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Communication patterns in different conversational contexts

The case of organic farmers and plant biotechnologists
discussing the future of food

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Introduction

According to the World Food Programme (2017) 795 million people in the world are malnourished. Therefore, because they do not get enough food one in nine people cannot lead a healthy and active life. The impact of food shortage on health is so big that malnourishment and hunger are the number one health risk worldwide, affecting more people than malaria, tuberculosis and AIDS put together. To combat this, the United Nations developed the Agenda for Sustainable Development Goals (SDGs) framework in 2015 (FAO, 2017). This framework contains 17 goals and 169 targets to be reached by 2030. One of the 17 goals is aimed at ending hunger, by achieving food security, improving nutrition and promoting sustainable agriculture. In 2016 the FAO (Food and Agriculture Organization of the United Nations) director- General Jose Graziano da Silva, also emphasized that no tool or approach should be disregarded, mentioning agroecology and biotechnology as options to consider in order to eradicate hunger, combat malnutrition and achieve sustainable agriculture (FAO, 2016).

Agroecology is a holistic approach to farming where the farm is seen as a system where energy transformation, mineral cycles, biological processes, and socio-economic relationships are considered. Agroecologists also share the notion that optimization of the agroecosystem cannot be done without considering all aspects of society (Altieri, 1983). Certain elements of agroecology are also used in organic farming, but what these elements are exactly differs per country (AgriHolland, 2017; Swissaid, 2017).

Plant biotechnology allows the production of GM (genetic modification) crops by means of genetic engineering, introducing new and pre-determined characteristics. This technology has the potential to speed up traditional plant breeding by introducing genes in the lab either from the same species (cis-genesis) or from other species (trans-genesis). Trans-genesis offers the possibility to transfer genes between plant species that

are not sexually compatible and are thus not available through traditional plant breeding. In addition biotechnology is also perceived as "currently catalysing another green revolution by allowing crops to be identified, selected, and even created that are more resistant to pests and drought and, perhaps at the same time, require less fertilizer." (Bourgaize, Jewell, & Buiser, 2000, pp. 355-356).

Altieri (2004) on the other hand expresses strong criticism against plant biotechnology, emphasizing that the capacity of plant biotechnology to feed the world is based on myths. He adds to this that plant biotechnology is being used to further support the industrialization of agriculture, which he perceives to be a negative development.

Overall, both approaches seem to exist in two different worlds. There are publications indicating that GM can make an important contribution to food security (Tramper & Zhu, 2009; M. Visscher et al., 2017) and to sustainable farming (Lotz, van de Wiel, & Smulders, 2014). While there are also publications indicating that GM is not needed at all to achieve this, and that with agroecology and organic farming sustainable production can be reached (Desmarais, 2012; Tiftonell, 2014). In addition, the extent to which GM has been adopted also differs worldwide. With high adoption and acceptance in the US, the Americas and many parts of Asia but limited acceptance and implementation in Europe and Africa (AgriHolland, 2017; FAO, 2016). This limited acceptance and implementation in Europe in Africa is thought to be because of concerns expressed by the public about risks to both health and the environment associated with GM (Braun, 2002; McHughen & Wager, 2010).

While agroecology is a tool that has to be tailored to each situation and is community based (Desmarais, 2012), it has great social acceptance. Whereas agricultural biotechnology has the potential to be applied all over the world when slightly adapted, (Lotz et al., 2014), but has less social support and is perceived as a technology heavily influenced by

globalization(Desmarais, 2012; Lappé, 1999; Tramper & Zhu, 2009; M. B. Visscher, R.; Boersma, H.; Coenen, B.; Crok, M.; van Kasteren, J.; Zeilmaker, R., 2017).

Because all tools available should be used to eliminate malnourishment, taking a closer look at possibilities to combine organic farming and plant biotechnology is done in the current paper. While both approaches are normally considered to be incompatible (Desmarais, 2012), Ronald and Adamchak (2008) argue that the future of food is dependent upon combining natural farming practices with GM technology to help alleviate pest problems associated with organic farming. To make this cooperation possible, or at least allow coexistence of both approaches, a coming together of both parties is needed. One way which has been uttered is through dialogue (Braun, 2002; Hails & Kinderlerer, 2003; Keller, 2009; Lotz et al., 2014).

The main characteristic of a dialogue, as compared to conversations in the form of a discussion or a debate, is that nobody is to win in the conversation. A dialogue invites collective thinking and inquiry, summarized by Isaacs (1999) as 'the art of thinking together'. According to literature on dialogue (Bohm, 1990; Isaacs, 1999; Pearce & Littlejohn, 1997) this would imply that participants recognize, understand and respect differences, and that they are willing to connect and to adapt to one another.

While there is information on what an ideal dialogue should be, including its prerequisites (Bohm, 1990; Bohm & Nichol, 2004; Pearce & Littlejohn, 1997), conversations between plant biotechnologists and organic farmers have not been studied in that way. There is literature available where conversations have been analyzed to discern mechanisms in conversations (N. Aarts, Ruysenaars, Steuten, & van Herzele, 2015; Van Herzele, Aarts, & Casaer, 2015), but such an approach has not been applied in this specific context. Based on the previous, the aim of our study is to discover communication patterns which play a role when plant biotechnologists and organic farmers converse in different conversational

settings. Focusing on how they communicate within their own groups, how they communicate when combined with each other and how they then reflect upon this process when alone with the researcher.

To fulfill this aim, the following research questions were formulated:

Main research question:

Which communication patterns can be found in conversations of plant biotechnologists and organic farmers in different conversational settings, what are the effects of these patterns on how the conversation develops, and how can these insights be used to organize a dialogue?

The following sub- research questions were formulated based on the main:

Sub- research questions:

- 1. Which patterns of communication can be found within the group of plant biotechnologist and organic farmers in a homogenous setting?*
- 2. Which patterns can be found in conversations between plant biotechnologists and organic farmers in a mixed setting?*
- 3. Which patterns can be found when plant biotechnologists and organic farmers are interviewed individually?*
- 4. In what way do these communication patterns and dynamics influence how the conversations develop during the different conversational contexts?*
- 5. How can these insights be used to organize a dialogue?*

In line with the research question and the aim, the scientific objective is then to gain insight into how conversations between plant biotechnologists and organic farmers are built up in interaction.

Focusing on the exchanges between conversational partners and how those impact the conversation. By exploring the possibilities of combining plant biotechnology and organic farming through conversations, a contribution is also made to the societal objective of combatting malnourishment. Being that exploring all options, and

fostering cooperation is an important step towards that objective (FAO, 2016).

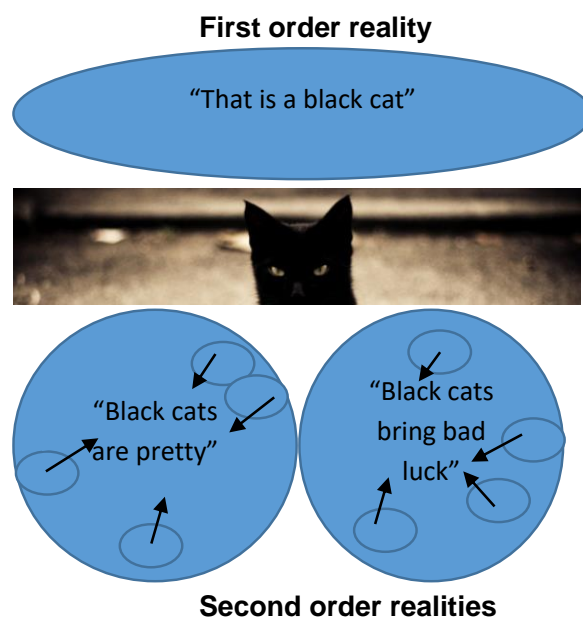
To be able to discover communication patterns in conversations of organic farmers and plant biotechnologists both separately and in a mixed setting, a theoretical framework was thought out. The theoretical framework consists of sensitizing theoretical concepts which fit the research purpose and helped analyze the acquired material. These concepts will be elaborated upon in the following section. After this the methodology will be detailed. The results of the different conversational settings will be displayed thereafter. The discussion and conclusion will then serve to discuss the found conversational patterns and to come to a conclusion of the research.

Theoretical framework

To be able to answer the previously stated research questions three theoretical concepts have been selected which allow for a sensitization of the researcher to possible lines of inquiry (Hoonard, 2008). These sensitizing concepts are *first and second order realities*, *framing* and *dialogue*.

First and second order realities

According to Ford (1999, pp. 481-485) reality is constructed in interaction, in conversations that people have with one another. A first order reality is one which can be physically demonstrated and has publicly discernible characteristics, qualities, or attributes relating to a thing, event, or situation. Second order realities are then attachments of meaning to a first order reality which are based upon an individual or group perception. Once many people agree with a stated second order reality, it can be perceived as a first order reality where interpretation and fact are woven together. The difficulty associated with distinguishing between first and second order realities is not realizing their interconnection in everyday interaction (Ford, 1999).



Being able to distinguish between first and second order realities is very applicable to the case described in the current paper. By using this distinction, the coming together or further distancing of groups and individuals within those groups can be analyzed. The reason for this being that the groups are expected to agree more on their second order realities during the homogenous setting, with similar attachments of meaning. While in the mixed setting these supported second order realities may

lead to conversational challenges between the groups. Thus, paying attention to these second order realities, and how they are supported or contradicted, can help demystify how in conversation participants come together or become more distanced.

Framing

Entman (1993) defines framing as "to select some aspects of a perceived reality and make them more *salient* in a communicating text"(p. 52). He then also mentions four functions of framing that can promote a particular 1)*problem definition*, 2)*causal interpretation*, 3)*moral evaluation* and/or 4)*treatment recommendation* for the item described.

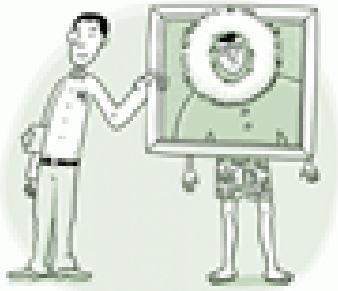
These four functions of framing are used to help analyze material for the current research because they allow a distinction to be made with regards to the item described and why it is presented in such a way.

After stating these functions Entman (1993) further defines the word salience as "making a piece of information more noticeable, meaningful, or memorable to audiences."(p. 53). With that he then points to the notion that frames can serve to orient receivers towards a specific way of seeing things, which might result in support for the speaker's utterances and goals. However, even though this might sound very strategic, framing is something one is often not aware of or does intentionally. Rather, it is impossible not to frame, as it is a way of making sense of the world (Gray, 2003), and differentiating between different sorts of reality (Goffman, 1974).

In the paper by Dewulf et al. (2009), a further distinction is also made between a cognitive approach and an interactional approach to framing. He refers to the cognitive approach as frames which are cognitive representations of the individuals, and the interactional approach as a view where frames are co-constructed in interaction by individuals.

The interactional approach is the approach taken in the present paper, as the focus of the study is not what the participants think beforehand, but rather what is co-constructed in interaction. With the research serving as an attempt to discern if and how participants build upon each other in interaction, and how this influences the course of the conversation. Here framing is yet again relevant as according to N. Aarts and Woerkum (2006) what is presented as a frame can have a strong impact on the development of a conversation.

Framing



<http://guide.cred.columbia.edu/guide/sec2.html>

Highlighting certain parts of an issue, thus automatically making other dimensions less pronounced. While it is impossible not to frame, what is presented as a frame can have a strong impact on the development of a conversation.

In doing a frame analysis, I focus on how in the conversations participants react to issues by strengthening or weakening them (Gray, 2003).

Focusing on how they frame perceived issues, including a possible solution, and how they frame themselves and others and how power may play a role in this. *Problem, identity, characterization* and *power frames* are the ones that fit with this focus and allow the material to be analyzed in that way.

Problem frames are constructed when one frames something as the issue at stake, formulating what the problem is about, often mentioning both causes and solutions (N. Aarts, van Lieshout, & van Woerkum, 2011, p. 236).

Identity frames are constructed when participants describe themselves or the group that they belong to in relation to the issue at stake.

Characterization frames serve to characterize others, referring to an individual or a group, with an often normative or evaluative tone added to it (Gray, 2003).

Power frames are about the ability to impact the situation surrounding the issue at stake, which can refer to the individuals conversing as well as others (N. Aarts et al., 2011, p. 236).

In the current research, attention is paid to these frames by looking at how they are introduced into the conversation, how they are reacted upon and if they are further constructed in interaction. Looking at these frames also helps determine how the participants build up their group perspectives in interaction.

Dialogue

Dialogue also referred to as the art of thinking together serves as a process in which mutual understanding, the creation of shared meaning and handling conflicts in a different way is key (Bohm, 1990). The occurrence of dialogue relies on spontaneous sharing of personal perspective and admittance of doubts and grey areas. Furthermore, dialogue is interactive and the questions asked, are asked out of curiosity and the desire to know more (Bohm, 1990). In dialogue underlying assumptions and differences between people who on the surface seem to have the same opinion are also explored (Pearce & Littlejohn, 1997).

Due to this being an exploratory paper, the notion of dialogue will not be used to impose certain guidelines or conditions. Rather it will serve to assess if moments of dialogue occur during the conversations, and to explore if the conversational partners come to understand each other regardless of their background. In this way, if moments of dialogue occur, they will occur naturally. This is relevant to the existing literature because dialogue is usually organized by using certain sets of rules and guidelines (Pearce & Littlejohn, 1997). Therefore, this research will attempt to fill a gap by allowing exploration into the natural occurrence of moments of dialogue.

Interrelation theoretical concepts

In conversation, a distinction can be made between *first and second order realities* by looking at where implicit or explicit meanings are attached to a fact. By then looking at the remainder of the conversation, it can be deduced whether those second order realities are further built up or diminished.

Framing is relevant as an additional concept as it can be used to go deeper into how these second order realities are presented and built up during the conversation. By using frame analysis in interaction, a deeper analysis of how utterances are built up and how they strengthen or weaken what has been said (Gray, 2003) is made possible. By then focusing on problem, identity, characterization and power framing, how emphasis is put on certain issues, whom they express is to blame for those issues and how the participants present themselves and the other group can be pinpointed.

Besides looking at what attachments of meaning are presented and how they are built up, the occurrence of dialogical characteristics is also paid attention to. Moments of mutual understanding, recognizing the

other, shared creation of meaning and changing the way one sees things, are all things which are considered characteristics of dialogue (Bohm, 1990; Pearce & Littlejohn, 1997). The occurrence of these characteristics is paid attention to as these can contribute to increased understanding, and the absence of these characteristics can lead to distancing between participants(Pearce & Littlejohn, 1997).

Overall, looking at these three sensitizing concepts serves to investigate not only the utterances made but also the occurrence of both distancing and coming together of participants both on an individual and group level.

Method

The research performed for the current paper was qualitative exploratory research. The research was also interpretative, assuming that “we live in a social world characterized by the possibilities of multiple interpretations.” (Yanow, 2000, p. 5). To capture the multiple interpretations of plant biotechnologists and organic farmers in conversation, different conversational contexts were set up.

To prepare for the research, a literature study was conducted after having formulated a research question. Suitable literary concepts were sought out befitting with the research question and purpose of the research. They were then included in the theoretical framework to be used as sensitizing concepts. Literature was also sought to develop the method, focusing on descriptive case studies as a design, and focus groups and interviews as the method. How a focus group should be held, how it should be developed and analyzed, and how to build up semi-structured interviews was researched by means of literature. The analysis of the material from the focus groups and interviews was done by using the theoretical framework theories as sensitizing concepts.

In the following section the design of the study is elaborated upon. Thereafter the data collection and analysis methods used for the study are further outlined.

Case study design

The way the research was conducted was in the shape of a descriptive case study. This according to De Vaus (2001) is suited for exploratory research and offers a flexible approach due to the wide variety of data collection methods that can be used with it. In this descriptive case study, the object of study and thus also the unit of analysis about which information was collected were embedded units (De Vaus, 2001, p. 220), in the sense that the conversations, both homogenous and mixed, served as the context where the plant biotechnologists and organic farmers were studied. The structure of conversations serving as a context as it allows utterances and conversational interaction to be studied, from which conversational patterns can then be derived.

At the start of the organized conversations, the topic introduced by the researcher was the future of food production and how plant biotechnologists and organic farmers perceived the role of their background to fit into this. In both the homogenous and mixed settings

this was the starting point. Doing this research in a descriptive case study form allowed a description to be made of what was going on in the conversations, both in the homogenous and mixed setting. The interviews, which were done after the group conversations, provided additional information on the individual participants experience of the conversations.

Data collection

To study conversational constructions in interaction of plant biotechnologists and organic farmers, different focus groups were organized by the researcher. Focus groups were used as a method of data collection as it fits within exploratory research (Krueger & Casey, 2000) and is a suitable method within a descriptive case study design. In addition the type of data which can be collected from a focus group was deemed very useful, as it would allow participants to “respond in their own words, using their own categorizations and perceived associations”(Stewart & Shamdasani, 1990, p. 13) during the conversations. In addition, a focus group is also a format where there is space for people to express concerns, problems, and solutions and be able to elaborate on underlying values and assumptions (Bunders, Bunders, & Zweekhorst, 2015). In addition, focus group conversations can resemble dialogical conversations (Bohm & Nichol, 2004; Myers, 2008). During the research two separate types of focus groups were held namely homogenous and mixed focus groups. Two homogenous focus groups were organized, where plant biotechnologists and organic farmers participated separately. The participants of these groups were then rearranged into two mixed focus groups, which allowed plant biotechnologists and organic farmers to converse together on two separate occasions.

The reason for having these two different groups first talk amongst themselves, was to establish a baseline. This baseline allowed a comparison between conversations that developed between same minded and different minded people. The necessity of such a baseline was based on the notion that people usually talk with same minded people, rather than conversing with different minded people as the latter is more likely to be uncomfortable(N. Aarts, Steuten, & van Woerkum, 2014). In the homogenous groups no contestation was expected, while in the mixed groups due to different minded people being together, contestation, conflict but also some degree of resolution was expected. By letting these two very different groups converse, conflict was given space to arise, but also to be resolved in a different way which according to Bohm and Nichol

(2004) and Pearce and Littlejohn (1997) is an important dimension of dialogue and can lead to mutual understanding.

The conversations were facilitated by the researcher herself, thereby influencing the research but having any facilitator present influences a conversation (De Vaus, 2001; Stewart & Shamdasani, 1990). The researcher was aware of these dynamics, and by preparing the focus group guide and the theoretical framework had a clearer idea of what was to be done when compared to an outside facilitator. In addition, the focus group conversations were video recorded, thus relieving the researcher of taking detailed notes and giving space for facilitation. After both the homogenous and mixed conversations took place, eight interviews were held, with four plant biotechnologists and four organic farmers. These were done to obtain material for reflection on the homogenous and mixed conversations, what kind of impact the conversations had on the participants and how they thought back on those conversations. The interviews were audio recorded and the researcher took notes during them, a video recording was not made of these interviews as this was deemed too intrusive by the researcher. The obtained material was transcribed and written up word for word, resulting in 297 pages to analyze.

Selection of participants

Six participants were determined to be the minimum for each focus group, as this allowed diverse data to be collected and analyzed while leaving the researcher with enough participants if someone cancelled (Stewart & Shamdasani, 1990). Contact with potential participants was made through email, and a follow up was done by phone and email. In the initial contact, why their participation was important, what the potential impact of the research was and how they could contribute was described. Potential participants were approached based on snowball sampling, selected to fit the profile of either a plant biotechnologist or an organic farmer, allowing for data relevant to the research objective to be collected (Stewart & Shamdasani, 1990). Both groups consisted of people who lived in the province of Gelderland, and near the city of Wageningen, the Netherlands. The plant biotechnology participants contacted were BSc, MSc and PhD students of Wageningen University, studying in the field of plant biotechnology that had theoretical knowledge on genetic modification of plants and were interested in the future of food. The organic farming participants were professionals operating in the field of organic farming

with practical experience, whom lived by the agroecological principles organic farming is based on.

In organizing the homogenous conversations, two dates were selected where most participants of each group could join. The mixed groups were organized thereafter on two consecutive days and consisted of a combination of participants from both homogenous groups. The willingness and availability to participate again influenced the attendance of the mixed conversations. Two additional people, both a plant biotechnologist and organic farmer, participated in the mixed conversations while not attending the homogenous conversations. These participants did show interest in attending the homogenous conversations but were not available on those dates but were still willing to participate in the mixed conversations.

As can be seen from the following table, the homogenous conversation of the plant biotechnologists consisted of four participants, while the conversation of the organic farmers consisted of eight participants. The mixed conversations consisted of five and six participants respectively with differences in the amount of plant biotechnologists and organic farmers present. The participants selected for the interviews were the ones that were present during both a homogenous and a mixed conversation. The interviews were held a month after the mixed conversations due to Christmas holidays being in between.

Table 1 - distribution participants in different conversational settings

Conversational setting	Participants	Description	Additional remarks
Homogenous Plant Biotechnologist (PB)	4	4 PB's	
Homogenous Organic Farmers (OF)	8	8 OF's	OF2 barely partook, brought along by OF1. OF8 joined 10 minutes in.
First Mixed	5	3 PB's, 2 OF's	PB5 joined 11 minutes in. PB5 was also the participant which had not been present at the PB homogeneous conversation.
Second mixed	6	2PB, 4OF's	OF7 joined 12 minutes in and OF8 joined 40 minutes in. OF9 was the participant who did not partake in the homogenous OF conversation.
Interviews	8	4PB's and 4OF's	All 8 participants interviewed were present in both a homogenous and mixed conversation.

Focus group guide preparation

To design the focus group guide, consisting of a problem formulation, purpose of the focus group, desired outcomes of the focus group and a few briefing questions (Stewart & Shamdasani, 1990), input was collected. This input was based on a literature review in which agroecology and plant biotechnology and their separate perspectives and ways of thinking were explored. The main messages from the differing perspectives were taken together to structure the focus group interview guide. The questions incorporated in the focus group interview guide focused on obtaining information in line with the sensitizing concepts of the theoretical framework. The questions were predominantly aligned with the frames mentioned in the theoretical framework. This guide was first tested with a group of students, who offered feedback which was used to adapt the guide. The guide was used at the start of the conversations, letting the conversations develop on their own thereafter. Besides guiding the conversations, the focus group guide was also used in the analysis as a structural guide by using its stated purpose and its three guiding questions. The focus group guide can be found in appendix A.

Interviews

The eight interviews which were done a month after the mixed focus groups, were done with four plant biotechnologists and four organic farmers who were present at a homogenous and mixed conversation. These interviews served to examine how the participants looked back on their participation during the focus groups. The structure of these interviews was semi-structured, with questions on exploring their participation during the conversations, in line with the frames mentioned in the theoretical framework, and how they reflected on that participation. An open question at the end was also posed to see if they had something to add which had not been covered by the questions. In this way information was obtained corresponding to the frames, but the structure of the interview itself also depended on the interviewee which allowed flexible input (De Vaus, 2001). This guide can be found in appendix B.

Data analysis

The analysis and the results were done in a descriptive way, following that the design of this study is a descriptive case study. According to De Vaus (2001), describing everything is impossible, as "any description of any case always involves a selection of facts." (p. 251). However, when doing

a descriptive case analysis, the description is always made based on theory, and one needs to be explicit about which theories are used when writing that description. In the current paper then, the description given is not “the” description, but our description of what occurred. The outset of our description was to offer insight into the conversational buildup whereby the transcribed material and the sensitizing concepts were used to focus on the exchange between conversational partners and how those exchanges developed throughout the conversations.

The sensitizing concepts described in the theoretical framework were chosen with possible communication patterns that could occur in the different conversational settings. During the homogenous conversations it was expected that second order realities would be built up in both groups (Ford, 1999). With individuals from both groups presenting problem frames, and strong identity and characterization frames, thereby strengthening the shared realities within their own group. These realities were then expected to be challenged during the mixed conversations, making moments of dialogue more difficult to occur (Pearce & Littlejohn, 1997). During the mixed conversations, problem frames, power frames, identity and characterization frames were expected to be negotiated in interaction. These frames were also expected to be used during the homogenous conversations, only there less negotiation was expected. These frames together influence the way the conversation develops (M. N. C. Aarts & Wageningen, 2015) and because of that analyzing them also served to analyze more closely how second order realities were being built up in interaction and developed throughout the conversations.

The focus group analysis begun after the first focus group and continued as the data collection progressed. Each subsequent group was analyzed and compared to earlier groups. This way of analyzing was done to improve the researcher’s/moderator’s skills along the way. By transcribing a group session before the next took place it was possible to spot questions that the participants did not respond to well and adapt them (Krueger & Casey, 2000). The interviews were not transcribed in the same manner due to limited time between each interview.

The analysis was done in line with the focus group guide, first focusing on how they discussed the future of food. This then also allowed for the elucidation of their main problem definitions, and their identity and characterization frames. In addition, how they perceived societal decisions should be made could also be derived from the collected material. All these concepts were also included in the theoretical framework as sensitizing concepts.

When writing up the results the exact number of times something was mentioned throughout the conversations was left out as this could be misleading to the reader (Krueger & Casey, 2000). Rather, just as recommended by Krueger and Casey (2000) modifiers were used, such as none, a few, some, many, most, and all.

The coding of the material itself was done with the help of Atlas TI and by re-reading the transcripts multiple times. Refining each time what the overall patterns were and narrowing down the coding based on that. Finally, the main patterns found in both homogenous and mixed conversations and in the interviews were written out in the results section. The analysis all the while remained verifiable (Krueger & Casey, 2000) with the conversations and interviews being transcribed word for word, and raw video footage of the conversations and audio files of the interviews available as proof that the conversations and interviews took place as described.

Results

The results are presented in the same order as the conversational contexts occurred. Describing first the communication patterns found in the homogenous conversations, then the communication patterns during the mixed conversations, and finishing off with the findings from the interviews. Segments of conversation will be presented which are illustrative of patterns that we found, and which allow the display of a detailed analysis to support those patterns. The full transcripts of the conversations are available to the reader as supplementary data.

Homogenous group conversations

The segments selected are presented per topic, the order in which they occurred during the conversation can be derived from the line numbers. Four segments are presented in the organic farmers section and five segments are presented in the plant biotechnologists section. These segments serve to illustrate how both conversations evolved, the way participants interacted, and what perspectives the participants constructed with regards to genetic modification and organic farming.

Organic farmers

In the following segment the organic farmers build up group strength. They do this by supporting each other and building upon each other, operating from the we perspective and using terms which require pre-existing knowledge or shared opinions. This way of building up group strength was a pattern found during the entire conversation and is present in all four quotes presented in this section.

This first specific segment is about how the organic farmers express discontent that they must defend their profession, while “chemical” agriculture is legitimized as conventional.

The organic farmers express discontent about having to defend their profession

- 428 OF3:so it is so it is very bad that you should have to explain that. And that we constantly
429 all of us together should have to explain that. With the consequence that we are actually
430 constantly defending our own profession.
431 OF4: yes exactly
432 OF3: it should not have to be this way, it should actually be that chemical agriculture
433 should have to defend themselves because of what they are doing.
434 OF5: mhm
435 OF4: yes that, yes.
436 OF3: yes but it is, the world is turned exactly upside down.
437 OF6: what is conventional and what is normal
438 OF3: and I think that that is well yes eh disturbing by now
439 OF8: mhm

In line 428 - 430 OF3 starts by mentioning that constantly having to explain is already a problem because the implication is that they are the ones who are asked to defend their own profession. With that he constructs an identity frame of being right and being the victim. OF3 also uses 'we' two times in those lines, which further emphasizes a group identity and that that identity applies to all the group members. He thus starts by problematizing the current norm, presenting opposites as well as a new norm where organic should not have to defend but be established. OF4 expresses agreement (line 431), upon which OF3 continues to build by mentioning that it should not be this way, and that "chemical" agriculture should have to defend itself. By saying this OF3 presents a characterization frame of conventional agriculture as chemical, and implicitly accuses them of doing something wrong, while simultaneously presenting organic farmers as being right. OF5 and OF4 express support for this presented view, after which OF3 continues. Mentioning in line 432 that it "should not have to be this way", which in line 436 hardens into "the world is turned exactly upside down" which seems to refer to how the party that is defending itself should be reversed. Thereby reaffirming the identity frame constructed of being right and being the victim, while characterizing conventional farmers as the culprits whom practice chemical farming and thus are the ones doing things wrong. OF6 then justifies this by questioning the notion of what is conventional and what is normal. With this the term "conventional" is introduced, which had not been mentioned before but was implied when chemical farming was mentioned. This then also suggests that the other participants understand what OF3 is talking about when mentioning chemical farming, or at least that he assumes that they know as he does not explain himself further, presenting it as a shared perspective. In line 438 OF3 then makes his personal perspective explicit by saying 'I' and mentioning that the distinction between conventional and normal is starting to disturb him. OF8 is the one who then expresses support for OF3's statement at the end of the segment (line 439).

The following segment is about how interest in cis-genesis is expressed under very specific conditions by a participant, which is then dismissed because of local knowledge available in those specific situations. At the end of the segment the possible role for research presented is that researchers could offer their services in favor of the process already going on at the local level.

This segment is one of the few instances in the conversation between organic farmers where a deviating opinion was introduced. The pattern that is displayed in this segment is that deviating opinions are not allowed in this conversational setting.

Interest towards GM technology from a participant cast aside as deviating opinion

724 OF7: yes I, I really love research eh and I think, I think cis-ehh
725 OF8: how do you call that
726 OF7: cis – genesis very interesting andddd I can also see that if indeed ehmm we have a
727 group of people that are on such an impossibly difficult soil, and that they are very
728 hungry and we found something wow, I can imagine that it can be of use. But that is
729 really about very specific questions.
730 OF8: Hmm.
731 OF7: and also indeed of questions of places where mostly there is very little money so
732 then it should be more of developmental eh together eh how do you call that?
733 OF6: help
734 OF7: yes it should be help
735 OF8: mhm
736 OF7: and not then, then done by Monsanto with a lot of money. Let them be done by the
737 universities. And not ehmm and also stay there, as well as that Monsanto is now using
738 eh broccoli that actually came from a university. Yes. That is, then I also think that yes
739 that's not what I did it for and then the independence of knowledge that is just gone
740 then. I think that is really a waste. That would be so
741 OF1: That is exactly why. Especially in such circumstances where, circumstance are very
742 marginal and special. There, often an enormous amount of local knowledge is present,
743 especially among farmers that are in such a weird situation. They really know how to
744 deal with that. And they often have really good insight as to how crops should look and
745 they are themselves working on pushing that in a certain direction.
746 F: and if you then come flying in with a specific
747 OF1: and then let's say put in a little genetic modified crop then yeah pff this, that has,
748 that does not have any you know, it does not answer the question posed by the people
749 who eh eh eh should be posing the question that it is an answer that should fit the entire
750 world. And that is then being pushed upon.
751 F: so someone would walk with them and really look, be it from the conventional or a
752 different type of eh breeding that would go see what they really need for example
753 banana plants
754 OF1: yes but yeah I think that everybody eh eh, every crop is in development. Every
755 place in every crop so you know, in 10 years the crop will be very different than the 10
756 years before that. And there is a, there is thought behind that, an idea behind from the
757 people that harvest the crop and that in a specific way pick their seeds from it.
758 F: ok.
759 OF1: so yes, yes I think that you know, yes it is often said that ok eh, research has to do
760 this, I mean I don't know if research should do it. It's already going on its own.
761 OF8: mhm
762 OF1: by itself is not the word, but I mean, it is already happening and by people that we
763 do not call breeders but in fact are.
764 OF8: that what?

765 OF1: that we do not call breeders.
766 OF8: mhm.
767 OF1: but in fact are.
768 OF8: yeah.
769 F: but don't those people need some kind of support?
770 OF1: yes of course they need support but they are not supported when you, when you
771 say ehh come driving up with your Land Cruiser and say: "here, here is the seed that will
772 give you answers." To the questions that we actually did not pose but it is still the
773 answer.
774 F: but how could you then according to, according to you help?
775 OF1: hehe
776 F: yes, that's what I am then curious about. When you have people in an area
777 OF8: mhm yes of course.
778 F: where it is difficult
779 OF1: well yes, then you can just listen to them and offer them something which will help
780 them get further along. But you can position yourself in service of the process already
781 going on as as a researcher. Instead of trying to push trough ehh your own agenda from
782 above.

In line 724, OF7 starts by mentioning that she likes research very much, afterwards introducing that she thinks cis-genesis is very interesting. In line 726 to 729 she then presents an extreme case which seems to be an attempt to create an opening to be able to apply cis-genesis under those specific circumstances. This extreme case is then further elaborated upon in line 731 to 732 by mentioning that places with difficult soil are often also places where little money is available, and thus the technology should come in the form of developmental aid. In lines 736 to 740 she adds restrictions, mentioning that this research should not be funded by Monsanto but by universities. Thereafter she introduces an example about broccoli being developed by a university and then being used by Monsanto, constructing a power frame where big seed companies have power over universities. This power frame is further strengthened by mentioning that the independence of knowledge is gone, and that that is a waste (lines 739 and 740). Hereafter the conversation seems to shift. Even though OF7 used careful formulation and presented it as her own opinion, without mentioning we, OF1 starts countering from line 741 onwards. Mentioning that in these extreme situations a lot of local knowledge is already present in the form of local farmers that know how to deal with those situations and who are working on developing those crops. With that OF1 constructs a characterization frame of local farmers as knowledgeable, and that they have no need for GM technology. The facilitator can at this point be seen as part of the conversation as she picks up on this by mentioning that "if you then come flying in with a specific" (line 746). Even though the facilitator does not finish the sentence, OF1 adds on to it by mentioning that researchers then put some genetically modified crop in, that does not answer the question that is being posed by the local people there. OF1 also states that that crop is

then an answer that should from the perspective of the researchers be applicable to the entire world and which the researchers then also push onto the farmers (lines 747-750). By formulating it in such a way OF1 seems to be implicitly accusing the researchers of pushing their own ideas onto local farmers and ignoring the knowledge that those local farmers have. OF1 in this way constructs a characterization frame of GM researchers as knowledge centered, of a one-track mind and that they take little input from other perspectives. These identity and characterization frames come back in the same segment again, but then more elaborate. The local farmers are constructed as knowing what they are doing and being unaccredited plant breeders as they are continuously selecting based on desired characteristics, while research is constructed as not necessarily needed (lines 754 – 767). When the facilitator then asks if those people do not need any support (line 769) OF1 constructs a characterization frame of the GM researcher as forward and wealthy. Coming back to that they do not ask what people want, instead giving an answer to a question not asked and doing it in a “Land Cruiser” (line 771). Further probing by the facilitator on how people could be helped then leads to OF1 stating in line 779 to 782 that as a researcher one can then listen and offer something which will further their process, putting oneself in service of the process in progress, rather than imposing one’s own agenda.

OF1 mentions ‘we’ repeatedly in this segment like OF3 in the first segment. In that way OF1 presents what he says as a shared perspective, which then points to strong group cohesion and that the opinion presented is shared by all group members. This way of countering and building of group narrative further excludes deviating opinions, and helps build a group identity and group norms of what is acceptable and what is not. While this way of formulating serves to strengthen group cohesion, it also induces a certain level of silence. The above segment is then an example of how it is discouraged to express deviating opinions within this setting and how this can then induce silence. Overall, even though this quote starts as a seeming counterexample the general dynamic of building upon each other and creating a strong group reality can also be applied based on the way the deviating opinion was dealt with.

In the following segment the way in which conventional farmers are currently educated is discussed, constructing them as profit oriented. Pesticide representatives, which could be considered the enemy of organic farming, are then mentioned as being supportive of organic farming. Some discussion takes place between two of the participants with regards to the pesticide representatives and why they advocate organic farming.

The pattern in this segment is that the organic farmers continue to construct how organic farming should be the norm. They do this by building on each other and describing different dimensions of why this should be the case.

Everything should move towards organic

852 OF3: so that is his education. That has nothing to do anymore with all the, with all the
853 deep facets that we are discussing now. That person has its numbers and the profit and
854 everything together and he is trying, he only has one goal and that is doing better on the
855 technical front. That is the way he is studied, that is the way he has studied and that is
856 the way he is trained. There are of course a few that go deeper in that, but that is a
857 small amount and that is also the reason that this system is kept alive, when I look at
858 the conventional agriculture study club, then the image of what I am sketching can be
859 applied to actually 80% of those people. And the funny thing is, is that the
860 representatives of pesticides that come by and give a talk, they are turning more
861 towards organic, and how to work with the soil and everything that goes with it, they are
862 seeing that more and more. That has caught my attention the last couple of years that
863 they are more open to it so also a Bayer etc. they are seeing a shift and a change that
864 needs to occur. And that is also a means story that they have put on the table. They do
865 not want that resistance from the consumer so
866 OF4: they walk on two lines you know
867 OF3: yes I know that
868 OF4: they buy up the company where they have organic products and then start adding
869 that line
870 OF3: yes but then I hear such a representative genuinely speak from the heart, because
871 he sees a lot. He does not just see one company, he sees hundreds of companies and in
872 all places in Europe. And that is, that needs a lot of time to make that turn.
873 OF8: Hmm.
874 OF3: and that is nice to see. So it is possible. But before that farmer turns, that will not
875 happen. So there should actually be a base in the education, be it secondary or higher,
876 where we should go back to the old system. Or a new system.
877 OF5: yes, yes, a new system.
878 OF3: where we work more from the soil, and we can start explaining things, but we are
879 so involved in technology with all of us.
880 OF8: mhm.

Shortly before this segment started the organic farmers were asking each other about conventional farmers and how they are currently trained. At the start of this segment, OF3 then mentions that conventional farmers are not involved with the "deep facets" that they are discussing now (lines 852-853). Implying that the organic farmers are involved on a much deeper level with agriculture than conventional farmers, and thus also have a deeper understanding of it. OF3 constructs the conventional farmer as being profit oriented (lines 853 - 855), which is constructed as very

distant from organic farming. In those same lines, OF3 constructs conventional farmers as being technology oriented as their main goal is to do better on the technical front. Overall constructing a characterization frame of conventional farmers as being superficial, profit and technology oriented. By mentioning that 80% of conventional farmers OF3 knows fit into this characterization (line 859), he is adding a personal experience and numbers to strengthen his argument. In the same line he then continues by saying that "the funny thing is", as if surprised himself which makes him seem more genuine, that pesticide representatives are shifting more towards organic and how to work with the soil. Thereby also implying that the new norm of organic farming, and working from the soil, is being gradually accepted by seeming opposite parties. He constructs this as a recent development which has only caught his attention in the last couple of years. He then also mentions that the pesticide representatives are "seeing a shift and a change that needs to occur" (line 863-864) as they do not want to experience resistance from the consumers. By mentioning consumers in this way, this then also implies that consumers are displaying resistance against conventional farming and are more favorable towards organic farming. OF4 argues against this in line 866 and 868, thus introducing a deviating opinion as this undermines the idea that organic is accepted as a possible new norm by the pesticide representatives. OF4 does this by mentioning that they only advocate in favor of organic methods as those companies also buy up organic companies. In doing so OF4 constructs a certain power frame, where money explains why the pesticide representatives are recommending organic farming methods. The way OF3 regains his credibility is by supporting his argument through personal experience: "yes but then I hear such a representative genuinely speak from the heart" (line 870). The reason why this personal utterance is effective in supporting his earlier statement is because it is hard to contradict, as contradicting OF3 would mean to openly accuse him of twisting the facts and saying that the way OF3 experiences something cannot be trusted. After this is said by OF3 (lines 870-871), OF4 gives no rebuttal and is absent during the remainder of the segment. This absence of interaction with OF4 further supports the notion that very little room is left for contradiction after a personal experience is recounted. OF3 then continues by mentioning that a farmer turning from conventional to organic farming will not happen overnight, however the incorporation of an organic approach in the education of farmers can make organic farming part of a new system which starts from the soil. With this he then emphasizes how organic farming can be incorporated into the existing system and together form

something new which is supported by OF5 in line 877. This segment then again fits with building up the main second order reality that organic is the way to farm and it should be the norm. All in all, the organic farmers construct themselves as the opposite of conventional farmers because they do have knowledge on how to develop a better agricultural system which should be the new norm. They construct conventional farmers as surface focused, profit oriented and technology oriented and construct their way as the wrong way. Pesticide representatives and how they are advocating organic farming is then used to indicate that organic farming is being gradually accepted by differing parties as the new norm.

In the following segment, which is from a bit further along the conversation the organic farmers explicitly discuss how organic should become part of the basics and how chemical use should then be regulated.

This segment then further makes the pattern explicit of organic as the new norm and how it should be part of the basics of agriculture, as already alluded to in the first and third segment shown. This segment also shows the same conversational pattern shown in all the above segments, where how the participants converse serves to build up the group bond. The way that they converse throughout the conversation is by adding onto each other and building up each other's arguments, leaving little space for deviating opinions.

Organic embedded in the basics

- 960 OF3: I would rather have that, organic is part of the basics
961 OF8: mhm.
962 OF7: yes, yes.
963 OF3: and then there are chemicals, and you can choose that path but then you need to
964 have these prerequisites
965 OF5: mhm.
966 OF7: and it will cost you this much
967 OF7: mhm.
968 OF8: mhm.

In the lines before this segment the participants are discussing the possibility of a new agricultural system, where organic farming is mentioned as playing the main part. OF3 then mentions that "I would rather have that, organic is part of the basics" (line 960). OF8 and OF7 then give their support (lines 961, 962) after which OF3 builds that narrative further. He mentions that chemicals could be an option, but you would then need to adhere to specific guidelines to be able to use them. OF7 then adds "and it will cost you this much" (line 966). The use of chemicals, which is now inherent in conventional farming is thus mentioned as an additional step, an exception to the rule, for which you need to fit certain prerequisites. The way they formulate this resembles

the way the certification works which is currently required for produce from organic farmers to be labelled as organic. The cost aspect introduced by OF7, which was also mentioned earlier on in the conversation, reflects the environmental burden that they perceive chemicals have, and that remediating this costs money which the conventional farmers are currently not paying. Overall in this segment the reality of organic farming as the preferred option and that it should be the norm is solidified. The participants together increasingly build up their support for organic farming practices as the new norm and that elements of conventional agriculture should be restricted.

Summary of results: homogenous group of organic farmers

What can be seen from the analysis is that group cohesion which strengthens the group bond in conversation (Elias & Scotson, 1994b) was built up amongst the conversational participants during this conversation. Though moments of distancing and exploration did occur in a few instances, these eventually served to further strengthen the groups cohesion and further consolidate the groups existing standpoints on organic farming. That strengthening of arguments occurred can be seen from the high support of statements given by group members, further enforcing shared group perspectives with second order realities being presented and supported in such a way that they are made relevant. In all the above segments a strong sense of shared group ideas was shown by the repeated use of "we" by the participants and by sketching us versus them scenarios. Indicating that what they were saying applied for the entire group of organic farmers while at the same time excluding other groups. They also strengthen each other's credibility during the conversation by supporting what is said and helping to build up each other's arguments. Only a few times during the conversation were arguments questioned and different perspectives presented which did not fit with the realities presented. This lack of deliberation was presumably due to the type of group norms established during the conversation, as when a deviating opinion was introduced this was immediately countered leaving very little room for other perspectives and nuance. Conventional agriculture was also discussed and referred to as chemical agriculture they also expressed discontent with it. They argue that organic farmers have to defend themselves, while the conventional farmers do not have to while the conventional farmers are the ones using chemicals. The identity, characterization, problem, and power frames they construct all fit with building up a strong group cohesion, in which they mainly support and do not challenge each other. Identity and characterization frames were constructed in such a way that the organic farmers are right and the

parties they criticize are wrong. Thus, the most established second order reality during this conversation, which seemed to be accepted by all the conversational participants was that of organic agriculture as the desired new norm. Where the organic farmers emphasized throughout the conversation that everyone should move towards organic. Specifically mentioning that if the chemical practices of conventional agriculture are scrutinized and a new way is developed to educate farmers in which organic farming components are embedded, organic farming will become the default norm.

Plant Biotechnologists

This first segment is seven minutes into the conversation, here the participants are discussing GM, and how it can be a useful tool under specific circumstances. They argue that it can make a difference and that it should not be disregarded because it is unnatural.

The pattern that they construct together in this segment, while using careful formulation, is that GM can serve as a tool.

GM can serve as a tool

77 PB3: I do now see that the land is becoming less usable, getting a drier soil, saltier soil
78 ehm I do not see per se that GM is the big solution but you can ehm with the help of
79 genetic modification enhance ehm that you transfer genes from plants that can handle
80 dryness well, other things that are not in your germplasm per se in the gene bank that
81 you cultivate. There might be alternatives but it can make a big difference it does not
82 have to be a hundred percent GM but it can help that's a bit the way I see it. Then you
83 can still, ehh use more soil for now that is one thing.
84 PB2: and you just have more tools.
85 PB3: yes.
86 PB2: and how it, how you eventually get to a goal, that is basically less interesting than
87 ehmm what you actually use. And then GM is indeed, I do agree with that a tool a way.
88 And to then immediately write it off because it is something with not natural is ehm I
89 think that goes quite far.

In lines 77 till 89, PB3 is giving a description of soil types on which growing crops is difficult, offering GM as a possible solution. In those lines GM is constructed as a way to improve plants, so they can grow on difficult soils. These lines also serve to sketch a specific scenario in which GM could play a role. PB3 constructs GM as an option carefully and as his own opinion. "It does not have to be a hundred percent GM but it can help that's a bit the way I see it." (lines 81 and 82). PB2 then adds to this "and you just have more tools." (line 84), thereby constructing GM as something small and useful. PB3 concurs after which PB2 adds a new perspective in lines 88 and 89 by mentioning whether something is natural or not, and that writing GM off because it is unnatural seems extreme to him. In this segment the problem frame constructed is concerning the

soil, and how to be able to grow crops on different areas, with one of the solutions being genetic modification, and an obstacle to this solution its perceived unnaturalness. In this segment also a characterization frame is constructed of those who disapprove as quick to judge. They argue that it is not about how you get there but that you get there (line 86 – 87). The identity frame constructed by the plant biotechnologists in this segment is then that they are helpful and simply offering an additional tool to start up agricultural production in barren regions.

Further on in the conversation, they again talk about natural versus unnatural, slightly mocking the notion that because something is natural it is also considered to be good.

In the following segment they counter the argument of possible opposing parties while remaining aware of why GM products can be denied based on their unnaturalness. Further establishing the pattern that natural is not always good, and therefore GM should not be disregarded because of its associated unnaturalness.

Natural is not automatically better

- 891 PB3: well I have, I don't know if everyone does that, but some only use "natural" hmm
892 pesticides but they can just as well be harmful, as harmful.
893 PB2: I have also heard of a very natural product called cocaine and that seems to also be
894 very harmful
895 PB4: yes I heard that too
896 PB2: hehehe
897 laugh altogether
898 PB4: yes but that is that way, homeopathic things
899 PB2: and tobacco that is also super natural
900 PB4: has a natural source so it cannot do any harm
901 PB3: sometimes it's a little bit the, the misconception natural therefore good and
902 unnatural therefore not good and
903 PB4: yes
904 PB2: try to define natural it is not doable, and because you cannot define it, it remains a
905 discussion.
- 921 PB2: well also, and then you're going to say again to someone who works in organic
922 agriculture, and then that person is going to say like yes but such a GMO – construct is
923 not natural, for example, I think that that would be the first argument.

Right before this moment in the conversation the plant biotechnologists were discussing organic farming. Thus, in this segment the focus is more on how others may perceive natural products as good, but that this is not always the case, also specifically mentioning organic farmers in lines 921 till 923. The plant biotechnologists explicitly mention that natural is not always better, referring to natural pesticides as also potentially harmful (lines 891-892). To support this notion they also mention cocaine and tobacco in a joking way as examples of natural products which are harmful. Building up to line 901 where PB3 states that "sometimes it is a

little bit the, the misconception, natural therefore good and unnatural therefore not good.” (lines 901, 902). PB2 then adds that because natural cannot be defined it remains a discussion (lines 904-905) in this way he presents a very rational explanation for the discussion between natural and unnatural. In the small secondary segment from a bit later (lines 921 – 923), PB2 continues discussing the natural aspect by mentioning that an organic farmer would not accept a plant with a GMO construct because it is considered unnatural. Thus, pointing to natural versus unnatural as a reason why genetic modification is not accepted by organic farmers. By then deconstructing this naturalness argument against GM they are characterizing organic farmers as small minded. Constructing the characterization frame of organic farmers as not considering the possibilities but sticking to their rule of thumb that natural is always best. Thus, both segments together present how GM could be considered a tool but might be disregarded because it is not considered natural. Altogether constructing ‘natural is good’ as a misperception, based on clear examples that are hard to contest. They again construct their own identity as trying to be helpful as researchers by offering a tool.

The following segment, with lines omitted, is about how as a researcher one can never claim that something is a 100% safe due to possible disadvantages and the possibility of things going wrong.

In this segment the pattern established is that they construct the second order reality that because they are researchers they are too honest and thus cannot claim a 100% certainty as they will always consider the advantages and disadvantages. They construct this as something that is a disadvantage to GM implementation. They construct this reality in such a way that it leaves space for deviating opinions.

Deconstructing 100% certainty

1110 PB2: Yes but it also, imagine you are going to buy a car, and you ask two different
1111 experts with that specific car expertise. You ask and he says : “no, that’s a good car,
1112 nothing can go wrong with that.” and one says “yes it is a good car, but it could be
1113 dangerous in that and that situation.” so what do you do, do you buy the car yes or no?
1114 F: no
1115 PB4: no
1116 PB1: no
1117 PB3: no.
1118 PB2: that is exactly what happens

1151 PB4: but that is the case in all topics, the way you started this conversation, everything
1152 that we have implemented until now in this society, you could say had a risk.
1153 PB3: yes, something is never 100% certain.
1154 PB4: and, yes, so maybe it is just the group of scientists that want to implement that see
1155 these risks or something. Or the ones that introduced it, even though I think that is the
1156 main difference. We do not pretend like we are in love with our concept, because you are
1157 a researcher so you doubt if there are possible disadvantages. So if this would have been
1158 presented as the ultimate, than it would have already been implemented.
1159 PB2: yes maybe it would be.
1160 F: maybe indeed, yes.
1161 PB3: yes, that is one way of putting it.
1162 PB4: that is I think the problem then, the nature of scientists is the problem for the
1163 implementation of the technique if you want to see it that way.
1164 PB1: we are too honest.
1165 PB4: yes I also think so yes, or we doubt too much.

In the first part, between lines 1110 and 1118, a metaphor is presented in which a car is compared to the genetic modification of plants. PB2 illustrates how the presenting of a possible disadvantage might make one hesitant to buy a car, and then implies that this is also the way it works with genetically modified plants. This link between the car and the genetically modified plants can be seen in the last line of the segment (line 1118) where PB2 says "that is exactly what happens". What this segment points toward is that while mentioning disadvantages might not be mandatory, disadvantages can be mentioned and researched which then in turn influences the acceptance of genetically modified crops in the eyes of consumers. In addition, by implying that they as researchers are the type of car expert that would mention the disadvantages, they present an identity frame of themselves as honest. Automatically then also implying that another party, such as organic farmers, might then be holding something back as nothing is without possible disadvantages.

The second part (lines 1151 till 1165) makes 100% certainty as an underlying reason for the limited implementation of GM more explicit. In this part PB4 mentions that everything ever implemented has had risks (lines 1151-1152), with PB3 adding that indeed something is never 100% certain (line 1153). By saying that nothing is ever certain, which is hard to contest, they imply that not only genetic modification, but also organic farming is not necessarily secure. In addition, in line 1151 till 1153 by mentioning that everything has had associated risks and that nothing is ever 100% certain, it is suggested that GM is not the problem. PB4 then presents the researcher as always in doubt due to possible perceived disadvantages as they are not in love with their concept (lines 1154-1158), suggesting that organic farmers are. Ending with that if GMO's had been presented as the ultimate, it might have already been implemented (lines 1157 - 1158). Overall constructing the identity frame of themselves

as researchers (line 1157), as rational, honest, realistic and careful. In support of this they mention that they think through both advantages and disadvantages, in that way distancing themselves from people who are in love with their concept. Shortly before this segment took place, they present a characterization frame of organic farmers as in love with their concept. Thus, when mentioning that they are not in love in the above segment, they are characterizing the organic farmers as in love and blaming them implicitly of being blind to the possible disadvantages and risks associated with organic farming. While PB2, PB3, and the facilitator partially agree with this by saying yes, they add hesitation to their confirmations, not ruling out other possible reasons for GM not being implemented (lines 1159- 1161). Though the support is hesitant, as it is carefully formulated by using "maybe" (lines 1159, 1160) which also leaves room for other ideas, they still seem to agree to a certain extent that the nature of scientists might be what is behind the lack of acceptance of genetic modification in plants. This is then made explicit by PB4 in lines 1162 and 1163, where PB4 states that the problem is then the nature of scientists. With this they then seem to be in agreement as PB1 adds, "we are too honest" and PB4 responds with "yes I think so yes. Or too doubting". Again, reaffirming their constructed identity as a researcher of being honest and rational and therefore in doubt, and implying that organic farmers are not as they do not question their own practice. Overall, in this segment the plant biotechnologists are constructing a reality together. While it may seem similar to the way organic farmers do so, because they leave room for deviating opinions through the use of maybe and because they utter different perspectives, the realities they construct are less established. They do build them up, but in such a way that they can always be contested within the group.

In the following segment, one participant is describing how what conventional farmers use in their agricultural practices is allowed by the law, and that when they abide by the rules they should not be judged for it.

The reality that PB2 creates in this segment which is not contradicted by the other participants is that current agricultural practices are within the legal norm as they have been found to be safe by research and the government, therefore organic farmers have no right to condemn conventional farmers and their agricultural practices.

Organic farmers have no right to judge conventional farmers

605 PB2: to come back to your conventional agriculture, basically ehm is ehh conventional
606 agriculture ehm limits of conventional agriculture on what they use and can use is set by
607 the law. And a farmer or a horticulturalist, that ehm is not organic will always go to the
608 limit if a competitor also does that. If they do not do that, then ehh, if they for example
609 spray too little, they might lose their harvest and their money. If they could spray less,
610 ehm they probably would was quite expensive to spray and also ehm we can as ehmm as
611 government say while yes were going to stimulate them to spray less, and that is also
612 something that is going on.

613 PB3: mhm.

614 PB2: if a government prohibits something then that is ehm to be able to get society as
615 far as, as far as possible. So if the government prohibits a certain kind of pesticide or
616 herbicide that is very harmful, which is happening very often lately ehm then that is
617 because it is very harmful for society and then that is not used anymore. The things that
618 are then allowed to be used, are then by us, by the representatives of the people seen as
619 ehm at least not that harmful, as to say that the benefits outweigh the possible
620 disadvantages. And I think that that is a very good way to approach it. The fact that
621 organic farming exists I think is really good so that you can offer a choice to the
622 consumer but ehh it is ehmm and ehmm and actually it comes forth out of a group of
623 farmers that at a certain point in time decided, we are going to do it this way

624 F: mhm.

625 PB2: but you cannot a ehmm condemn the farmers that are just behaving by the rules ,
626 because yes, you are not organic and so you are doing something very bad

In the first five lines of this segment PB2 is constructing a reality by stating things as matter of fact, without the use of hesitant language. In addition, in line 607 till 612 PB2 is describing the behavior of conventional farmers and their underlying reasons, predicting and justifying their behavior by describing their daily reality. In this way he shifts responsibility away from the conventional farmers and towards the law as it exists. He thus also implies that conventional farmers do not need to change, as they are acting within the law, thereby constructing their behavior as normal and acceptable. In these first five lines no hesitant language is used. In addition, also a political frame is presented in lines 614 and 615 where the government is presented as only prohibiting something for the good of the people. PB2 further supports this by stating that the government is actively working on screening chemicals in use, prohibiting them where needed which he indicates is "happening very often lately" (line 616). In the lines 614 till 623 PB2 also presents a characterization frame of the government as careful because they prohibit

things that are found to be dangerous.

In this segment, PB2 seems to identify with the government (lines 612, 619), and involve plant biotechnologists in general as he uses we and us, "we ... the government" (line 612), and "by us ... the citizen representatives" (line 619). While this way of speaking can be a coincidence, it could also be that he is implicitly indicating a connection between the government and research, thereby implying that governmental regulatory policy is based on research. The assumption that he does associate himself with the government as a researcher is made here based on the identification occurring twice in a short amount of time. Besides seemingly identifying with the government and speaking as if part of them, this assumption is further supported when PB2 mentions that "were going to stimulate them to make them spray less" (line 611). Indicating that together they are also incentivizing the conventional farmers to decrease their chemical spraying usage (611, 612). Thus, constructing an identity frame of the government and the researchers as a unity who know what is best for people and are constantly working to safeguard the health of the people.

In this segment, also two characterization frames are constructed, one about the conventional farmers and one about organic farmers. The characterization frame concerning the conventional farmers presents them as acting according to the rules (line 625), using as much chemicals as allowed by the law (lines 606 - 607). Indicating that the conventional farmers probably want to use less as it is costly for them to use those chemicals, but they cannot do so due to existing competition between conventional farmers in their daily practice, in that way constructing a very economic costs versus gains mindset (lines 605 - 612). In a way lines 605 till 612 and 625 till 626 serve to defend conventional farmers, justifying their use of chemicals as falling within the current norm and judging organic farmers for condemning conventional farmers. In lines 622 and 623 organic farmers are constructed neutrally as a group of farmers that decided to do things a certain way, in that way constructing organic farming as just one of the possibilities. They are thereafter characterized as being judgmental towards conventional farmers, mentioning that because conventional farmers do not do things the organic farmers way, they are perceived badly by the organic farmers (lines 627 - 629). With this, as in the previous segments, they then also imply that organic farmers are small minded. Even though this segment is almost a monologue of PB2, it is not contradicted by the other participants and PB3 shows encouragement in line 613. Overall in this segment, PB2 constructs a reality of conventional farmers only going as far as the law allows, and that the law is strict and careful enough to safeguard society's health as it is constantly adapting based on ongoing research. Overall, in this segment conventional farming practices are defended while simultaneously organic farmers are accused of condemning conventional farmers because they deviate from organic farming practices. They thus present conventional farming as the existing norm, and thus also researchers, as PB2 implies that regulation is built based on research, and

thus both researchers and conventional farmers are supported by the existing laws.

The following segment was taken from further on in the conversation where organic farming is also mentioned. Here organic agriculture and innovation are discussed from a plant biotechnologists perspective.

In this segment the participants continue to construct the pattern of organic being outdated and unable to change. Adding that organic farmers cannot innovate because of different reasons.

Organic farmers unable to innovate

815 PB2: but what I think is that, in principle organic farming must ehm innovate but that is
816 then not possible because already so much has been invested that organic farmers
817 cannot go back. Or that they cannot change anymore, more difficult, and that, that is a
818 shame and I think that because of that organic farming will disappear in the coming
819 years.
820 PB3: yes and I also think that partly the image, because you can implement things with
821 new technologies but then it can quite quickly lose its image. That is also an aspect, I
822 think. So what I mean is that you, you can update organic farming that you can also do
823 that in a way that the image that people see as organic and good that that disappears

In line 815 PB2 mentions that organic farming needs to innovate, adding that because of the inability to innovate he thinks that organic farming will disappear (line 818). With this he then puts emphasis on innovation as a key component for the continued existence of something. PB3 then adds to this that "implementation with new technologies" can lead to loss of image (lines 819 – 820). Both of their statements combined can then be taken as innovation in their perspective always encompassing new technologies, and that innovation in the organic sector cannot be done because they are too invested, both in the financial and mental aspect (lines 816, 817), or because they are afraid their image as good may change (lines 822 – 823). In addition, by mentioning the need for innovation and possible combination with new technologies they can be also seen as implicitly indicating that they might be open to collaboration, offering their technology to help innovate organic agriculture, in their perspective. Both PB2 and PB3 present a characterization frame of organic as needing to but not being able to change, as they do not continuously use technology to be innovative. The explicit reasons they give in the segment for organic farmers inability to change is because they might be too invested in the current practices or simply because they do not want to change (lines 815 -817), pointing to their outdated system and how they benefit from the image that organic is good (815, 820 – 823). An identity frame of the researchers is then also implied, that because they are researchers and innovate by means of technology they know best. In this segment then again a reality is constructed, but still a second order

one as multiple explanations are given for their perceived lack of innovation in organic agriculture in that way allowing space for deviating opinions.

Summary of results: homogenous group of plant biotechnologists

What can be seen from the above segments is that plant biotechnologists present differing second order realities, exploring each other's second order realities and letting differences exist while reaching a consensus about a certain topic. In the conversation there were also no real moments of distancing or coming together, which might have been because they spent the largest part of the conversation exploring. No explicit moments of disagreement were encountered either, as when different opinions were encountered the conversation moved forward by constructing a new shared perspective together. When building up second order realities, the plant biotechnologists encouraged nuance and gave arguments that contradicted what was being said by other conversational participants. Thus, in this conversation a low level of cohesion was established. In the conversation though, they did distinguish between themselves as a group and the others, presenting an us versus them situation. During the conversation they constructed GM as a tool to be used under specific circumstances, using cautious formulation and constructing it as a solution rather than the solution. They did add that GM should not to be disregarded because it might be considered unnatural, challenging the notion that because something is natural it is automatically good. They also added that nothing can ever offer 100% certainty and that the reason that genetic modification has not been implemented everywhere may be due to the nature of scientists whom they construct to always present both advantages and disadvantages. They also discussed organic farmers, with one plant biotechnologists constructing organic farmers as judgmental for condemning conventional farmers. Two participants together also pointed to organic agriculture's inability to innovate, and how this may be due to not wanting to change or not wanting to damage the image currently associated with organic farming. What they constructed overall is that genetic modification has not been completely implemented because it has been too honest in its communication about possible disadvantages, while the organic farmers do not discuss any possible disadvantages because they are in love with their concept but continue to do things in an outdated way.

Comparison homogenous conversations

When compared, these two homogenous conversations show that both groups converse differently and place emphasis on different things. While the organic farmers are trying to establish organic farming as a new norm, the plant biotechnologists seem to be concerned with defending the current norm and carving out some space for GM technology.

The organic farmers constructed organic farming as a norm which was not to be contested, shutting down deviating perspectives when uttered. They were blaming in their communication towards others, while defending when they talked about themselves and their group. They constructed identity and characterization frames that supported organic farming and challenged others. Due to this group conversational style they built up strong group cohesion, which could at times almost be perceived as group pressure. Overall, during the conversation, established, not to be contested, realities were constructed. This construction resulted in more unified group ideas and a stronger collective identity in conversation.

The plant biotechnologists also constructed realities, but these were clear second order ones where space for contestation was left. They also talked about the current norm, mentioning aspects of the current norm and why it should be allowed to continue to exist. They constructed a conversational space where they agreed with each other while leaving space for deviating opinions to a certain extent. They were however also blaming other parties and defending themselves and in doing so constructed identity and characterization frames. The group cohesion in their conversation was built up slightly, always allowing room for differing opinions.

Both organic farmers and plant biotechnologists used a lot of identity and characterization frames during their homogenous conversations to conclude things. The identity frames both groups presented construed them as victims while both also constructed a sense of having to defend themselves which was derived from the accusations they made and the characterization frames they constructed. Due to this, the homogenous conversations were much more about identity issues than content.

Mixed group conversations

In the following section, four patterns found in both mixed conversations will be presented. Each pattern will have illustrative quotes to show what the focus points were and to allow more elaboration and analysis of different aspects of those patterns.

The object of this analysis is to see if the conversing styles of both homogenous groups and the topics discussed in the homogeneous section can be found. This is done by looking at the main topics discussed in the mixed setting and presenting those, while at the same time looking at how the participants interact in this setting.

Organic should be the new norm

In the mixed conversations, organic as the new norm was re-introduced by the organic farmers. Two segments where this is discussed will be presented and analyzed in this section.

The segment below is about how during the second mixed conversation (M2), the organic farmers were discussing the distribution of funding for research and development of conventional and organic farming, and that they feel the funding should be divided equally.

The pattern constructed in this segment is that in the perspective of the organic farmers organic farming should be given equal funding to be able to become the new norm.

Give organic an equal opportunity so it can become the norm(M2)

- 1718 OF8: mhm. You could say give it an equal opportunity. That's what you could say.
1719 OF7: give them both equal amounts of money.
1720 OF8: yeah well yes.
1721 OF3: yes.
1722 OF8: that would be fair.
1723 OF7: yes indeed.
1724 OF9: and we need to keep that, diversity needs to be maintained, he,
1725 PB3: that is indeed important.
1726 OF9: diversity needs to be maintained and ehh because otherwise you could all have the
1727 same ehh cabbage on the land and everybody's doing the same
1728 PB3: yes exactly.
1729 OF9: and that is a big danger and then you get, the insects they follow and they then
1730 have nothing.
1731 PB3: yes.
1732 OF9: it collapses, it collapses the one system into the other system making them both
1733 collapse.
1734 PB3: yes.
1735 OF9: well the consequence is then again that the one farmer has to spray yet again more
1736 chemical products. Well yeah ehh you are working with something, and it doesn't stop
1737 anymore.
1738 OF8: you're actually resisting the whole time, while
1739 OF9: it needs to be in balance, being balanced that is very important.

1740 F: and that balance is in organic farming?
1741 OF9: and that balance that, at least that, that is what we strive to do. To get that as
1742 much as ehh
1743 OF3: well I think there is one answer that I increasingly see appear in front of my eyes
1744 since last week. There is one answer to the really big problem. And that is ehh just being
1745 honest and conventional agriculture just needs to say what they are doing.
1746 OF8: mhm, yes and that on the label.
1747 PB3: what you said also about transparency, everything needs to be more transparent.
1748 OF3: wow you really do not want to know what will then change, when you start thinking
1749 about that. I thought about that really well for a whole week.
1750 OF8: mhm.
1751 OF3: if the government would just obligate
1752 OF8: mhm.
1753 OF3: that every food producer should actually really have to write what happened, what
1754 was used to make that product
1755 OF9: ja.
1756 OF3: so that the consumer has the choice between eh, ok I choose a cheap product but I
1757 see everything that already happened or I choose an organic product that was just made
1758 in a natural way. What you get is that there will be an enormous demand for organic
1759 products. That those farmers will shift toward organic products, and that the organic
1760 production will really become much cheaper. That is possible, I am convinced of that
1761 OF9: yes.
1762 OF3: and with that, and with that actually a lot of problems actually all can be solved. A
1763 lot of problems.

In the segment above, OF8 starts of by saying that it should be given an equal opportunity (line 1718), where "it" refers to organic agriculture. OF7 then adds that this equal opportunity is about giving both an equal amount of money (line 1719), referring to both conventional and organic agriculture. They continue to build upon each other in the lines thereafter by saying "that would be fair" (line 1722) and "yes indeed" (line 1723). OF9 then adds that diversity should be maintained, mentioning the risk of only planting one crop, and having all farmers do the same thing, which would then also affect the insects (lines 1724 – 1730). With this they imply that the conventional system and the conventional farmers fall short, as multiple systems can collapse due to the current dominant practices (lines 1732 - 1733). OF9 continues to build his argument by stating that consequently, conventional farmers need to keep increasing the amount of chemicals they spray, which then becomes a never-ending process (lines 1735-1736). In this way the conventional farmers way of doing things is implied to be the wrong way, which is also in line with what OF8 states thereafter in line 1738. OF8 constructs the modus operandi of conventional farmers as reactive to the ongoing process, to which OF9 adds that it should be balanced. The facilitator then interjects by asking if that balance can be found in organic agriculture (line 1740), to which OF9 answers that indeed that is what they strive to do, to be balanced. While OF9 seems to not have finished (lines 1741 – 1742), OF3 interjects by changing the focus. He states that there is one answer to the big problem

and that is to be honest and make conventional farmers spell out what they are doing (lines 1743-1745). OF8 agrees with this and adds that they should put the process on the label. PB3 supports this idea by mentioning that everything should be more transparent, also indicating and supporting the suggestion that things are currently not transparent enough. In doing so he then cedes more space to OF3 to continue to build up his perspective. OF3 continues in line 1748 about how things are then going to change, and that he has been thinking about it thoroughly for a week. With that he gives his idea more credibility as he indicates that it is not a thought that has just occurred to him but an idea that has started to take form since the homogeneous group conversation took place. OF8 then says mhm as a sign of support in line 1750. OF3 continues by saying that if the government would force every food producer to name what went into making a product, they could make an informed decision and there would be a huge increase in demand for organic products (lines 1751-1759). Because of this increase in demand the conventional farmers would then to switch to organic, making the production of organic produce much more cost effective (lines 1759-1760). He argues that this is possible, and that this would allow a lot of problems to be solved (lines 1762-1763). Though the idea of forcing food producers to be honest seems like OF3's idea, this was also mentioned during the homogenous conversation between organic farmers where this idea was also supported. Here again this idea is supported by the organic farmers, but also by PB3 who argues that transparency is indeed important.

Overall in this segment the idea of organic being the norm is constructed again. Firstly, by mentioning that more funding should be made available for organic agriculture to give it an equal opportunity. Secondly, by mentioning that if consumers would know what food processes conventional food go through many of them would collectively switch to organic products. This consumer switch would then, according to OF3, solve a lot of problems. With this the massive adoption of organic produce is again presented as the best option. Besides painting an ideal picture, OF3 also implicitly blames conventional farmers by mentioning that they should put what they are doing on the package (lines 1744 - 1745). A bit later in the segment OF3 then shifts responsibility away from organic farmers and conventional farmers towards the government to make this labelling a reality. This can be seen in lines 1751 till 1757, as here he mentions that if the government makes labelling mandatory, then this would induce change. Besides placing responsibility on the government, he also constructs consumers as unknowing. He does this by implying that they need the labels to be able to make an informed

decision. With that he then also constructs the identity frame of the organic farmers as knowledgeable and willingly transparent about current agricultural practices, and others as not. In the segment emphasis is placed on how much organic differs from conventional and that organic is more beneficial to consumers. The labelling and making it more transparent can then also be seen as a way to justify why organic produce is expensive, and why consumers should pay more for it even though they might consider it expensive. Equating organic labelling with transparent and good and clear conventional labelling as proof that the conventional process is bad and results in bad products.

Overall in this segment consumers are framed as unknowing and needing to be informed about the right food choices, and responsibility is placed on the government to enable these consumers to make an informed decision through transparent labeling. They are then expected to choose organic as the new norm by organic farmers as they think it is produced through a better process. What should also be noted is that in the segment there was very little participation from the plant biotechnologists. PB3 contributed a bit, not questioning or exploring what was being said but only serving to support the notion of maintaining diversity (line 1725) and the need for transparency throughout processes (line 1747).

In the segment below the participants converse about how organic produce is beneficial to consumers, and that only when they are sick do they start purchasing these products because they are advised to do so by their doctors.

This segment fits with the previous in the sense that in both segments organic agriculture is being constructed as what the new norm should be. In this segment the organic farmers further imply that if people would eat organic food only certain diseases could be prevented or have a lower impact.

[Eating organic is recommended by doctors\(M2\)](#)

- 2104 OF8: it is very often like that with people. First you need to become sick to then realize
2105 that you were not living healthy.
2106 OF3: yes.
2107 OF8: and that applies to all things in life.
2108 OF3: we have a small vegetable shop.
2109 OF8: yes.
2110 OF3: and then, and then very often people come straight from the hospital to the shop
2111 and they buy all kinds of vegetables and fruit because they have been told that
2112 they have cancer and that the doctor said well then you need to do that and that because
2113 that will make you
2114 OF9: yes we have that too yes
2115 OF3: that is incredible but really true

2116 OF9: health hu
2117 OF8: mhm.
2118 OF3: I think it is awful that it is that way but
2119 OF9: yes actually it is really bad yes

In the segment, OF3 mentions that “very often people come straight from the hospital to the shop and they buy all kinds of vegetables and fruit” (lines 2110 – 2111) based on a cancer diagnosis and advice given by the doctors about what they should do next (lines 2111 – 2113). With this OF3 implies that doctors perceive the best food to be organic and therefore it must be so. OF9 also mentions that this happens in his store (line 2114). They both build up the credibility of their statements by presenting it as an expert opinion which they became aware of through personal experience. By combining both expert opinion and personal experience it serves to reaffirm that organic farming produces the best food, and that it should be the food standard. If this were the case it would allow people to be healthy and support their health, rather than be mainly exposed to conventional food which is currently the dominant food type. In this segment, while constructing organic produce as the better food type they also construct a characterization frame of people as only changing their behaviour after something goes wrong (lines 2104 - 2107). At the end of this segment they then also present this behaviour as being very distant from themselves, something they think is terrible but out of their hands. Thus, while emphasizing the gravity of the situation by mentioning how terrible they think it is, OF3 adds but, and OF9 says that it is really bad, but they imply that it is not their responsibility but rather that of people that consume conventional products. In that way they construct organic as the desired new food norm, while shifting responsibility away from themselves for achieving this norm. While in the previous segment there was some participation from one plant biotechnologist, in this segment nothing was interjected by a plant biotechnology participant. So far, in both the segments the organic farmers continue to build up group cohesion and seem to share strong collective opinions with very little participation from the plant biotechnologists side.

The importance of local knowledge and practical experience

The importance of practical experience was mentioned on different occasions by the organic farmers during the mixed conversations. They presented technology as something they could do without, but that it could also be used when made to work in favor of the processes already

going on based on practical knowledge. Four segments where this is discussed will be presented and analyzed in this section.

In the following segment technological solutions are mentioned as a quick fix by the organic farmers and they also refer back to their homogenous conversation where it was mentioned that all plant types necessary already exist.

With this segment the pattern already constructed during the organic farmers homogenous conversation is supported by constructing GM technology as not needed and that everything can be found in nature. In this way technology is also presented as something that is not necessary to develop new plant varieties when enough is known about existing varieties based on local knowledge.

[GM is not needed, variation in plants already exist in nature \(M1\)](#)

493 OF1: yes, yes, all problems with food and malnutrition have to do with a more in my
494 opinion political economical and social cause than the technological. And ehh ehh the nice
495 thing about technological aspect is that then the social political and economical does not
496 have to be addressed anymore. And you still can have the feeling that you are improving
497 the world. But it is a little bit the way of putting the car, gar, car, behind the wa, no,
498 OF4: putting the cart behind the wagon, putting the cart before the horse.

501 OF1: so eh, yes I think it's a little strange that's what I think then.
502 OF4: last time a woman from the Bolder was here,
503 OF1: yes.
504 OF4: that did touch me a bit dat, she said, all plants already exist.

506 OF4: and when you start to think about that, plans for too wet are already here, plants
507 for too dry are already here. Plants that grow fast are already here, plants that grow
508 even harder are already here. Only we have the genes that grow and fast and soft and it
509 seems like that's what they are trying to invent.

At the start of this segment, OF1 constructs technology as something used to avoid tackling social, political and economic issues and still feel that you are solving world problems (lines 493 – 497). OF4, acknowledges this by completing the saying OF1 is attempting to formulate (line 498). A few lines after (line 502) OF4 makes a reference towards another participant who was present in the homogenous conversation and who was not present at this mixed conversation. He mentions that she impacted him on an emotional level when stating that all plants are already there (line 504). OF4 continues to build on this by describing the variety of plants that already exist, and that it seems that scientists are trying to reinvent them (lines 506 – 509). In this way technology, and thus also scientists, are constructed as missing the point while simultaneously implying that they as organic farmers do understand and consider social, political and economic issues. In this part they also construct nature as abundant and

technology as redundant in their perspective because they are aware of nature's potential. In this segment, including the lines omitted, nothing was interjected by the plant biotechnologists, allowing the perspectives of the organic farmers to be established as a shared perspective in the segment.

In the segment below, the organic farmers express feeling that plant development research is operating from a researchers' perspective and imposing ideas which are not based in practice. In this segment they also state that they would prefer research to start from the need of practice.

With this segment, the necessity of research is yet again questioned and constructed as something that should be developed based on demand by taking agricultural practice and societal demand into account. In this segment there is some contestation from the side of the plant biotechnologists but the argument introduced is dismissed as irrelevant.

Research is not developed based on demand (M1)

- 1375 OF4: but I do have the idea that with research, because that's what I think that you also
1376 meant, that research is there to research. And that the demand is not really there. That's
1377 what you meant right?
1378 OF1: (nods in agreement)
1379 OF4: there is no demand from society for blue chrysanthemum's but still blue
1380 chrysanthemum's are being developed.
1381 PB2: no that eh
1382 OF4: that's what I mean
1383 PB2: that is very difficult.
1384 OF4: that's what I mean in a very black-and-white situation to put it that way. Nice black
1385 and white, yes.
1386 OF1: eh no, the question should indeed just be instead of starting with blue
1387 chrysanthemum's, starting with do we want blue chrysanthemum's?
1388 OF4: yes, yes exactly.
1389 OF1: what does that contribute to the world
1390 OF4: yes, yes.
1391 OF1: and the cosmos
1392 OF4: ja.
1393 OF1: and organic.
1394 PB2: yes and I still think that you need a big regulating organization. If you want, if you
1395 want to achieve that.
1396 OF4: or 100 clients come to him, 100 clients come to me and they all ask about blue
1397 chrysanthemum's. We go to someone, and say yeah, we actually need to have
1398 chrysanthemum because everybody's asking for it. And then we could get to research
1399 and research would then develop that. Because yes that's what you're talking about
1400 (points to OF1), you do not need to have an organization to do that. Because that
1401 organization will also meddle, but will also say like
1402 PB2: no but I mean the consumer also wants to eat mango's and also wants to drive a
1403 300 hp car, on diesel.
1404 OF4: yes, yes.
1405 PB2: to say, what the consumer wants, is of course not always right.
1406 OF4: hm?
1407 PB2: what the consumer wants, is of course not always right.

1408 OF4: no but that's not all we were talking about. But we were talking about the reverse
1409 question. So working the other way around. We have the idea that we're a little, that
1410 research is steering things and we could also approach it from the other direction.

In line 1375, OF4 starts off by saying that from his point of view, research seems to be there to research, without there being a real demand for it. He then continues this argument by giving an example of blue chrysanthemum and how they are being developed even though there is no demand for them from society (lines 1379-1380). OF1 then builds upon this by saying that "the question should indeed just be instead of starting with blue chrysanthemum's, starting with do we want blue chrysanthemum's" (lines 1386-1387). With these statements they challenge the current norm and imply that technology should be developed based on demand, rather than being developed separately. However, PB2 then tries to defend the current norm by mentioning that a regulating system is necessary (lines 1393 - 1394). With this he then implies that a reversal of the current system would be difficult to achieve. OF4 counters this by presenting a client-based way of operating which would be self-regulatory. When clients indicate that they want a certain product, farmers can go to a scientist to help them develop that. He also mentions that you do not need an organisation to mediate that, as this organisation could then also meddle (lines 1396-1401). By formulating it in this way, OF4 dismisses the argument of PB2 as irrelevant. PB2 then questions the notion that research should depend on consumer demand by mentioning that consumers want all kinds of things "eat mango's" "drive a 300horsepower car on diesel", and that what consumers want is not always best (lines 1402, 1403, 1405). With that he then implies that because consumers want something, it does not mean that it should be produced. In addition, he then also implies a need for distance between producers and consumers, which again supports the idea to regulate according to existing norms and undermines the idea of self-regulation introduced by OF4. OF4 then shifts the focus away from consumers and what they want by mentioning that this is not what they are talking about, thereby disregarding PB2's argument. OF4 continues by stating that it is about the reverse question, working the other way around (lines 1408-1410). Expressing that they feel, both OF4 and OF1, that research is steering the process and that it could also be based on input from the other side. In this way OF4 counters PB2's argument, implying that he also does not completely rely on the whims of consumers and. By doing so he then does not take responsibility for the implications of the system they suggested, but rather shifts it towards consumers. Rather they focus on the way research is currently conducted and that is the thing that they

would like to see challenged and eventually reversed.

Overall in this segment, norms are being constructed by the organic farmers that research should follow societal demands, where it is also implied that the plant biotechnology research does not do so. While PB2 tries to argue against the system the organic farmers are introducing, these arguments are swept aside by the organic farmers in such a way that it does not leave room for contestation.

In the following segment, an organic farmer mentions that in a hypothetical situation he would more likely take a GM product from someone he knows, indicating that the process is more important than the product.

This segment again fits with the pattern of research only being considered when it can serve practice. In this segment the additional dimension of seeing and understanding the entire process of making a GM crop as very important is added. With this it is implied that in order to be able to trust the producer and begin to consider using the product the entire process needs to be transparent.

Process transparency required for GM crop to be considered (M1)

- 748 PB1: no but what if someone could make it for you? Just exactly the product which you
749 would otherwise select.
750 OF1: yes then I would take it from a neighbor. For starters because its my neighbor, so I
751 have a direct relationship with him instead of some anonymous company somewhere,
752 and b because I know how it was done, because I saw him do it.
753 PB1: yes. So the end product is not the most important per se but the process is.
754 Because the end product is basically the same.
755 OF1: I think that the process is very important.

In line 748 PB1 presents the possibility of a GM product which could be the same as what OF1 would otherwise select but then made especially for him. What can then be seen from the response is that what OF1 gives importance to is the direct relationship between him and the researcher and that he would have then have seen him do it (lines 750-752). PB1 then mentions that for OF1, the way in which something is done is more important than the product, seemingly trying to summarize what PB1 is implying (line 753). OF1 then concurs with this summary and further strengthens this at the end of the segment by saying that he thinks the process is very important (line 755).

What can be derived from this segment is then that for OF1 to use a genetically modified crop, preconditions are necessary. These preconditions would entail to establish some level of trust with a researcher by getting to know one. Transparency should then also be

maintained throughout the entire development process of a GM crop. That the organic farmers experience suspicion towards research companies who they perceive as seemingly anonymous and that they do not give insight into their process can also be derived from this segment.

Besides presenting possible preconditions for cooperation, in this segment of the conversation the reality is also constructed that for a GM product to be accepted the process should be more important than the product. Within this construct PB1 constructs his identity frame as flexible as he seems very willing to adapt a product to an organic farmers' wishes. OF1 also constructs himself as seemingly open for possible cooperation but limits this openness and flexibility by imposing the previously mentioned preconditions.

In the following segment from the second mixed conversation, like the segment from the first mixed conversation, the organic farmers express that they feel researchers often miss field experience and a connection to practice as they mainly specialize in knowledge obtained in the lab.

In this segment the pattern is further built up that research should be done to serve practice. Adding that knowing what goes on in practice is very important to be able to produce things that will work alongside current farming processes.

Researchers need to know what goes on in practice(M2)

- 730 OF9: what I also, what I the experience, yes you say greenhouses, but I often notice that
731 people in the lab are doing a very good job but still often miss a lot in practice with
732 regards to ehh it is all thought out in the laboratory.
733 OF8: mhm.
734 OF9: but then you are still in the testing greenhouses. Look what I always thought was
735 the short coming is that researchers often did not know anything about practice. How it
736 all works and everything. They went also with ehh, they had to collect projects, also with
737 seed companies yes ehh were seated at the table with experienced people. Yeah they
738 knew everything in the lab about a specific technique but not about the chrysanthemum
739 or about the cabbage or anything. They could not say anything about that. They did not
740 know that at all.
741 OF8: or about the actual need of the
742 OF9: no
743 OF8: of the sector
744 OF9: now that is all very one sided on that specific part, very focused. The end, or the
745 total feeling with it that ehh
746 F: I have to say that we yesterday ehm, we then also had a mixed conversation and then
747 there was one person present also a plant biotechnology who then also specializes in that
748 but also works with chrysanthemums. That was then, he works at a chrysanthemum
749 breeding company ehm and so he is doing promotion research here at the University in
750 plant biotechnology. But on the other hand he is also working in the company so he does
751 have a lot of practical knowledge.
752 OF9: yes that, but you see that less here in Wageningen, to put it another way.
753 F:mhm.
754 OF9: and I think that is a nice combination.
755 PB3: yes, yes the bridge between it.
756 OF9: a bridge between yes.

757 PB3: because it is also like okay ehm you want to do something in the lab but you also
758 have to work towards what, what is eventually useful. Also for people on the other side,
759 that, that wel yes ehm are outside.
760 OF9: yes you need to understand the world outside as well. Then, as a researcher and
761 that, that is

This segment starts off with OF9 stating how in his experience, researchers are very knowledgeable in the lab but miss field experience because they operate in test greenhouses (lines 730 – 732). He then constructs the problem frame as being that researchers often do not know anything about practice. He mentions earlier on in the conversation that he worked for the WUR in the plant biotechnology division, and thus in lines 734 till 740 he is referring to when he worked there. Recounting how the plant biotechnologists knew everything about a certain technique, but not about chrysanthemum, cabbage or anything, implying that they lack basic crop knowledge. OF8 builds upon this by saying that they also do not know the actual need of the sector (lines 741, 743). OF9 then continues by constructing the focus of researchers as very one sided, very focussed, missing the total feel (lines 744 – 745), and thus also implying that a feel for the entire process is necessary to produce a useful product. In this segment the organic farmers also construct a characterization frame of plant biotechnologists as being oblivious to daily realities and practices of agriculture. As a response to this in lines 746 till 751 the facilitator seems to attempt to get more space into the conversation. She cuts in, talking about the chrysanthemum introduced by OF9, and adds that in the first mixed conversation, there was a plant biotechnologist present who specialises in plant biotechnology, but also works with chrysanthemums, therefore having both lab and practical knowledge. Even though OF9 then maintains his argument that in Wageningen researchers are more research focussed and miss practical knowledge (lines 752 - 753), he then also calls it a nice combination (line 754). PB3 also supports this by mentioning that the bridge between research and practice is nice (line 755). He however does not contest earlier generalizing statements about researchers missing practical knowledge, just agreeing with the facilitator and OF9 in the sense that having both lab experience and practical experience is a nice combination. In the lines 757 till 759 PB3 continues, by mentioning that indeed as researchers they need to work towards something useful outside the lab. OF9 responds by mentioning that researchers need to understand the world outside of their own, implying that they are currently unknowing while he does know (lines 760 - 761).

Overall in this segment the identity frame of the organic farmer is presented as knowing, and in touch with practice and what is needed. A

characterization frame of the researcher is simultaneously presented of being too lab focussed. With that they also further construct the idea that researchers need to get a better feel for practice and have more field experience for their technological innovations to fit with practice. The problem frame presented by OF9 and OF8 and supported by PB3 is that developing something in the lab without knowledge from practice, will possibly not be compatible or suited to meet the needs of the outside world. The implied solution of this segment is then that they need more researchers with both lab and practical experience, which would allow research to become more compatible with practice.

GM can serve as a tool

During the mixed conversations, as in the homogenous, GM technology was constructed as a possible tool by the plant biotechnologists. In the following section two segments will be presented in which GM technology and agriculture are discussed between both groups.

In the segment below a plant biotechnologist introduces that biodiversity might be at risk when large companies only can work more easily with genetic modification.

In the following segment GM is indeed constructed as a possible tool by the plant biotechnologists which needs to be regulated in a specific way to avoid a decrease in biodiversity. When they start discussing this the organic farmers express disapproval where they argue that the solution should rather be to rely on nature instead.

GM risks and solutions(M1)

- 1080 PB2: then to continue that train of thought, what do you think happens to diversity?
1081 Meaning diversity in the widest sense of the word. When you ehh allow companies to
1082 easily work with GM, what do you think happens with the diversity in companies and
1083 what do you think happens with crop diversity and with gene diversity?
1084 PB5: nah I think a lot less diversity.
1085 PB2: yeah.
1086 PB5: if you do not cross pieces anymore because of which, and that is what actually
1087 provides diversity.
1088 OF4: so it would be a very bad situation.
1089 PB2: I, I see that as a very bad situation.
1090 PB5: yes, yes I think so too.
1091 PB2: that, that is what I worry about. Because
1092 PB5: I didn't think about that.
1093 OF4: I never thought about that either.
1094 PB2: because if you lets say first off we all know that, I mean the Monsanto's among us
1095 and they'll think it's fantastic, they can patent everything. Little companies they ehh
1096 don't have a shot anymore.
1097 PB5: yes.
1098 PB2: and everything is for the big guys.
1099 OF4: I also think that it is like that.

1100 PB2: and what then, and that is, I think that an important part of the world food problem
1101 is dependent on how we handle genetic material. Meaning that, the more companies you
1102 have the more eh types of selection and breeding you have. The more, the broader you,
1103 your genetic variation and the bigger the chance that you then do get those varieties,
1104 either by using or not using GM I think that is, that that still is debatable but ehm
1105 OF4: we exclude it, because then you need to do more crosses and then you get even
1106 more crops.
1107 PB2: ehm, I don't think ehh, I think you need to keep your genetic base broad and ehmm
1108 and I think that if you, I think also that the needs change so that ehh, of, of ehh, of
1109 breeders and consumers. So you always have to keep crossing. What we need in 20
1110 years, is now in our genetic variation, but we do not know now what is going to be.
1111 OF1: yes.
1112 OF4: yes.
1113 PB2: and if, if youre variation in ehm, or diversity in companies and genetics ehm
1114 narrows, I think that automatically also your diversity in genetics narrows, then we might
1115 20 years then we might get in trouble.
1116 PB5: yes.
1117 OF4: then we fortunately still have nature. With its large diversity.
1118 PB2: when we then patent that as well then we are completely screwed. No, that is what
1119 is happening now you know

PB2 starts by questioning what would happen to the diversity of companies, crops and genes, if companies can work freely with GM (lines 1080-1083), this argument was also presented by PB2 during the homogenous conversation. PB5 answers this question by mentioning that this would lead to far less diversity. OF4 continues by mentioning that this would be bad and a few lines later add that he never thought about it like that (lines 1088, 1093). PB2 then adds to this that if big companies take over, they patent everything, leaving no room for small companies. He argues that small companies need to be able to partake in GM crop development to maintain crop diversity (lines 1094-1096, 1100 - 1104). With this he seems to imply that more flexible regulations are needed as otherwise it will only be dominated by large companies resulting in sparser genetic material (lines 1094-1096).

While it seems that PB2 presents a counterargument to GM, and this is also the way it seems to be received by the organic farmers, he also seems to imply that there is a need for a down regulated GM system in which small GM companies can participate. In that way if implemented under certain regulatory conditions, GM can serve as a tool. By presenting this counterargument, he is constructing the identity of the researcher as honest as what he says can negatively the image of genetic modification. In addition, by constructing it in this way, he also shifts the blame for the reduction of biodiversity away from plant biotechnology and onto big companies. However, the organic farmers react to it differently. Even though the same problem is recognized, different solutions are offered. The organic farmers use the conversational space to further construct and express their disapproval of genetic modification and emphasize what

nature has to offer. Thereby framing the problem as that of genetic modification having a possible negative impact on biodiversity. Thus, while PB2 mentions that if small companies can partake biodiversity would be maintained, the overall dominant frame constructed together is that if companies get to work more easily with genetic modification this would put biodiversity at jeopardy. This overall results in the characterization of GM technology as problematic, and something that could adversely affect biodiversity if given more space.

The following segment is about how during the second mixed conversation, one of the organic farmers presents a situation in which the use of GM technology could have a significant impact and thus could make him move towards supporting GM application.

In this segment GM is again presented as a possibly useful tool but by an organic farming participant who is then not challenged. He does so by presenting his personal experience which in this case serves to construct a context wherein GM could be considered acceptable.

Constructing a context wherein GM could be considered acceptable(M2)

- 78 OF9: ah you were just now talking about those patents, so if I then for a moment go
79 back to my time when I ehh was very closely involved. That I see where the projects that
80 were here in Wageningen were positioned. And how the financing was done, yeah I
81 always found that it where the Monsanto's and the I don't even know companies . That's
82 where you sooner or later found yourself. Ehh a lot of financing of the research what we
83 then had in the greenhouses, was all funded by those multinationals, through all kinds of
84 indirect paths, but still all, that is what it often turned out to be. What I did have, ehh,
85 what I at the time did have ehh a dilemma with or what I was having trouble with ehh is
86 trouble with that at the time we were also doing rice tests and that ehh through genetic
87 manipulation as one of the methods also in dry areas rice could be cultivated yeah and
88 then you get the dilemma, you get where there is hunger that can still be rice in dry
89 areas. They were already that far back then. I think yeah that it is hard to then deal with
90 that.
- 91 OF3: yes so it turns out that it did not work.
- 92 OF9: no but it is still being developed you know. Look they then found something and
93 ehhm but I think that if something like that would completely work then you really do get
94 a dilemma. Then you get, then you can in an empty area, you can still ehh cultivate rice
95 and still feed people.
- 96 PB3: can I ask something? I know the responding isn't until later.
- 97 F: doesn't matter.
- 98 PB3: so that will be later but to know a little bit more. What was then the dilemma for
99 you? Because you say okay it could be an advantage for hunger ehh to then indeed do it
100 but what was then the dilemma for you which made you also not want it?
- 101 OF9: ehh yes well look it ehh is in fact, I do agree with OF3. I actually think you should
102 not meddle too much with that. And eh, and that sort of thing. You also disturb all kinds
103 of processes. But I also had with regards to that point, to say if you could then indeed
104 feed all those mouths by simply said in a black-and-white way use dry soil, provide a
105 region of food by using very dry soil, which actually should almost not be possible, yeah
106 than ehh, for me that was, that would have been a difficult decision.
- 107 PB3: yes that is human.

OF9, the organic farmer in this segment, was not present during the homogenous conversation. However, he still presents a power frame in line with what was said during the homogenous conversation which puts GM research in a bad light, mentioning how Monsanto like companies have control over the university as they are the main financiers (lines 78 – 84). However, he follows this up by mentioning his dilemma in lines 84 till 90, his dilemma relates to the possibility of growing rice in fields where otherwise nothing could be grown. He mentions that this was what some of the researchers were working on at the time when he worked in that sector. PB3 very cautiously interjects if he can ask a question (line 96), and after he receives permission from the facilitator asks why it was a dilemma for OF9 and what would be the reason that he then also would not want to implement this GM rice crop in such an area. This last part is formulated quite cautiously and seems to be an attempt to figure out the reasoning behind OF9's opinion (line 98-100). OF9 then gives his answer, first acknowledging the opinion of OF3 and uttering agreement with not wanting to tinker too much with nature as this might influence various processes and thus also implies that he is not in favor of GM. OF3 dismissed the dilemma at the start mentioning that the technology is still not there (line 91). OF9 however after acknowledging OF3, continues by mentioning that the thing that made him doubt was being able to feed people in a certain region by using dry soil that could not be farmed in a normal way. PB3 then reacts to it by saying that "yes, that is human" (line 107). Thus, the dilemma that OF9 is presenting is that of tinkering with nature versus feeding people. This then indicates that in extreme situations, just as OF7 mentioned during the homogenous conversation, GM could be something to consider. However, in this instance, this argument was not countered by another organic farmer present. This might be because the option was presented as a dilemma while maintaining a sense of agreement with the other organic farmer who spoke up. With this OF9 constructs himself as someone who would rather not use the technology, thus sticking to the group norm and maintaining group cohesion. At the same time, he also expresses a cloaked deviating opinion that could possibly allow GM to be implemented in extreme cases. Overall, he thus constructs the problem as being unable to produce food in certain areas and GM possibly enabling food production under restrictive circumstances.

Differences in reasoning

During the mixed conversations the differences between both groups with regards to their frames of reference and ways of communicating played a role. In this section I will present and analyze three segments that illustrate these differences and how they impacted the conversations.

In the segment below, a moment in the first mixed conversation where the communication style of plant biotechnologists is questioned indirectly is displayed.

In this segment the pattern of organic farmers challenging the plant biotechnologists is shown. What is specifically challenged here is the way the plant biotechnologists converse with one another.

Organic farmers challenge the plant biotechnologists way of conversing (M1)

225 OF1: maybe we should take a break
226 OF4: hahahaha
227 OF1: then you can figure out how it actually works.

Before this segment took place, the facilitator poses an opening question asking the plant biotechnologists to give a definition of genetic modification. The plant biotechnologists do not give an answer straight away but start to discuss their different perspectives on this and which elements should or should not be included in such a definition. This then leads to the above segment in which OF1 mentions that maybe they should take a break, after which OF4 erupts in laughter. With OF1 continuing, mentioning that the plant biotechnologists can then figure out how it really works. Thus, here the way in which the plant biotechnologists communicate is openly criticized by the organic farmers in joke form. This does not however elicit a response from the plant biotechnologists who seem surprised that OF1 questions their way of conversing. The reason OF1 calls their way of conversing into question, and OF4 concurs, might be because the organic farmers do not answer in such a way. When asked for a definition or opinion the organic farmers rather add upon each other, making their stories stronger but do not openly challenge each other's utterances. Thus, this interaction is an example of how the reasoning and expressing of both parties differs to such an extent that, just as in the homogenous conversations, the organic farmers continue to back each other up while the plant biotechnologists, even when seemingly not taken seriously, continue to explore to prevent one-sided perspectives. This however is interpreted by the organic farmers as the plant biotechnologists not knowing what they are talking about. With the organic farmers surprised as to why the plant biotechnologists deliberate

in such a way, and the plant biotechnologists wondering why their exploratory way of conversing is criticized.

The segment below is from near the end of the first mixed conversation where there was a short interaction between one of the plant biotechnologists and the organic farmers. In this exchange, differences in their communication styles and reasoning were made explicit.

In this segment how both groups experienced each other's perspectives is made explicit and acknowledged. This turn in conversation seems to point to how having these type of conversations can facilitate some level of understanding between two very different groups.

Different ways of thinking (M1)

1498 PB2: because you probably thought a couple of times that, at least that's what I had a
1499 couple of times, that you presented arguments, that I was like insert "what are you
1500 saying?" well that is a very different perspective outside of my world to put it that way.
1501 That was probably the same for you.
1502 OF1 & OF4 nod in agreement.
1503 PB2: if we said things like yeah
1504 OF4: yes!
1505 PB2: but that's not what I think about at all? You know ehh
1506 OF4: yes that is true.
1507 PB2: and we of course also had that, when we, yes you were not there but when we
1508 were with the, with the biotechnologists, we were all very easily aligned.
1509 OF4: yes, yes, yes.
1510 OF1: just five words to solve the world. Done!
1511 OF4: yes exactly, yes.
1512 PB2: yes, we then agreed overall with each other about ehh, and now all of a sudden it
1513 was about naturalness and things like that. Well, with the biotechnologists we did not
1514 talk about naturalness at all of course.

PB2 points to how the arguments presented by the organic farmers during this conversation seemed a completely different view outside his world and that this was probably also the case for the organic farmers present (lines 1498-1501). OF1 and OF4 then nod to acknowledge that they indeed felt that way during the conversation after which PB2 continues to build up his reasoning. He states that that is not the way he thinks about things, indicating a completely different way of reasoning (line 1505). OF4 continues to agree, after which PB2 adds that with the group of biotechnologists they were easily on the same page (lines 1507 - 1508), and how in this conversation the organic farmers suddenly started talking about naturalness (line 1513). He claims that this was not part of the conversation in the homogenous case, which is quite surprising as the plant biotechnologists did discuss it and this can also be seen in the homogenous analysis section of the plant biotechnologists. The difference between how they talked about naturalness in the homogenous setting and the first mixed conversation is then that in the plant biotechnologists

conversation, naturalness was assumed to be a factor influencing the acceptance of GM crops, though they did not consider natural to be necessarily better. In this mixed conversation however, naturalness was an important dimension for the organic farmers level of acceptance, confirming the assumption the plant biotechnologists expressed in the homogenous conversation that naturalness is associated with better by the organic farmers.

Overall what can be seen from this segment is that both parties acknowledged that they had different perspectives, and that bringing these perspectives together made it hard at times in the conversation to understand each other. However, it also allowed them a glimpse into the way the other group reasoned. This did not necessarily lead to agreement, but it seems to have facilitated some level of understanding where they can agree to disagree while continuing to converse.

The following segment is taken from the first mixed conversation and shows how the facilitator is creating a situation whereby PB2 is enabled to challenge the organic farmers and their practices. The probing done by the facilitator is based on PB2's own utterances during the homogenous plant biotechnology conversation.

This segment illustrates how in the mixed setting the plant biotechnologists barely challenged the organic farmers and only did so under specific circumstances. When challenged, the organic farmers in this segment responded in a dismissive way without further exploration. Thus, this segment is another example of how the organic farmers had more conversational space available to them due to the differences in conversation styles between both groups.

Plant biotechnologist challenges organic farming under specific circumstances (M1)

285 F: but just to, to come back to organic farming then, those guidelines, because you just
286 indicated in your own definition that those guidelines might be somewhat outdated
287 PB2: no I did not indicate that.
288 F: yes, yes you did, you did. ...
289 PB2: yes, okay, okay. Yes I do want to stand by that argument here.
290 F: but, yes how do you guys experience that? Is that indeed that there are certain
291 guidelines or certificates that say that you are then operating in a sustainable way, that
292 you might not be able to completely, that you might not be able to innovate sustainably.
293 Or are you maybe not occupied with that?
294 OF1: ehh wait a minute, I think it's a difficult question ehhm for starters that set of rules
295 is being continuously adjusted and updated and changed and tightened and sharpened.
296 So I mean yes, that set of rules has existed for somewhat 20 years, 30 for I don't know
297 how long ehh ehh but that is actually continuously changing. And if so, that might be
298 considered outdated of course but very shortly so.
299 OF4: no that is not the case. It is not outdated.

In the segment, the facilitator points to PB2 as having mentioned that the guidelines of organic farming might be somewhat outdated, this was mentioned by PB2 during the plant biotechnologist's homogenous conversation (lines 285-286). PB2 at first denies having said that in this conversation (line 287), indicating that he might not want to admit to this or openly challenge the organic farmers. The facilitator then continues to press (line 288), after which PB2 then says that "Yes I do want to stand by that argument here" (line 289). This formulation may then also indicate that he was indeed hesitant of positioning organic farming as outdated with the organic farmers present. The facilitator continues by posing an exploratory question to the organic farmers. Asking about how they experience certificates they need to obtain, and if this hinders their possibilities to innovate in a sustainable way (lines 290-293). This then seems to trigger a defensive response, as OF1 responds by saying that the set of rules might stem from 20-30 years ago but that they are continuously being updated (lines 294 - 295). Further indicating that if outdated, this is only during short periods of time (lines 297 - 298). OF4 then strengthens this by stating that "it is not outdated" (line 299).

Overall what this segment shows is that in this specific setting, the plant biotechnologists are hesitant to challenge the organic farmers. In this case only challenging the organic farming methods, with arguments from the homogenous conversation, after being spurred on by the facilitator. In addition, when they did challenge them, this was countered immediately without further exploration into what these arguments were based on. Showing how just as in the homogenous setting, in the mixed setting, the organic farmers in conversation support each other, and this leaves very little room for exploration. The plant biotechnologists however continue to explore statements and ideas even when at times this is not in their best interest.

Summary results mixed conversations

What can be summarized from the analysis of the mixed conversation is that organic farmers maintain a high level of cohesion in mixed group form, while the plant biotechnologists continue to converse in an exploratory manner. When the plant biotechnologists do challenge the organic farmers, this is immediately countered in group form by the organic farmers. Though the organic farmers seem to be a closed front, leaving very little room for interaction with the plant biotechnologists, there still seemed to be some room for cooperation under very specific circumstances. Some degree of mutual acknowledgement towards each

other with regards to their differing perspectives and differing ways of reasoning were also uttered in both conversations.

Overall, differences in conversation styles of both participant groups were seen. The plant biotechnologists were far more hesitant about expressing their perspectives on organic farming mentioned in the homogeneous conversation, and organic farmers blaming and criticizing research less openly. Both parties were more careful and politer in their utterances about each other. This change might have led to some openings encountered, however these openings faded quickly. These openings may point to more discursive space being possible under different conversational circumstances.

Interviews

The interviews were intended by the researcher to reflect upon how the participants experienced the conversations, and how they felt during said conversations. However, additional insights were also gained from the interviews.

Interviews induced reflection for the plant biotechnologists

During the interviews, the plant biotechnologists mentioned that based on the mixed conversations, they had reflected upon what they were researching and if they would actually want to implement agricultural GM products.

1. PB2: *"is it actually necessary what you do? Well I thought about that for quite some time"*
2. PB4: *"but with regards to science I always thought it doesn't matter that much, but the actual implementation I never, how do you see that? I never decided ehh if I was for or against it."*

PB2 contemplates if it is necessary what he is doing, eventually concluding further on in the interview that it was necessary as otherwise what was he doing his PhD for. Thus, even though the conversations served to trigger self-reflection in him, he eventually conformed to his pre-existing ideas.

PB4 takes a somewhat different perspective, she makes a clear distinction between doing science for science and implies that there this reflective factor does not seem to matter. When put into practice however, the actual implementation of a GM product was something she had never made up her mind about. She expressed that she did not know if she was for or against it.

Overall what these quotes seem to indicate is that both participants had never thought through why they were doing what they were doing and what the possible implications might be. This reflection was then triggered because they conversed with different minded people.

The organic farmers closed themselves off during the mixed conversations

During the interviews both plant biotechnologists and organic farmers mentioned that the organic farmers were being defensive in their communication during the mixed conversations.

1. PB1: *"it is so that, they really did have fixed points of view and those were certainly not going to change."*
2. PB4: *"in the second conversation it was more the case that differences of opinion played a role. There you felt some more tension."*
3. OF3: *"well yes I also noticed what was sitting in front of me, so I went straight for the complete opposite. Not going along with it at all, BAM!"*

The first two quotes are from biotechnology participants and the third from an organic farmer.

PB1 indicated that she felt the organic farmers had made up their minds before entering the conversation thereby framing the organic farmers as narrow minded and closed off.

PB4 indicated that the mixed conversation was tenser than the homogenous conversation due to more differences in opinion. This then indicates that PB4 finds differences of opinion to increase the tension level of the conversation by default.

The organic farmers themselves also mentioned that they were being defensive during the mixed conversation. OF3 is the one represented in the quote as he was very explicit about his defensiveness. He stated that he knew what he was up against and in that way framed the plant biotechnologists as strong opponents and there to convince him. He therefore needed to form a strong front against them as they were the opposing party.

Overall, while formulated differently, all three mention that during the mixed conversations they were in, the organic farmers were conversing in a defensive manner. PB1 participated in the first mixed conversation and PB4 and OF3 in the second mixed conversation.

The importance of practical experience for the organic farmers

During the interviews, the organic farmers mentioned that practical experience was very important to them. They constructed plant biotechnologists as lacking practical experience and that they would be more interesting when they did have practical experience.

1. OF3: *"I was actually a bit startled by their lack of background knowledge on what they were actually doing and how they were interfering in processes of nature."*
2. OF4: *"that probably those people within the University, and I know that I'm generalizing now and that that is also not completely fair, but that those people are sometimes very far removed from practice."*
3. OF8: *"it would have been richer if there were more people from the biotech corner, if they could have also been there, with some more experience also in practice or something like that."*

The three quotes in this section are about the lack of practical experience the organic farmers perceive the plant biotechnologists to have.

OF3 mentions that he was shocked by the low level of background knowledge the plant biotechnologists had, and that they were interfering with nature's processes without seeming to know exactly what they were doing. He thereby constructed what he had seen as surprising, and that he had held them in much higher regard than what he had witnessed during the conversation. In that way he constructed a characterization frame of the situation being even worse than he thought. OF4 mentioned something similar in a more generalising way, giving a disclaimer of how he was generalising and that that is also not completely fair. He referred to people within the university as sometimes very far removed from practice. In that way he constructed the lack of practical knowledge as something far more common within the university, and not just the case with the plant biotechnology participants present during the mixed conversations.

The comment OF8 made also had to do with practical experience but more on a conversational level. She mentioned to how it would have enriched the conversation if plant biotechnologists with more practical experience would have been present. In that way she constructed the conversation as lacking and plant biotechnologists with little practical experience as less interesting conversational partners.

OF3, OF4 and OF8 all make explicit that it would be more interesting and valuable if plant biotechnologists and researchers in general had more practical experience and knowledge.

Organic farmers seem more open than during group conversations

During the interviews two organic farmers also indicated an openness towards possibilities for cooperation with plant biotechnologists and GM technology. This openness was not presented by them during the group conversations, thus the occurrence of it indicates that the organic farmers seem to speak more freely during the interviews than the group conversations.

1. OF4: *"but then practice and theory they meet up with each other at a certain point and then there is where it's going to happen, where practice and theory meet.*
2. OF3: *"because I can stick to my guns, yes but then you don't achieve anything with each other, you can stick to your guns, leaving some wiggle space to maneuver a bit is more comfortable.*

OF4 and OF3 commented earlier in their interviews on the current level of practical experience of the plant biotechnologists and researchers in general, as can be seen in the previous section. With these additional two utterances however, they hint at possibilities when change is encountered.

OF4 was a bit more explicit in those possibilities. He mentions that where practice and theory meet that is where it is going to happen. With that he seems to imply that when people work together who have both practice and theory it gives way to the possibility of ground-breaking developments and opportunities. Thus, while earlier he frames the issue as being that people within the university are often too far removed from practice, the addition of theory to practice seems very promising to him.

OF3 also seems to be hinting at some room for cooperation in the second quote, indicating that sticking to your guns leaves you no manoeuvring space, while keeping a little bit of space to move can come in handy. With that he seems to imply that if one does not allow any space for changes in opinion or perspectives, it is very hard to change those in the light of new information. OF3 also mentions during his interview that he is very curious about genetic modification and that he would like to know more about it, thus also fitting with the quote that he remains a bit open. Based on these utterances, the possibility exists that in his case new information might persuade him to behave differently towards genetic modification and possibly allow cooperation.

Plant biotechnologists seem less agreeing than during mixed

While the two quotes in the previous section seem to indicate that there might be more space for cooperation, the plant biotechnologists seemed less open during their interviews than during the mixed conversations. The quotes below are two remarks made by two different plant biotechnologist, indicating that they are less in agreeance with organic agriculture and the organic farmers they conversed with than they let on during the mixed conversations. They seem to attempt to downplay their agreeing attitude during the mixed conversations.

1. PB2: *"yes maybe it might've been different if ehh if there also would have been ehh students of the organic side to put it like that emm it's harder to go against someone ehm that is a lot older than you, to ehh just to interrupt like, know that is not true. You would not do that then."*
2. PB3: *"then she was actually ehh shoving words down our throat, while this was actually not the case. The difference is just that I understood some points somewhat better, but not that I gave any indication, or that I was going to switch to organic. So that was a bit of a weird remark for me."*

Both plant biotechnology participants presented participated in a different mixed conversation, with PB2 conversing in the first and PB3 conversing in the second mixed conversation.

PB2 indicates that during the mixed conversation he was in, he did not feel that it was possible to interrupt the organic farmers present due to the large age difference. "you would not do that then" indicates that this falls outside the perceived norm of interaction, and that because the age and experience gap is too significant, being interrupted by someone younger and with less experience might be considered disrespectful. In his formulation he mentions that if there would have been organic agriculture students present as conversational partners, the conversation might have gone differently. Thus, with this he also implies that when the level is perceived to be the same, in this case age and experience, it is easier to interrupt and challenge each other. He expressed this difference to be challenging and implicitly pointed to a hurdle in the conversation that could not be overcome by him.

The quote from PB3 is more specific, referring to one particular organic farming participant, and how he felt that at the end of the mixed conversation she (OF8) was putting words in his mouth. He adds that because he came to understand the organic farmers standpoints somewhat better, this did not mean that he was convinced that organic farming was the way to go. Here then he presents his own identity frame

of the researcher, coinciding with what was built up in the homogenous conversation. Namely being curious and wanting to explore what other people say, in this case to the extent that he does not make his opinion known as he does not perceive it to matter at that point. Thus, while he did explore and come to understand somewhat more about the organic farmers perspectives he did not want to switch to organic. By constructing what OF8 said to him as random, he then presents a characterization of her as intrusive and difficult to communicate with.

Overall, the plant biotechnologists seem to be less open towards the organic farming participants than presented during the mixed conversations based on what they said during their interviews.

Summary results interviews

What can be seen from the interview quotes in the analysis is that firstly the mixed conversations triggered the plant biotechnologists to reflect on why they do what they do. Secondly the organic farmers conversed defensively during the mixed conversation because it was their intention, they saw the plant biotechnologists as strong opponents and they also came across defensive from the plant biotechnologists perspective. Thirdly the organic farmers perceive practical experience to be a very important dimension, criticizing researchers for not having it, and if present this would in their opinion make way for more interesting conversations and more room for cooperation. Fourthly not being of similar age and experience was mentioned as a conversational hurdle by PB2. With PB3 then also mentioning that showing understanding, does not necessarily mean that one agrees, and it can be perceived as problematic if this is taken up as such.

Overall what can be seen from the interviews is that the organic agriculture participants seem to be looking for more openings to cooperate when discussing the topic individually as compared to group form. The plant biotechnologists however, say that they were not able to express themselves fully during the mixed conversations. Overall, they seem more critical and closed off about organic farming and possibilities for cooperation during the interviews than during the mixed.

Both groups are more open during the interviews about their own perspectives, sharing their individual thoughts and less defensive in their communication with regards to those thoughts. They seem less divided in us versus them and are nuance things more. However this does not seem to bring them closer together but rather further apart.

Discussion

The aim of the present study was to discover communication patterns which play a role when plant biotechnologists and organic farmers converse in different conversational settings. In the homogenous, mixed and interview setting, communication patterns were discovered which will be recapped. Thereafter results related to cohesion and second order realities will be elaborated upon to understand the communication patterns found.

In the homogeneous setting the main communication patterns were different for both groups. The plant biotechnologists agreed with one another on most topics while allowing space for deviating opinions, thereby building up low group cohesion. The organic farmers built up a high level of group cohesion, constructed strong second order realities and left no space for deviating opinions.

In the mixed setting both groups maintained their group related communication patterns presented in the homogenous conversations. When put together they then formed a new pattern. The high cohesion established between the organic farmers resulted in conversational power, and the low cohesion between the plant biotechnologists resulted in conversational vulnerability. The plant biotechnologists were vulnerable in the sense that the arguments they interjected were often not taken seriously or disregarded. The extent to which the organic farmers dominated the conversation could also be seen by how there were large parts of the conversations where the plant biotechnologists did not participate. In addition, no second order realities were built up together, with the second order realities of the organic farmers only being built up further and becoming more established.

In the interviews the impact of this mixed group interaction was found to be very limited. While the plant biotechnologists were present in the background during the mixed conversations, this did not mean that they were swayed towards the organic farmers opinions. The plant biotechnologists explicitly mentioned that they were not going to shift towards organic during the interviews based on the mixed conversations. They also mentioned that there was a lack of conversational space to express their opinions during the mixed conversations. The organic farmers on the other hand presented their individual perspectives of which several did not match with those presented in the group settings, seeming more open towards GM than during both the homogenous and mixed conversations they participated in.

Overall, while the organic farmers seemed strong in the mixed conversation setting due to their high cohesion, especially when conversing with a group with low social cohesion, this impact does not seem to have extended further than the mixed conversation. Conversation dynamics seem to have had an impact on what said in the interviews, based on how the participants experienced the focus group discussions. Apparently, the plant biotechnologists did not feel they had space to express their standpoints and felt they had to conform to the

organic farmers. The organic farmers however felt that they did have space to express their ideas during the focus groups, which possibly made them more open and less defensive in the interviews. This all should be further studied.

The dangers of too much group cohesion

High cohesion among the organic farmers resulted in conversational power, and a strong group identity. Group cohesion is often times associated with better group performance (Rovio, Eskola, Kozub, Duda, & Lintunen, 2009), but when it is too high it can lead to groupthink. Groupthink is a dynamic where group norms are developed that bolster morale at the expense of critical thinking" (Janis, 1971, p. 84). In this way limiting the space for deviating opinions.

The norms established within the organic farming group during the homogenous conversation did not seem to leave space for critical thinking. This is also something that is hinted towards by the plant biotechnologists by constructing the organic farmers as not critical enough towards themselves.

During the mixed conversations, the way the organic farmers closed themselves off seems to also have to do with cohesion and groupthink. According to Marques, Abrams, and Serôdio (2001), when the in-group feels threatened, in-group homogeneity is increased. Thus, because the homogeneity is increased, groupthink is more likely to occur, which in addition is also more likely to occur in the face of threat (Janis, 1971). Therefore, in the mixed conversational setting, where the organic farmers seemed to perceive the plant biotechnologists as a threat, they stuck together as an unconscious defense mechanism, thereby maintaining their group cohesion and conversational power (Elias & Scotson, 1994a). As a result, little conversational space was left for the plant biotechnologists.

While low cohesion is also related to less group strength (Rovio et al., 2009), based on the current case it does not necessarily lead to less individual conviction. Even though the plant biotechnologists seemed more vulnerable in interaction, they did not change their previously held beliefs when confronted with a highly cohesive group. Therefore, having low cohesion does not mean that they are strongly impacted by a highly cohesive group on a personal level. Rather the way they suppressed their beliefs seems to an expression of what Noelle-Neumann (1974) calls the spiral of silence. Where people in fear of rejection do not contradict ruling opinions like the plant biotechnologists in the mixed conversations. The suppressed opinions can become stronger as soon as they meet 'like-minded' people again in other settings. When that happens groupthink may also occur to them, which results in increased group cohesion, and

because of this process the distance between the opponents may grow bigger.

Overall, one must be weary of a high group cohesion level, as it can lead to a conversation where either group does not seem to gain from it. With the low cohesive group trying to explore while the highly cohesive group is attempting to defend themselves in the face of a perceived threat. By doing so, they do not realize that they are distancing themselves from their conversational partners rather than engaging with them.

Important to distinguish between different realities

Both groups constructed their second order realities by means of issue, identity and characterization framing. Though the research by N. Aarts et al. (2011) was on a different topic, namely youngsters and residents, it also had a homogenous and mixed setting. Both groups in that research had a conversational pattern similar to that of the organic farmers, with a high level of in-group support for each other's arguments building up strong second order realities, leaving no space for deviating opinions in the homogenous setting. In this research however even though the second order realities were used with the same framing types, the second order realities constructed by the organic farmers were much more established than those of the plant biotechnologists.

This might also explain the difference in cohesion between both groups. As how the participants formulate and support each other's arguments strongly impacts the level of cohesion built up.

Perceived first order realities, which is a new term introduced in this research to further distinguish between second order realities, are second order realities which are so heavily supported that they are believed to be true in a certain group setting. While these perceived first order realities can be challenged by people from outside that group, in this case in the mixed conversations this did not occur. However, even though they were not challenged in the mixed setting, it can be seen from the interviews that they were not accepted as true by the plant biotechnologists.

Building up "normal" second order realities leaves more space for contestation, which may result in deliberation in the conversation. However, formulating second order realities also leaves more space for discussion and possibilities for cooperation and new co-constructed definitions.

Together, this points to the notion that during conversations, a way to decrease the likelihood of cohesion building up too high is by breaking through these perceived first order realities. For this, the facilitator present should be able to distinguish between first, perceived first and

second order realities by being alert on 'hidden' assumptions, norms and beliefs, and be able to make the process explicit in conversation.

Initial politeness can pave the way for dialogue

The occurrence of nuance and decreased stereotyping in the mixed setting may be due to politeness. In the research by N. Aarts et al. (2011) similar results were obtained when mixing two opposing groups, there they also indicated that politeness may have played a role. Politeness as an influencing factor was also mentioned in the interviews conducted after the group conversations in the current research.

While some instances of partial agreement occurred during the mixed conversations between the plant biotechnologists and organic farmers, the extent to which this conversational agreement was also internalized resulted to be quite low based on the interviews. From the interviews, the shift in support by the organic farmers of plant biotechnology and an increased interest towards GM technology was found. A possible explanation for this might be because the organic farmers were alone with the researcher. By being present as an individual they did not have to adhere to the group norms established during the group conversations. This then made space available for deviating opinions to be uttered.

Both groups seem to not have internalized or been fully supportive of the arguments presented in the group conversations, however they did remain polite. This politeness is a good sign as according to Jehn and Mannix (2001) groups which remain polite in the early stages of group interaction are often high-performing. Being polite, then allows group members to become more familiar with one another, and increased familiarity often results in information sharing and improved conflict resolution (Jehn & Mannix, 2001) (Owen, Antle, & Barbee, 2013). These findings suggest that more frequent interactions could increase the likeliness of dialogue occurring. When people really start talking to each other and start thinking together in such a way that opinions are shared without hostility this can be possible (Bohm, 1990). An important

prerequisite for this is that the participants stop defending, as when they defend they cannot work together (Bohm, 1990).

Recommendations

Facilitator

A facilitator should be used to get the conversation going. He or she should start off by presenting the topic of the conversation and by presenting ground rules for a dialogue to occur (Bohm & Nichol, 2004). Such ground rules could be that the participants accept to listen with respect and full focus, acknowledge that there are multiple truths possible, that they will attempt to explore underlying assumptions and norms and that they will take emotions seriously. Together they then should agree to search for a concrete and achievable next step.

Before presenting the topic however, Bohm (1990) suggests that the participants should first start talking about the meaning of dialogue. What they think it means, why they are present there to have a dialogue and so forth.

During the conversation, the facilitator can sum up what is being said from time to time and eventually, ideally, fade into the background and be seen as one of the participants(Bohm, 1990).

When participating as a participant, the facilitator can still display dialogical leadership (Isaacs, 1999). Isaacs (1999) mentions that participation in a dialogue should be balanced, where four different actions can be interchanged to keep the conversation going. This can be to 1) **bystand**, actively noticing what is going on and providing his or her perspective on it, 2) **follow**, completing what is being said, helping to clarify others thoughts and support what happens, 3) **move**, by initiating ideas and offer a way to move forward or to 4) **oppose** by challenging what is being said and question its validity(Isaacs, 1999, p. 3).

By challenging what is being said, a facilitator could intervene and break through the conversational dynamics of realities being established and cohesion formed. In that way the facilitator could prevent or diminish a “we vs them” division. Probing questions can also be asked when

generalizing remarks are made or when stereotyping or stigmatizing occurs. In this way the facilitator can subtly open up the conversation and stimulate the exploration of underlying assumptions, norms, fears, interests and generalizations.

Talking and doing

In addition to having a more active facilitator, putting both groups together more frequently is also expected to have a positive impact. By putting them together more frequently, a longer-term change can be achieved, as due to increased familiarity they can become more open to each other and start to co-construct and operate from a common base (Bohm, 1990).

Besides talking, if both are willing, it could be beneficial to have the plant biotechnologists tag along with the organic farmers into agricultural fields. In that way the plant biotechnologists could gain more practical experience and it could allow for a connection to grow between both groups. If this connection occurs, they could then benefit from each other's knowledge.

Limitations of the research

Limited amount of participants and data

The number of participants that participated in the group conversations as well as the data collected was limited. However, the data was collected systematically and precise and analyzed based on the theories from the theoretical framework. Based on the data and analysis insights were generated that can also be used to test in new contexts and investigate further.

Extreme case

This case was an extreme case in the sense that the differences between both groups were very big. They are both at the extremes of the agricultural spectrum and therefore the findings do not necessarily apply to the groups in between. However, selecting an extreme case for this research is also beneficial, being that extreme cases often reveal more information about the dynamics and actors within that group (Flyvbjerg, 2006).

Role of the researcher

The role of the researcher influenced how the conversations developed, as the researcher was present and guided all the conversational settings. With a case study it is hard for researchers to investigate their case without impacting it through their presence (Denscombe, 2010), and in this case also their participation. This can lead to the observer effect where those researched might behave differently because they are being observed (Denscombe, 2010). However, by being precise and systematic throughout the entire process this is taken into account.

Further research

Cases selection

As mentioned, this was an extreme case. Therefore, for further research it would be interesting to study less extreme and different cases with which to test the new gained insights. To obtain more data, larger participant groups would be necessary and more data collection. This would then be done by having different cases, and having each case go through the same conversational settings for a longer period of time. In that way the likeliness of dialogue occurring would increase if and when the conversations can be maintained during a long enough period to make a change (Bohm, 1990).

Threefold action research

Action research in the form of actively guiding and intervening in the research process should be used based on the gained insights. By doing so the gained insights can be tested and guidelines for a dialogue between groups of people who differ from each other can be developed and sharpened.

In addition, we argue that further research into the presented case should consist of three elements. Firstly, walkalongs between the organic farmers and plant biotechnologists should be conducted. Secondly, both groups should be combined on multiple occasions with a trained facilitator, who is aware of the findings in the current research and will actively initiate the conversations and interact where necessary. Lastly, short interview checks should be done throughout the entire process to monitor the impact of the different research aspects on the participants.

Conclusion

Considering all the above we can conclude that it is very difficult for both parties to move towards each other, based on the differences between their in-group communication patterns. They do seem willing, but they seem to feel threatened by the other. The research also shows that coming closing together is possible at times, which indicates a further willingness. To achieve their coming together, frequent communication, formal and especially informal meetings and going into the field together, should be stimulated and facilitated. In this way, the best of both worlds could be combined into a productive, healthy, sustainable and ethically responsible form of agriculture.

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Appendix A

Focus group guide outline

Problem formulation: GM is a promising technology, but is in danger of being cast aside due to controversial associations. Agroecology while very strongly supported socially, has difficulties with pest control with regards to some crops due to its natural farming methods. Synergising both solutions could lead to a securer future of food, however are both parties willing to work together or is this something that is highly unlikely based on the discussions to be held?

Purpose: to have a discussion on the future of food to elucidate the main problem definitions, characterizations of both groups and how they perceive important societal decisions should be made.

Desired outcomes of the focus group: to obtain material on moments of conflict and resolution and to obtain more information about unknown areas of discussion of both groups separately and combined.

Few briefing questions (seen below)

Contributing to unknown areas of discussion

Feeding the world in a sustainable way.

Starting question: How do you see the future of food, and how do you think your expertise may play a role in this?

What is the issue at stake for each party and for both?

Agroecologists: if admit to needing GM, admit to needing big companies?

GM: if admit that need agroecologists, admit that they cannot rely solely on their own knowledge and that working together with farmers and learning from them is necessary.

Topics of conversation

Problem definition

1. Problem frames: causes and solutions
2. Conflict frames: issue management and resolve
3. Whole story frames: summation; problem, potential causes, solution, management and resolve.

Characterization of conversational partners

1. Identity frames: description of self/group they belong to in relation to the issue at stake
2. Characterization frames: characterize the others with a normative/evaluative tone

How the situation should be managed according to the conversational partners

1. Social control frames
 - a. How societal decisions should be made and by whom?
 - b. If participants themselves express a willingness to be involved?
2. Power frames
 - a. The ability to be involved and influence the situation of both one's group and that of the other.

Three guiding questions (both for lit & focus groups)

1. How do they define the problem of feeding the world in the future in relation to their background? (homogenous)
 - a. How do they define the problem of feeding the world in the future in relation to their background when both technologies would be combined? (heterogeneous)
2. How do they characterize themselves and the other party?
 - a. How are these characterizations expressed in the homogenous setting?
3. In solving the world food problem whom do they view to be key decision makers, and who do they feel should make societal decisions?
 - a. How does the willingness to contribute differ between both parties and between the homogenous setting and heterogeneous setting?
 - b. Do they view themselves as capable of influencing the groups situation? Difference between both groups and both conversational settings?

Further planning – conversation specific

Both homogenous conversations start off with an introduction round, where everyone states their name and why they are interested in the subject.

Waarom zijn we hier?

Ik heb jullie hier uitgenodigd omdat jullie je allemaal bezig houden met een biologische productiewijze en ik heel erg benieuwd ben vanuit waar jullie hebben besloten je hier mee bezig te houden maar ook hoe jullie de relatie zien tussen 1)een biologische productiewijze (of 2)GM technologie en de toekomst van land en tuinbouw en voedselproductie. Vanuit de gedachte dat de toekomst van voedsel niet één is die al vaststaat. Er zijn heel veel verschillende productiewijzen voorhanden en technologieën die mogelijk nuttig kunnen zijn maar die niet altijd even geaccepteerd zijn. Leek mij interessant om in dit gesprek het perspectief van 1)boeren actief in de biologische landbouw (of) (2) studenten gespecialiseerd en geïnteresseerd in de planten biotechnologie hierop te werpen.

Homogene groep – biologische landbouw

Vragen

1. Hoe kunnen we zorgen voor voldoende voedsel van hoge kwaliteit op een duurzame manier?
 - a. Welke productiewijzen zijn voorhanden zoals biologische landbouw, welke nieuwe technologieën zijn hierbij van belang, in welke mate worden deze technologieën zoals Genetische modificatie al dan niet geaccepteerd en waarom?
 - i. GM hierbij relevant?
2. Hoe denkt u dat de biologische landbouw een rol kan spelen in hoge kwaliteit van landbouw op een duurzame manier?
 - a. Zou hierbij GM technologie een aanvulling kunnen zijn?
3. Wat zien jullie als belangrijke invloeden/beïnvloeders en wie zouden er volgens jullie belangrijke beslissingen moeten nemen over de toekomst van landbouw? (social control frames)
 - a. Wat doen jullie zelf?
 - b. Wat vinden jullie van wat de overheid doet met betrekking tot biologische landbouw en genetische modificatie?

c. En van de universiteit?

GM soms geopperd als de technologie om de wereld te voeden? Wat vinden jullie hiervan?

Wat is de invloed op het welzijn van boeren als GM gebruikt wordt en op hun landbouw en milieu?

Hoe zien jullie de relatie tussen de menselijke gezondheid en GM?

Wat vinden jullie van de mogelijkheid om minder pesticide en insecticide te gebruiken door resistentie in te bouwen in gewassen door middel van GM?

Homogene groep – planten biotechnologen

Vragen

Wat vinden jullie van biologische landbouw?

Wat vinden jullie van de kritiek die wordt geuit tegenover GM, ook vanuit de biologische hoek?

Denken jullie dat biologisch de wereld voeden kan?

Denken jullie dat GM de wereld voeden?

Is er ruimte om beide te combineren, waarbij de methode biologisch zou zijn en daardoor ook onder de categorie duurzame landbouw zou vallen, en dan met het gebruik van GM-zaden die dan iets extra's toevoegen waardoor het makkelijker wordt om de wereld te voeden?

Heterogene groepen

1) Voorstelrondje

Naam en waarom geïnteresseerd in onderwerp en waarom aanwezig?

2) Aftasten wat ze weten over elkaars veld

a) wat is biotechnologie en hoe kan het toegepast worden op voedselontwikkeling?

i) biologische boeren

ii) biotech verdere uitleg, aanvulling/respons

b) wat is biologische landbouw en hoe verschilt het ten opzichte van conventioneel (waarom anders?)

i: planten biotechnologen

ii: biologische boeren verdere uitleg, aanvulling/respons

3) gecombineerd gesprek: combinatie van productwijze en technologie

a) indruk en vraagtekens die jullie erbij hebben

b) hoe eigen methode te combineren is, of niet?

4) wat zijn de barrières die jullie ondervinden bij het uitbreiden van waar jullie mee bezig zijn?

Appendix B

Interview participanten – evaluatie verschil gesprekken en eigen rol

Inhoud

- a) Wat had je van tevoren verwacht van de gesprekken?
 - b) Was je verrast door bepaalde inhoud?
 - c) Waren er voor jou gevoel onverwachte wendingen in het gesprek?
 - d) Is er een bepaalde uiting of opmerking wat jou aan het denken heeft gezet, of heeft geraakt tijdens die gesprekken?
-
- e) Wat was voor jou het verschil tussen het eerste en het tweede gesprek en in hoeverre kwam dat door de participanten of mijzelf?

Proces

- a) Had je het gevoel dat iedereen aan bod kwam?
 - a. Waren sommige mensen meer aan bod dan anderen?
- b) Zou je mijn rol in het gesprek kunnen beschrijven en hoe ik voor jou gevoel invloed had op het proces?

Eigen bijdrage

- a) Hoe zie jij je bijdrage in het gesprek ten opzichte van de andere participanten? (gelijk, meer, minder)
- b) Heb je voor jou gevoel ook je eigen rol/eigen gedachtegangen naar voren kunnen brengen?
 - a. Zo niet, waar lag dit aan?
- c) Had je het gevoel dat je de ruimte had om iets in te brengen?

Afsluitende vraag: formulering varieerde

Wil je nog iets anders toevoegen over de gesprekken wat je opviel/wat je belangrijk vond waar we het niet over hebben gehad?