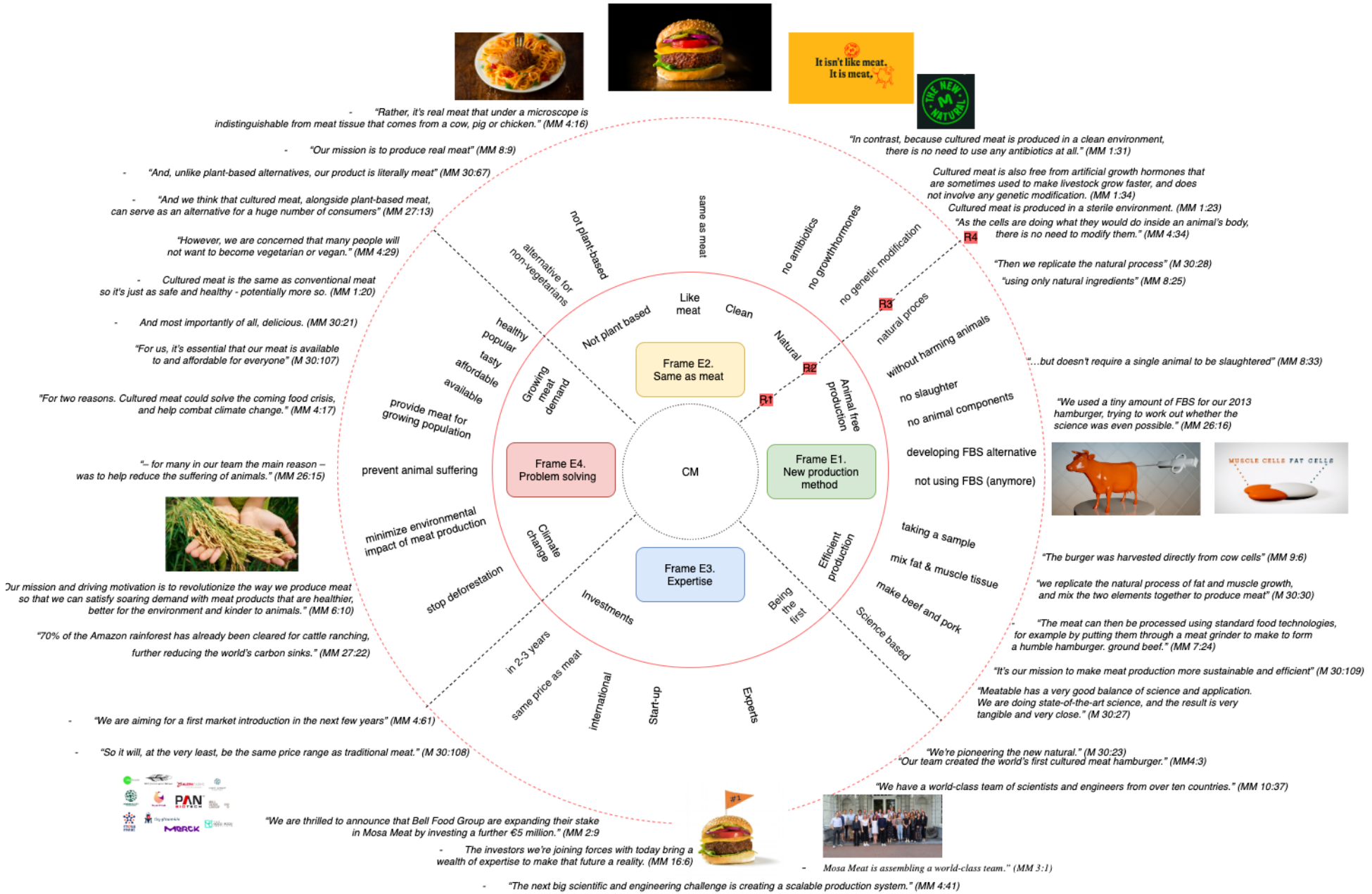

Figure 1 R1. Indicating the frames, R2. Indicating the code-groups, R3.codes. R4. Quotes

4.1.d. Findings through using the Wayback machine

The latter are the findings from reviewing the most recent version of the webpages. From the investigation of older webpage versions, it was found that changes in the webpages are constructive, meaning the changes consist of text and content build-up rather than content changes (the investigated webpage versions can be found in Appendix 1.). Therefore, this investigation gave no new categories or frames.

However, some interesting change was found in the comparison between the first webpage variant of 2018 and the most current version of 2020:

It was found that the webpage version of Meatable of September 30, 2018, the opening sentence of the webpage is "one cell can change everything" and "[…] make meat with one cell […]". This fits with the "new production method" frame. Contrary, the most recent webpage version's opening sentence fits with the "problem solving" frame (E4). With Mosa Meat, changes of the webpage since 2018 became interesting when comparing the content of the FAQ. There is was found that the perception of CM's position compared to plant-based proteins has changed. In the 2018 version, it is acknowledged that "*if everyone were to adopt a plant-based diet, it would be better as these products are even more sustainable than cultured meat."* The 2020 version argues differently: *"[…] it is exciting to see the growing popularity of plant-based foods. However, we are concerned that many people will not want to become vegetarian or vegan*." A more striking change consist of the answer to what CM is, which in the 2018 version is *"Cultured meat (or "clean meat")",* though in the 2020 version CM is *"Cultured meat (or "cell-based meat")"*. We here can see an apparent trend change in the naming of CM. Also, the expression of price expectation changed from an explicit expectation to sell CM for €9, - per burger to a non-explicit "the price is still high".

4.2 Analysis of the political debates

The second part of this research is devoted to the data of the political debates. The first and guiding debate took place January 20th, 2020 (2020D11156) and, in contrast to the multimedia character of webpages, the physical political debates are purely text-based and so are the documents of the political debates. The structure of the debates follows a certain dynamic in which each party is allowed to introduce their opinion regarding the debate topic and questions, clarification and opposing opinions can be shared. The debate is guided and after all the speakers had their term the minister is given half an hour to collect his or her answers to the propositions of the single parties.

The data of the political debates, all documents, following the procedure as suggested in the methodology were downloaded and organized based on the characteristics of the documents. After the open coding of the debate (2020D11156), the created database was searched for supplementary information. It was decided that not all documents remained relevant for the research, such as 'Position Papers', since these regard writings towards the Political actors instead of writings from the political actors. (An overview of the investigated documents can be found in the Appendix 2).

From applying GT to the debate of January 20, 2020, similarly to the investigation of frames with the webpages of CM entrepreneurs, the lenses of Kohler-Koch (2000) were applied here to search for the content that could be a frame. First, the entire debate was coded, giving a total of 180 codes, such as: 'having an innovative role', 'EFSA procedure', 'allowing experiments' and 'forbidding FBS'.
An array of topics was found to dominate the debate, such as ideas an innovative position and competition, ideas on solving current problems and ideas on safety and following rules.
The following section explains the more concrete findings of analyzing the debate through the four lenses of Kohler-Koch (2000).

4.2.a. Findings from applying the faming lenses

1. Lens 1- Parsimonious cognitive models

A theme that has strong persistence throughout the entire debate consist of the argument that the Netherlands has an innovative past and innovative role and therefore should also stay in that frontrunner's position. This can be found in short references towards the subject. It is an argument that has an apparent truth itself, a general assumption and therewith could be a parsimonious cognitive model**: Innovation is good, innovation needs to be stimulated, and preserved**. The highly-charged value therein is that the Dutch identity is related to the countries innovativeness and that one should not let go of this. The interesting thing about the above frame is that it is ubiquitous throughout the debate, and comes from all parties.

The theme of "have(ing) to feed the world" reflects concepts of urgency and problems of the current food system such as: meat is unsafe, there is a growing population and growing meat demand. Since **the government has the role to provide food for its citizen, things that could be a solution to the latter are welcomed, and so is CM.** This line of reasoning could be a parsimonious cognitive model and therefore represent a persevering frame. This frame is related to the theme "CM can be a solution" in which problems of the current system are delineated, such as the environmental impact of livestock

industry, and CM is suggested as a solution that circumvents animal suffering and has a higher efficiency than meat production from livestock farming.

2. Lens 2- Reminders of a positive experience

Regarding themes that reflect a positive experience, which, in the light of framing, fulfil the role of the optimistic representation if the topic of interest the following things serve as a reference of a positive experience: 1. **Winston Churchill** is referenced to as a visionary, and 2. the first person to **patent CM technology Dutch Wim van Eelen** in 1999, is referred to as proof of being the founding country of CM. Though all references only occur one time, they have in common that referencing positive experiences mostly points out towards **the past of CM and to the successful participation to the development of CM in and by the Netherlands**. Accordingly, the notion of "**being the first**" seems to be important for many further reasonings. More recent references consist of the round table talks with experts and a reference of the successful CM startups in the Netherlands. In general, the debate has few reminders of positive experiences.

3. Lens 3- Linkages to internalized categories of traditional thinking

One of the themes that link internalized categories of traditional thinking i.e. themes that link the subjects of interest to issues on the agenda or normative aspirations is the overarching theme of "**competition**". Here, the threat of being outcompeted by other countries, that are developing and aiming for CM production is used as an argument for pushing the debate towards stimulating CM. The subject of interest is bringing CM to market, the normative aspiration is staying ahead of competitors. This can also be found in the following line that is part of the category "Clear rules attract investors": "*While we in the Netherlands continue to have doubts, the Americans are giving this meat innovation a chance by allowing it based on clear rules and allowing it to enter the market. That also attracts investors*." (translated from Dutch 1:203). Interesting here is how the subject of interest, stimulating and bringing CM to market (and changing the regulations), is related to the normative aspiration of attracting investors and prioritizing economic development.

Another one concerns the **passing of the EFSA procedure**. Here, the subject of interest is the following of the EU law by strictly holding on to the idea and belief that the EFSA procedure needs to be passed before anything else can happen. The proposed normative aspiration is to secure safety and to follow the rules that are imposed from above. However, from side notes in the debate it appears that there might be some space within the strictness of the regulation that is solemnly waiting for EFSA approval, as can be seen from Quotation MM 1:16 "*In Germany it is allowed*" ("In Duitsland is het wel toegestaan.") And MM 1:350 "*It is certain that such a tasting was recently organized in Berlin, so that Germany does offer space for it*" (Het staat vast dat in Berlijn onlangs wél een dergelijke proeverij is georganiseerd, dus dat Duitsland daar wel ruimte voor biedt."). Interestingly in this relationship between the subject of interest and the normative aspiration, the rhetoric shortcut with this example is very strong and any further argumentation on why strictly following the EFSA procedure is the right thing to do is almost absent.

Other themes that link internalized categories of traditional thinking are 1. "**allowing experimentation**", where the subject of interest is to change the regulations that currently forbid

experiments that realize CM as a physical consumer's product and the normative aspiration is to make use of the potential of CM as a tool to solve problems i.e. to not ignore potent technologies 2. "forbidding FBS", in which animal wellbeing is the driving normative aspiration that brings FBS on to the agenda. This theme, also with this rhetoric occurs a lot, though interestingly there are many times that it is invalidated by statements of FBS not being necessary or not being used anymore. Finding a "plant-based alternative for FBS" also follows similar rhetoric as does the "**forbidding FBS**" theme. Protecting animal welfare from the use of FBS is the normative aspiration, in which now the stimulation of plant-based serum alternatives is the subject of interest that is brought to table, 3. "transparency needed", here the subject of interest is having transparency on the exact production process and contents of CM. The urging of transparency is related to fears of unethical characteristics that could be part of CM (such as genetic modification, growth hormones and antibiotics) and focusses on consumer's right to have access to information on what the products exact contents are.

A last interesting frame concerns the idea that "**animals are necessary**". Herein, it is argued that CM is no substitute for meat because animals are needed in the circular economy and fulfil important economic functions, such as eating grass (a product that is not consumable for humans).

4. Lens 4 - Indicators of experts and opinion leaders shared concepts

Concerning frame formation based on experts and opinion leaders sharing a concept, inside the debate small notions of interpersonal agreements can be found and references to shared opinions with experts. The two themes on which the most occurrence of agreement can be found are **"seeing CM as a part of the Protein transition"** and **"acceptance of CM is dependent on the use of FBS".** The notion of **"safety of CM"** finds some agreements and the notion of **"CM being not a substitute for meat"**. Also, there are few external opinions that are referenced to and represent a shared understanding of its value. The Voedingscentrum, as a source of knowledge on healthy diets, is a more frequent external reference that confirms that meat is part of a healthy diet. Lastly, there is agreement on the statement of a professor from the veterinary faculty in Utrecht on the animal unfriendly use of FBS.

From the findings of the lenses, the codes can be assembled. Table 1 gives an overview of the codes that have been found through applying the four lenses as proposed by Kohler-Koch (2000).

Lens 1.	Parsimonious cognitive model	Innovation, Feed the world
Lens 2.	Reminder of a positive experience	Successful past in CM development
Lens 3.	Link to internalized category of traditional thinking	Competition (incl. experiment), Safety (incl. transparency and fbs use), Need animals
Lens 4.	Shared concepts	Part of transition, no fbs and no substitute

Table 2 Findings from applying Kohler-Koch's (2000) lenses

Defining the policymakers' frames

When looking at the codes in the table, it appears that there is an overlap in topics between the different lenses. Rather than trying to integrate two divergent codes into one frame, or trying to have the codes compete in order to find the dominant frame, codes can be grouped bases on an overarching topic. As such the "innovation" code, the "successful past" code and the "competition" code can be grouped. Together they can make one frame: the "innovation" frame (P1). Similarly, the "feed the world" code and the "part of transition" code can be grouped into one frame: the "feed the world" frame (P2). Lastly, the "safety" code, "no FBS"- and "CM is no substitute" code can be grouped into one frame: the "safety" frame (P3).

This process is depicted in Figure 2. The most outer part consists of the quotations, going inward we find the corresponding codes and the synthesized frames.

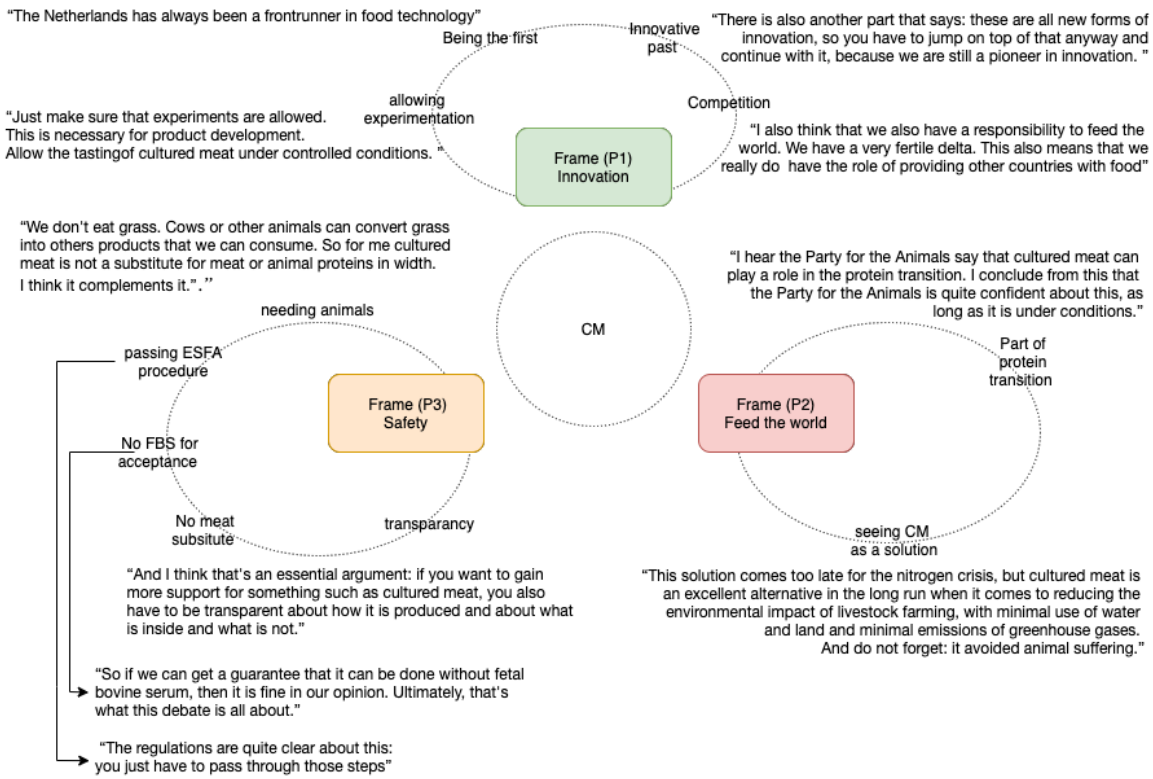

Figure 2 Frames, their categories and quotes as found from the political debate

Chapter 5. Discussion

5.1 — What frames can be found from CM entrepreneurs and policymakers

Answering the research question: "*How do Dutch CM entrepreneurs **and** Dutch policymakers use framing to make sense of CM since the coming into effect of the NFR?"* A total of seven frames was found to occur of which all have distinguished approaches of CM, respectively E1-4 and P1-3.

Through carrying out GT and applying the lenses as proposed by Garud & Karnøe (2001) and McGrath (2007) to the webpages of Mosa Meat and Meatable four frames were found. First is the "same as meat" frame (E1), that refers to the characteristics and meaning of CM as 'being identical to meat'. The second frame is the "new production method" frame (E2), that refers to the production method of CM that is more efficient and animal friendly than meat production from livestock. The third frame is the "expertise" frame (E3), that consists of proofs of concept, remarks of relation to science and overarching institutions and being the first one to execute cultured meat production. The last frame is the "problem solving" frame (E4), and consists of addressing problems and presents CM as the solution. In figure 4, the core of the wheel is presented, which shows the frames, the related topics and the relation between the frames. We find that the "new production method" frame (E2) is a function of the "problem solving" frame (E4) since the proposed method is also the source of the problem-solving.

With the investigation of the webpages, it was also found that images have a leading role in communicating ideas and are a way of supporting frames. The "same as meat" frame was found to be strongly represented in images of Mosa Meat in terms of the literal picture of meat, meat products and associations to mainstream food chains selling meat products. The "problem solving" frame is represented in the images through accusing blame and showcasing either wide unharmed landscapes or cut down forests. Interestingly, the "new production method" frame is rather underrepresented in the images, and consist of no, or only highly abstracted pictures that aim to explain the production procedure. Mosa Meat dedicates an entire tab of their webpage to explaining how CM is made and presents an animated video that introduces the core concept of how CM is made. However, the literal explanation and visual representation are absent. With Meatable this is even totally absent and the production procedure of CM is simplified into two sentences: "*First we take a sample from an unharmed cow or pig. Then we replicate the natural process of fat and muscle growth, and mix the two elements together to produce meat.".* Also, Meatable has no single image-representation of CM, which causes the concept of CM to be abstracted even more than it already is.
Therewith, the images belonging to the "new production method" frame seem to conflict with the "same as meat" frame that also advocates for CM being natural, which in general is perceived to be the opposite of highly abstracted pictures.

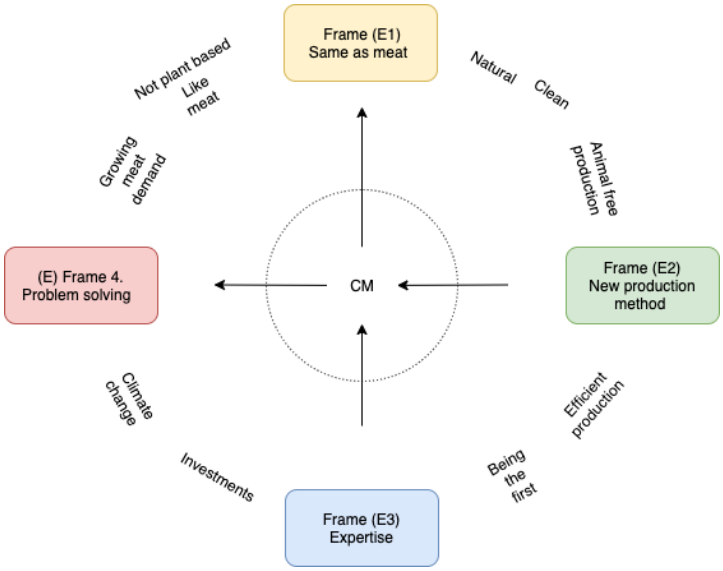

Figure 3 CM entrepreneur frame relation

The analysis of the political debates, through applying GT and framing theory form Kohler Koch (2000) gave insight into three frames: The "innovation" frame (P1), representing the ideology of fostering innovation; the "Feed the world" frame (P2), representing pragmatic ideas of being responsible and having the duty to secure food; the "safety" frame (P3), representing safety and control concerns.

The "innovation" frame (P1) and the "safety" frame (P3) were found to have opposing characteristics, though the "feed the world" frame (P2) was found to have a mediating function, as can be seen in the graphic representation in figure 5. Herein the "innovation" frame is the most progressive frame and represents the goal and role of being innovative and the threat of being outcompeted, and therefore losing the leading position. The "Feed the world" frame represents the most pragmatic frame in which role and function of CM are guiding and it becomes clear that it fulfils a role in the transition towards a system that lends itself to provide protein to the growing world population. The "safety" frame prefers to argue for situations that do not change and stick with the already existing rules and beliefs. Therefore, it is the most conservative frame, that fears newness and means to have control.

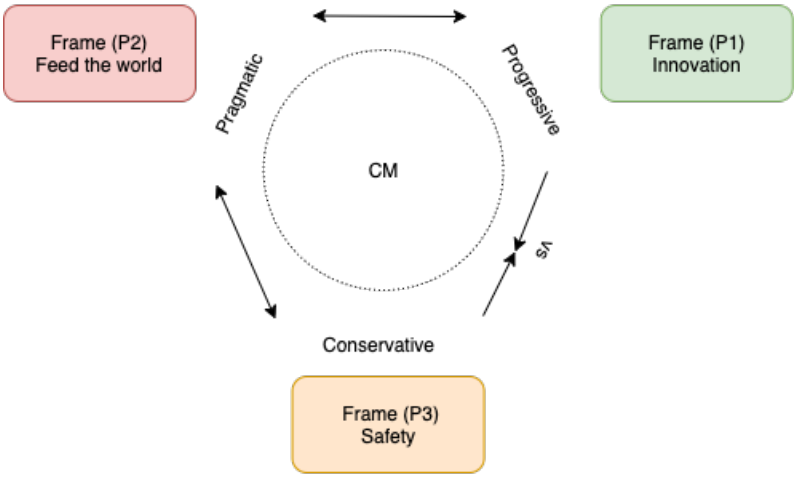

Figure 4 Frame relation from the political debates

5.2 — How do frames of CM entrepreneurs and policymakers differ

The content of the webpages of Mosa Meat and Meatable differs widely from the content of the political debates. Which, in general, is not surprising due to their different structure and purpose. Consequently, webpages are meant to engage and inform and have a one-sided point of view; the stand of the concerning actor or enterprise. Expressions can be both formal and informal, as it can be usual for marketing purposes. Political debates, however, concern several actors that may have opposing opinions. Therefore, there can be several points of view during a debate. The format of the debate also has a limiting effect on how one can and may express and political correctness is required. Consequently, the frames found from applying GT to the data sets from the webpages and the debates differ strongly in both content and nature.

Differences and similarities can be explained based through figure 6, in which the found frames have been organized in such a way that the corresponding and contrasting frames and relations become visible.

5.2.a Corresponding frames

It becomes clear that there is no strong literal correspondence between the frames of the CM entrepreneurs and politics. This can be seen in the wording, references and context that are given to CM. However, though the explicit frames differ, a relation can be found between the scope of the "problem solving" frame (E4) and the scope of the "Feed the world" frame (P2), as indicated by the red dotted line. Both address the growing demand for sustainable protein sources and advocate for CM as a tool to meet future demands. Idem, a relation can be found between the "new production method" frame (E2) and the "innovation" frame (P1). Though the essence of the "innovation" frame (P1) concerns more the intrinsic value of innovation, it also relates to the notion of being "new". The "new production method" frame (E2) implies similarly through emphasizing how it is different from previous meat making procedures.
Vague relation is found between the "expertise" frame (E3) and the "innovation"- and "feed the world" frame (P1 and P2). This is indicated by the physical closeness of the three frames. This relation, that lies with the progressive and pragmatic trajectory, comes from the correspondence between details from the debate, such as seeing CM as an optional promising export product for the Dutch market and values indicated by the CM entrepreneurs. The values presented by CM entrepreneurs, such as being the first ones to make CM, and having proofs of concept through the gained investments and connection to overarching institutions, are shared in the debate.

5.2.b Opposing frames

The greatest contrast is found in the self-contained "same as meat" frame (E1) and "safety" frame (P3). CM entrepreneurs present CM as the solution to major problems, such as climate change, food shortage, and threats of human health and animal wellbeing. It is the same as meat: it is a tasty, natural and healthy and it is liked, available and affordable for everyone. It is clean (does not use antibiotics, growth hormones and GMO) and does not harm animals.
Where CM entrepreneurs strongly emphasize the naturalness of CM and its equality or even inevitability to meat**,** this contradicts with the political view on CM. It appears that the political understanding of what CM is is strongly identified by the use of FBS and issues regarding

transparency of the contents of CM. Though the use of FBS is strongly denied on the webpages of the CM entrepreneurs and within the debate, CM is accused of using FBS, often even by the same actor who previously notified his audience on the progress made within CM development. Additionally, the transparency issue is a result of feelings of having a lack of insight, and a lack of access to insight into CM.

That there is a different understanding of CM as "meat" also becomes clear when using the opposite set of framing lenses to the debate. Using the production lens on the political debate does not give significant insights. Ideas on the production of CM stick with the perspective on when it will be available, which is expected to take a long time before it will come to market. On the other hand, the entrepreneurs, who repeatedly quote that they are close to market introduction, expect to launch in the coming 2-3 years.

When applying the use-lens onto the debate to search for what the meaning of CM is/would be when used it appears that there is no consensus on what role CM should fulfil. It is perceived as a solution, an addition to the array of meat replacements, as a sustainable alternative, but also explicitly not as a substitute, since it is argued that the livestock industry is needed and should not be replaced. Some actors experience CM as a threat to their freedom of choice and demand that CM will not interfere with the availability of livestock meat.

Another point in which the frames of CM entrepreneurs and the frames in the political debates are opponent is reflected though the "expertise" frame (E3) and the "safety" frame (P2). They contrast in the sense that the "expertise" frame (E3) tries to reassure the trustworthiness of the CM entrepreneurs practices, though the "safety" frame (P3) is countering the progress of CM through denying and doubting its trustworthiness and safety.

Summarizing, together these findings suggest that there is still a great lack of understanding of what CM is. Accordingly, there is no counterpart of the "same as meat" frame within the political debates, nor is there a specific frame that only concerns the identification of what CM is. Based on the absence of a concrete frame and presence of non-relevant topics, such as the use of FBS, this strengthens the point that CM is ill-defined.

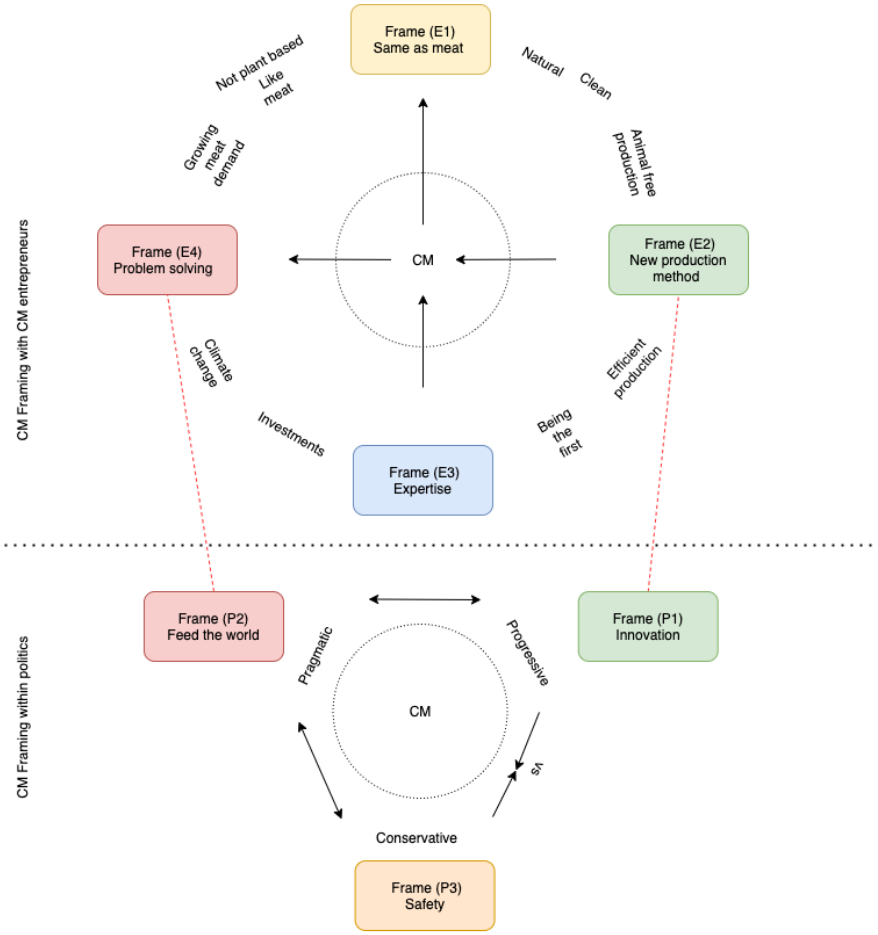

Figure 5 Comparing frames of CM entrepreneurs and frames in political debates. Physical positioning of the frames indicates their closeness on the content level. The red dotted line indicates overlap in the content of the frames

5.3 — What are the consequential outlooks of the persistent frames and how do these differ?

When seeking after the outlooks that follow the frames of the CM entrepreneurs and political debates, we find that for the CM entrepreneurs, in the future, animals will be redundant. All frames found with the CM entrepreneurs argue for this and no notions prove differently. However, this is not the case for the outlook coming from the political debates.

A great part of the political debate is dedicated to the use of FBS and expressions of fear on having a lack of control, insight and transparency, which argues for an opposite idea of CM's naturalness, cleanness and subsequent trustworthiness. With this point of view, in addition to statements that argue for not replacing animals, this will mean that animals will be needed in the future and also continue to fulfil their current role in the livestock industry. I.e. CM will not replace the livestock industry.

Regarding the outlook on regulations, it turns out the actors in the debate have mixed ideas on where the responsibility for the development and regulation of CM lies. A great part of the debate is circling

around the role of innovation, as both an intrinsic value and pursue. It is argued that the Netherlands should be stimulating the development due to the innovative history of the country and the opportunities CM brings, but also it is argued that it is the responsibility of the CM entrepreneurs (i.e. the market) itself to take the last steps towards market introduction. There is the idea that allowing (tasting-) experiments is the mayor instrument for stimulating CM development and realizing its existence as a consumer product. However, this was not found to be affirmed by the CM entrepreneurs. Overall, there seems to be no clear vision of what role the government should have and on how CM should be regulated on the national level. The lack of the ability to judge on the features of CM, therefore, could be a motive for the strongly shifted responsibility for the further development towards other (overarching) institutions such as the EFSA.

Noteworthy, the outlook that can be subtracted from the CM entrepreneur's frames on regulations also do not make implicit suggestions of what measures should apply. The findings from applying the governance lens indicate the value CM could have for stakeholders, but make little remarks on what (financial) instruments, or regulatory- and institutional changes are required. Mosa Meat makes a one-time reference to the regulatory system of the United States and mentions to support their regulatory framework, which consists of both the FDA, who does the pre-market safety evaluation and the USDA, who also has the lead in regulation livestock meat. Apart from this reference originating from a blog post of Mosa Meat, there are no citations that create an explicit idea of what the envisioned regulations consist of.

Altogether, the identity of CM is very different between both parties. The overall frames with the entrepreneurs emphasize the transformative value of CM and focus mostly on the outcomes of CM.
Every frame contains a progressive element and the aim to "*change the way meat is made*" (Mosa Meat) is the best example of this posture. The identity of the frames with the political debate have a different character and seem to judge CM on a different value; its innovative value. This differs from the transformative value in terms of what role CM has. The transformative value is cherished for its outcome, but the value of innovation in this specific case seems to be valued more as a pursue and an economical, hierarchical tool, rather than to focus on what it can physically achieve.

5.4 — How do the findings relate to theory and previous research?

Now that frames, their characteristics, similarities, dissimilarities and meanings have become clear, the question of how the findings relate to previous research becomes relevant.
Regarding frames found in research on CM by Bryant (2019), it is found that the previously found frames are partially represented in this research.
The research by Bryant (2019) on the impact of framing on the acceptance of CM suggested three impactful frames: 1. The "Same as meat" frame, meaning: *Clean meat tastes like conventional meat, is increasingly affordable and can be healthier to eat. 2.* The "High tech" frame, meaning: *Clean meat is made using highly advanced technology in a state of the art laboratory. 3.* The "Socially beneficial" frame, meaning: *Clean meat has many benefits for the society like reducing harm to the environment and helping animals.*

Firstly, apart from the "same as meat" frame, there are no correspondences in the names of the frames.
It was found that the "same as meat" frame is represented with the CM entrepreneurs. However, this is not the case within the political arena. Also, similar frames as 'high tech' and 'socially beneficial' were found, only were they given different naming. The 'Socially beneficial' frame is represented with CM entrepreneurs and politics as the "Problem solving"- and "Feed the world"- frame.

The "high tech" frame is also found with CM entrepreneurs as the "expertise" frame since the "high-tech" frame describes CM as a product made using *highly advances technology in a state of the art laboratory*. The notions of 'advanced' and 'state of the art' fit with the characteristics of the "expertise" frame. In the political debates, this frame is not literally represented.
However, it is embedded in the content of the "safety" frame. Within the "safety" frame, the conservative attitude that wants to preferably strongly frame CM in the figurative sense, the high-tech character of CM evokes fear. This fits with findings of Bryant (2019) that the "high tech" frame has much less popularity. Actors who referred to the "high tech" frame also expressed fears, though actors who were more on the "socially beneficial" side referred more to the positive side of CM and the dangers of the livestock industry. Therefore, it can be stated that frames, aside consumers, also influence the acceptance of CM with policymakers.

5.5 Conclusion

Through applying Grounded Theory and theory on framing, this research concludes that CM entrepreneurs and politics frame CM differently. A total of seven distinctive frames was found, of which the overall character of CM entrepreneur's frames regards more the transformative capacity of CM, though the overall character of CM within the political debate's frames regards more the innovative value of CM.
CM entrepreneurs have a strong "same as meat" frame that classifies CM as "meat", within the political debate there is no omnipresent frame on whether CM is "meat" or is "not meat". CM entrepreneurs seem to mean to replace livestock meat by CM, though politics mean to have CM to complement to current meat supply.
Besides, it was found that pictures have an important role in transporting frames. Inconsistent use of textual frames and visual frames might degrade the persistence of the frame. The existence of previously found frames is confirmed, therewith confirming that frames influence the acceptance of CM with policymakers. Frames leaking though from the webpages of CM entrepreneurs were found to have little effect on framing within the political debate.
Lastly, even though, both enterprises aim to answer the question of "what CM is", there is a lack of actual representation of what CM is and how it is made. Accordingly, the findings of the political debates indicate that there is a lack of understanding of what CM is.

5.6 Reflection of the findings

This research originated from a curiosity into how a dramatically new product, such as is CM, proceeds its way into the wide world. It was found that it is a Dutch invention, and that its development is a product of strong entrepreneurial vision and national governmental support. However, it was also found that this relationship apparently had changed since the current situation is found to be different.

Aligning visions

From this research is becomes clear that the visions between CM entrepreneurs and policymakers are not aligned. The findings suggest that this might be caused by the contrasting and/or detached subjects that dominate the conversation. This seems to be case in the two parties themselves, which shows internal inconsistencies like the contradicting images and frames and the high degree of abstraction of the explained production process with the CM entrepreneurs, and the varying degrees of knowledge on CM within the debate, the misinformation about the use of FBS and the different opinions on what role CM should have with the policymakers. Between the parties, the different emphasis on characteristics of CM and mismatch of topics of interest illustrates the communication gap.

With regard to the role of framing on what is perceived as more legitimate or less legitimate, the use of FBS is clearly not perceived as legitimate. The history of using FBS still causes the most recent legitimacy problems. On the side of the CM entrepreneurs, the blaming of the conventional livestock industry is the clearest example of framing of what is not perceived as legitimate. Contrary, in the debate the livestock industry issue is approached from two sides in which it is both perceived as problematic, and as necessary and normal. This indicates that livestock farming still is perceived as legitimate, even though abuses in this domain are frequently reported. The FBS topic is also considered with the CM entrepreneurs. However, since it does not form a persisting individual frame, their consideration is not expected to settle or counter the legitimacy issue.

The misalignment of visions and legitimacy beliefs mean that the mobilization of resources for changing institutions is inhibited and accordingly, the process of collective attribution is stagnated. Therewith, in the specific relationship between these two parties, the successful institutionalizing of CM towards becoming a 'taken for granted'- and perceived as 'the right thing to do'- product is not proceeding and the final identity of CM as legitimate remains undetermined.

Searching for an explanation and suggesting solution

Where this misalignment originates from is not answered by this research, nor does it provide an accurate solution. It has already been noted before that the two investigated parties have very different characteristics and goals and that it is also not surprising that the format of the findings therefore differs. Both have certain tactics to lead them to their goals, which also not necessarily are explicitly expressed through the data. As such, the political agenda around CM does not only concern CM, but also other (related) topics or even nonrelated topics and personal preferences. Also, it could be that the leading government wants to change the past tactic since they have adopted a different belief system and don't expect CM to actually be able to solve the problems on the agenda.

Concerning the CM entrepreneurs, webpages are not made to perfectly inform. For example, it could be a choice to keep the production process of CM highly abstracted in the pictures to not scare readers with repellent and unfamiliar images of the meat. Similarly, the livestock industry also never literally depictures raw meat. Additionally, the short and rather basic description of the production process is chosen to stay away from the "high tech" frame, that was proven to lower consumer acceptance. The almost absence of mentioning FBS on the webpage could also be a conscious choice since not mentioning it also lowers the association of CM with FBS.
In short, both parties might have a double agenda that is not brought to light with this research method.

Nevertheless, a suggestion can be done to stimulate the alignment of visions. To fit more with the political agenda, CM could put stronger emphasis on the innovative character of CM and underline the value this would have for the economic opportunity of the country. A suggestion that however would better fit on a webpage is to rethink the presentation of CM in terms of images. This research shed light on the effect of images on framing and the effect they have as a strengthener of the presented ideas, but also as an equally strong underminer. Assuring high consistency between the frames and the identity of the pictures is therefore an important step. The suggestion would be to not only have this consistency in the literal content of the image, but also in the material choice. For example, to not have strong expressions of 'naturalness' together with very graphic and abstracted footage, but choose a more vivid and realistic representation. In general, the use of original (not stock photos), realistic and relevant pictures might also create more transparency.

5.7 Contributions to the Field

This research contributes to the field in several ways. First, reflecting on the assumptions made from literature, the findings of this research confirm the statement by Khan (2007) that institutional entrepreneurs frame strategically. It was indeed found that they articulate change projects in particular ways to 'define the grievances and interests of aggrieved constituencies, diagnose causes, assign blame, provide solutions and enable collective attribution processes to operate' (Khan et al, 2007). Also, Kohler-Koch's (2000) statement that validation takes place on internal coherence rather than eternal validation was found to take place, both in the political debate and with the CM entrepreneurs.
With the political debate, this becomes mostly clear through applying the lenses as proposed by Kohler-Koch (2000). With the CM entrepreneurs, this becomes apparent through the self-enforcing relation and overlap between the frames and their corresponding topics that become visible in the upper part of figure 6. The investigation of the subsequent outlooks of the different frames is in line with Entman's (1993) assumption that competing frames can indeed lead to different worldviews and different social realities.
Second, it adds to the theory of framing by acknowledging the impact of images on multimodal frames. Images have a dominant role in the platforms that share information on CM. Particularly on webpages, which are strongly required these days as proof of the existence of the enterprise and are the first thing to be consulted when searching for information. Ignoring the meaning and effect of images in

framing might cause misinterpretation of the content, such as the degradation of frame persistence through conflicting images. Therewith, this research suggests implementing image analysis into future frame analysis.
Third, it complements the research of Bryant (2019) by addressing framing around CM acceptance and reviewing the findings of Bryant within a different context. It contributes to the growing research on CM, and very new products and brings a new perspective to research on consumer acceptance by integrating the political arena as a target audience. Therewith, this research builds a bridge between framing theory with entrepreneurs and framing theory from the political research field and tests the ideas of Kohler-Koch (2000) on framing by applying the proposed research lenses to political data.
Last, this research sheds light on the different perceptions of CM and the consequential communication gap. Therewith, it illustrates how framing and a lack of framing have an impact on the development of innovations and adds to the approaches in the field of innovation sciences.

5.8 Limitations

Practical limitations
This research is not without limitations. Due to its interpretative design, findings only apply to this specific study, and though it is aimed to have an objective approach, the data is still subjected to the judgement of an individual. Also, the research setup has its limitations since the data is restricted to a specific time frame and scope that does not include other sources of data. As such data from social media, newspaper articles or scientific papers could have been insightful, next to the webpage analysis. Social media is a source that may expose to information on a daily basis, therefore having a great impact and newspaper articles give a more clear idea of events and consequential effects. Additionally, data selection based on an event analysis might have been better suited to prevent from excessive data. Interestingly, the eventually gathered data was found to fit with an event analysis for the year 2018 and 2020, since all relevant documents were grouped around two important debates that were dedicated to CM that took place early in 2018 and 2020.
On the level of the political documents, the data from the political debates only consist of documents that explicitly name CM, therefore, associative topics are not included. However, these might have contextual relevance for the frame character. Therefore, the generalizability of the findings of this research remains low.

Theoretical limitations
On the theoretical side, the framing approach gave valuable insights that would have been missed when only applying GT. Particularly for the investigation of rhetoric relations and understanding of the weight of particular expressions without basing this on word counts, the framing approach has proven to be a good method.
However, shortcomings were found with the used lenses. The lenses as proposed by Garud&Kanrøe (2001) give rather descriptive findings and little psychological insight with regard to how arguments are favoured, whereas the lenses as proposed by Kohler-Koch (2000) shed more light on underlying motives and have a stronger rhetoric distinction between the frames. This causes a discrepancy in the level of abstraction between the frames found though applying Garud&Karnøe's (2001) lenses and Kohler-Koch's (2000) approach. Also, the production- and use lens have a strong relation, for which reason finding distinct frames is complicated. On the other hand, Kohler-Koch's (2000) lenses do not

give direct insight into the meaning of the subject of interest. This, in turn, needs to be subtracted from the found frames.
Complementation of both approaches i.e. combining the lenses of Garud & Kanrøe (2001), especially the governance lens and the lobby lens of McGrath (2007) and Kohler-Koch (2000), could help to create a better model for researching frames. Additionally, bringing in the notion of images could provide a more inclusive approach to researching frames.

5.9 Suggestions for future research

For future research, it would be interesting to research the origin of frames: why do certain actors have certain frames, and what are the sources they have been consulting? Accordingly, the effect of the source type, respectively webpages or newspaper articles on framing could be interesting to investigate.
Secondly, the effect of images in framing has no theoretical understanding yet. However, knowledge on the effect of images is well established with media studies and should not be neglected in the imaging during innovation trajectories. Formulating a theoretical background to the effect of images within framing could bring knowledge from other disciplines into the field of innovation sciences.
Lastly, in-depth research on framing over time and investigation of the correlation between frames and events could give access to a greater understanding of the impact of frames on the future.

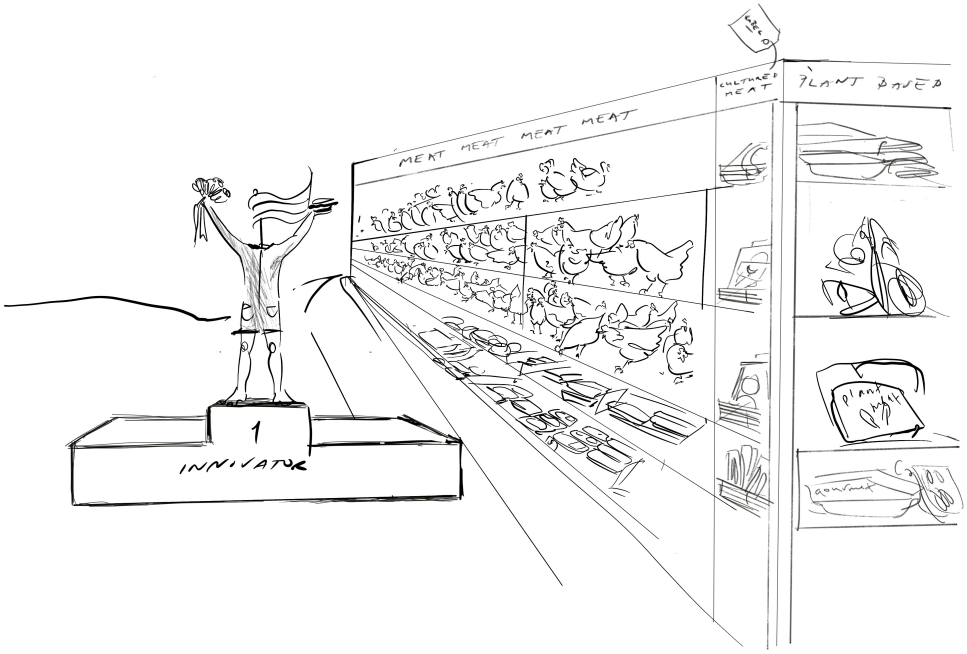

Illustration 2 creative rendering of the policymakers' CM frames, by Loutje Hoekstra

Acknowledgement

I would like to thank Andrea Herrmann for the supervision of my research and the trust in my independency during this strange period of time. Also, I would like to thank Taneli Vaskelainen for his helpful comments.

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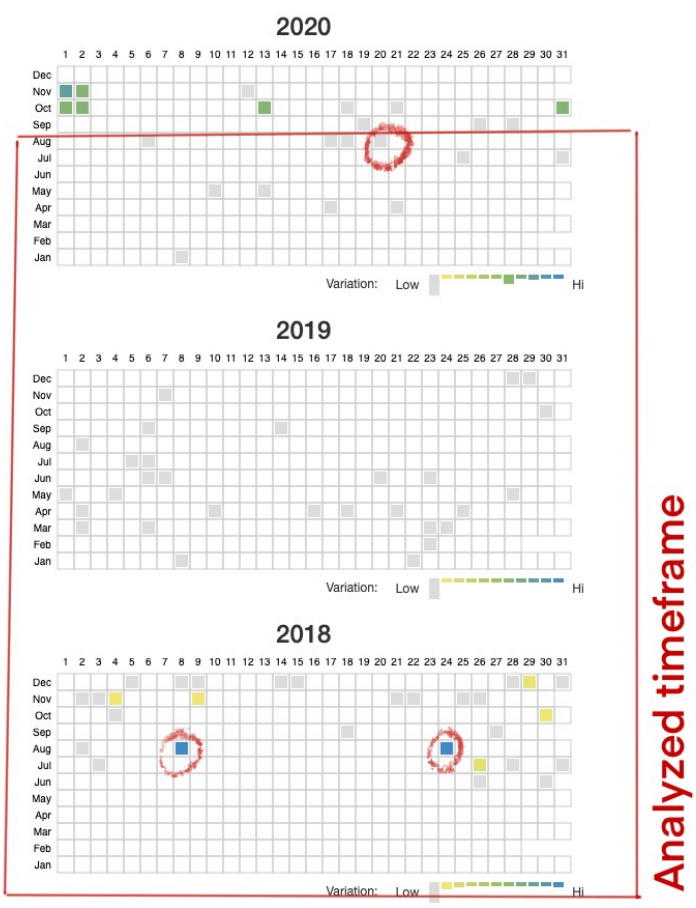
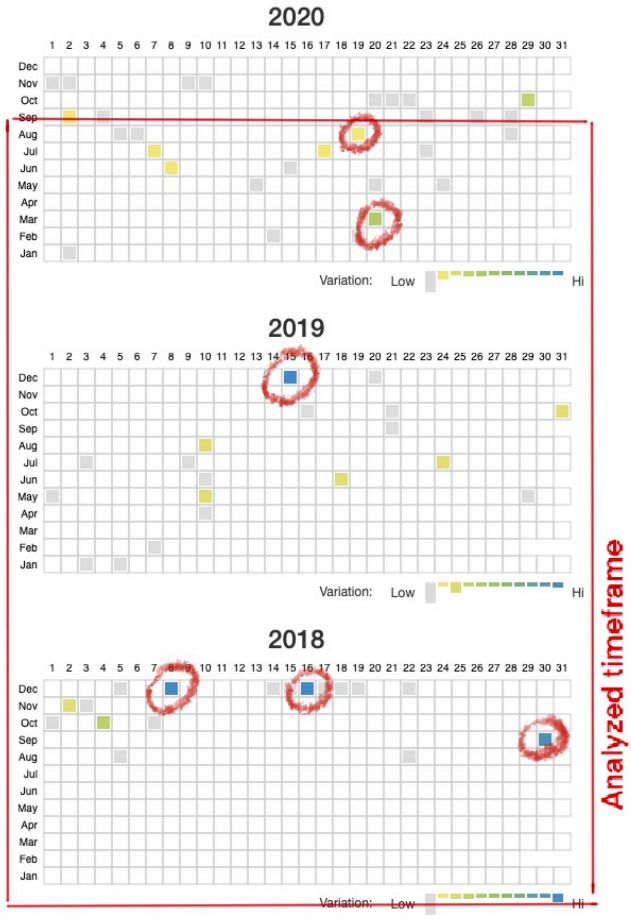
Appendix

Appendix 1



Significant changes Mosa Meat.com (screenshot attained though https://web.archive.org/web/changes/https://mosameat.com)



Significant changes Meatable.com (screenshot attained though https://web.archive.org/web/changes/https://meatable.com)

Appendix 2.

List of documents that are part of the analysis of framing with policymakers:

1. Tweede Kamer, vergaderjaar 2017–2018, 31 532, nr. 198
2. Tweede Kamer, vergaderjaar 2017–2018, 31 532, nr. 202
3. Tweede Kamer, vergaderjaar 2017–2018, 31 532, nr. 213
4. Tweede Kamer, vergaderjaar 2017–2018, 21 501-32, nr. 1111

5. Tweede Kamer, vergaderjaar 2018–2019, 31 532, nr. 229
6. Tweede Kamer, vergaderjaar 2019–2020, 35 300 XIV, nr. 72
7. Tweede Kamer, vergaderjaar 2019–2020, 33 009, nr. 83

8. Tweede Kamer, vergaderjaar 2019–2020, 31 532, nr. 237
9. Tweede Kamer, vergaderjaar 2019–2020, 31 532, nr. 239
10. Tweede Kamer, vergaderjaar 2019–2020, 31 532, nr. 240
11. Tweede Kamer, vergaderjaar 2019–2020, 31 532, nr. 241
12. Tweede Kamer, vergaderjaar 2019–2020, 31 532, nr. 253

13. Debate 2020D11156 of 20-01-2020

14. Uitvoering van de moties over kweekvlees. 19 Juni 2020