

‘One Health’ Design Thinking: The effects on zoonotic awareness of stakeholders within nature-inclusive farming

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ABSTRACT

Disease and prevention control is a complex (wicked) problem that involves stakeholders across human, animal, and environmental interests. Increasing zoonotic risk awareness is needed for creating sustainable solutions through regulations, policy, and execution of measures. To orchestrate this complex challenge a design thinking session with a One Health view was designed. The effects on the awareness of stakeholders using this session were examined. The study was conducted as a qualitative case study focused on zoonotic risks within nature-inclusive agriculture. The current context of nature-inclusive farming was examined and the design thinking session was tested using a multi-stakeholder set-up. Increased awareness is discussed through the interplay between design thinking & systems thinking through One Health. Providing knowledge sharing through discussions and holistic perspective taking. The paper discusses the positioning of the session within risk identification and management processes as a warming-up exercise. For aligning perspectives and understanding a One Health stakeholder ecosystem in a pragmatic way.

CCS CONCEPTS

• Human-centered computing • Collaborative and social computing • Collaborative and social computing design and evaluation methods

KEYWORDS

Design thinking, Systems thinking; Multi-stakeholder, zoonotic risk management; One Health; case study

ACM Reference format:

FirstName Surname, FirstName Surname and FirstName Surname. 2018. Insert Your Title Here: Insert Subtitle Here. In *Proceedings of ACM Woodstock conference (WOODSTOCK'18)*. ACM, New York, NY, USA, 2

*Article Title Footnote needs to be captured as Title Note

†Author Footnote to be captured as Author Note

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WOODSTOCK'18, June, 2018, El Paso, Texas USA

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INTRODUCTION

Zoonoses are diseases transmitted by animals to humans. Human-to-animal contact increases the chance of transmission of unknown diseases to humans. Contact includes proximity (air), physical contact, or eating food from animals. Transmission can lead to the emergence of new, possibly deadly, diseases [11]. In a worst-case scenario, a disease that can spread from human to human can lead to an epidemic or even pandemic [29]. Relevant examples are the Q-fever outbreak and the Covid-19 pandemic [15][29]. The risk for zoonotic transmission and possibly an outbreak is, however, present with every animal-to-animal and human-to-animal contact. This includes livestock farming, the keeping of companion animals, globalization and transport, wild animals, vectors, changes in climate/biodiversity, and rewilding [4].

Disease and prevention control of zoonoses is a complex (wicked) problem that involves many stakeholders [72]. Zoonotic risk management is complex as emerging zoonotic diseases are difficult to predict. The challenge involves a large number of stakeholders with, in some cases, opposing needs and perspectives [25][72]. In addition, there are no clearly defined solutions to the problem as the risk of zoonotic transmission depends on “various anthropogenic, genetic, ecologic, socioeconomic, and climatic factors” [25]. As a result, there is a need for analysis of zoonotic risks and the introduction of preventive measures [4][69]. Within, for example, livestock farming regulations such as the confinement duty of animals have been introduced to prevent outbreaks such as the bird flu from spreading uncontrollably [6]. However, as mentioned by the report of Bekedam et al. [2021] many risks of zoonoses within society remain insecure and unknown.

As advised by Bekedam et al. [2021] the risk of zoonotic transmission may be decreased through increased zoonotic literacy. Bekedam et al. [2021] describes zoonotic literacy as ‘(...) the importance that knowledge and awareness in the field of zoonoses are much more widely disseminated.’ The identification of risks, creation of policy, and the implementation of measures around zoonoses asks for both a varied expert and non-expert (e.g. farmers), on the surface, perspective. Next to the human

perspective, animal and environmental perspectives need to be considered [4][25]. These perspectives are represented by expert veterinarians and varying biologists. As a result, stakeholders have varying levels of zoonotic literacy, varied interests, and different expertise. This increases the complexity of communication and discussion around policy and measures [72]. It is, therefore, more difficult to comply with all perspectives and create effective and desirable solutions. Increased zoonotic literacy may increase knowledge, awareness, and resulting communication about zoonoses between stakeholders [4][72].

Within this case study, the transition to nature-inclusive farming is examined. An area where zoonotic literacy should increase [4]. Nature-inclusive farming, within this research, is described as farming where animals are brought back into nature and a varied ecosystem becomes part of agriculture [57]. Currently, however, risks are unknown and there is little policy or measures for zoonotic risk management imposed for nature-inclusive agriculture. In addition, it is unsure if zoonoses are taken into account as a risk by involved parties within the transition to nature-inclusive farming by farmers [4].

This problem is present in the Brabant region in the Netherlands as well. Where BrabantAdvies organises the ‘Brabants Kennisnetwerk Zoönosen’ (BKZ). This initiative brings together professionals from the human, veterinary and environmental sectors [40]. This project was done in collaboration with BrabantAdvies and therefore includes a multi-stakeholder set-up where experts within and related to the BKZ are consulted.

An opportunity to use design methodology was recognized in order to support the problem of zoonotic risk management. To increase zoonotic literacy for stakeholders within nature-inclusive farming a multi-stakeholder session was designed for this research. The session was designed using the design thinking approach and includes 4 exercises based on design methodology [12]. Design thinking is a relevant approach to be applied in this context due to its strength in creating human-centred solutions. It can be applied to complex societal problems based on varied needs from different perspectives [39]. In addition, the session made use of a One Health (OH) perspective, using the One Health approach [11][25]. Focusing on humans, animals, and the environment when defining risks in order to create an increased awareness of zoonotic risks from all three perspectives, rather than through a human lens only.

The goal of this case study was to investigate effects on awareness of zoonotic risk through use of a Design thinking session. This research specifically focused on awareness, as zoonotic literacy consists of several stages [4]. The study does not extend enough to measure the effects on zoonotic literacy in general. Awareness is, however, part of becoming more literate about zoonoses [4][52]. In addition, the session focused purely on risk identification. As mentioned by Bekedam [2021] analysis needs to be done on risks before creating new policies and measures by, for instance, LNV [18]. Lastly, the study itself focused on explaining the current

context and effects of the designed session, not elaborating on existing/known risks within prevention and disease control. As a result, the design research question of the study was stated as follows:

Main research question:

- “How does a risk identification session based on a design thinking approach with a One Health perspective, contribute to the awareness of zoonotic risk within nature-inclusive agriculture?”

Sub research question:

- “What does Design thinking with a One Health view add to the experience of stakeholders using the session?”

The session was designed based on contextual interviews with nine different stakeholders. The session itself was attended by seven attendees from six different expert stakeholders including a farmer, GGD (gathering data & monitoring), veterinarians & the (local) government. The effects of the session were first tested solely with experts present as the session required previous knowledge about zoonoses. After the session, an analysis was done about the experience with the session using a questionnaire. Interviews were held to understand the effect on awareness. Lastly, a questionnaire was sent to farmers including a video. In order to understand the possible effects of the session for non-expert stakeholders and a desire to follow such a session.

RELATED WORK

As the research combines a variety of approaches and processes the related work describes the most important fields in literature related to this study. At the end of the section, the conclusion explains the combination of fields within this study and the resulting gap.

Risk management

Risk is described as “the measure of probability (likelihood) and consequences of not achieving the defined goal” and is built up as a correlation between likelihood and impact according to Smith et al. [2006] [63]. In addition, risk management (RM) is “a systematic way of looking at areas of risk and consciously determining how each should be treated.” [75]. It is used within entrepreneurial as well as social and ecological challenges and is described as ‘highly contextual and case-specific’ [8][26][49].

RM consists of several steps in order to create a strategy for risk reduction [65]. The three main steps within the process are risk identification, risk analysis, and risk evaluation [71]. As identification is the first step in the process of RM, the designed session focuses solely on risk identification. Stoneburner et al. [2002] mentions that within risk identification is essential to identify with the system, and scope it to identify threats.

Biosecurity is part of RM and is described as a way to “(...) cover strategies to assess and manage the risks of infectious diseases,

quarantined pests, invasive alien species, living modified organisms, and biological weapons.” [42] The measures are created through means of stakeholder investigations. As mentioned by Reed & Curzon [2015] [54] stakeholder mapping is essential for the governance of biosecurity and is applied through means of various techniques around the world: “Stakeholder mapping for biosecurity may therefore usefully combine top-down and participatory approaches, working with stakeholders to identify categories.”

RM is supported through frameworks, and workshops. Frameworks within RM are created within a certain area of interest or for a case study [26]. For example, the study by Pittinger et. al. [1998] uses a participatory workshop, including stakeholder discussions to create an ecological risk assessment framework. The study by Goh et al. [2013] [28] describes a RM workshop within a construction project as a comprehensive way to define risks. These workshops are generally described in cases involving human actors and previously identified risks. This study includes non-human actors and a variety of unknown risks [4].

Next to frameworks, tools exist to assess risk. An example of a case-specific tool is the Failure Mode and Effect Analysis tool (FMAE) [60]. The FMAE tool provides a way to step-wise identify and score risks, using a column-like structure. However, the tool is critiqued for being prone to participant judgments and assessments can be ambiguous [37][60].

RM and risk identification remain a difficult and often case-specific challenge. Although efforts to structure and systemize the RM process [71]. The frameworks found, generally only provide a structure for connecting stakeholders. Not a pragmatic way to actually connect them [26][75]. As prevention of disease and control is described as a multi-stakeholder challenge including many actors and needs, there is an opportunity to go beyond using frameworks and tools and use more creative ways to tackle the wicked challenge [72].

Wicked problems & design thinking

Wicked problems

A wicked problem is described as a problem that “for each attempt to create a solution changes the understanding of the problem” [38]. A careful approach to involving stakeholders is necessary in order to guide the wicked problem of zoonotic risk management [72].

Projects tackling wicked problems aim to create solutions through creating shared understanding through means of stakeholder involvement [48]. The project of eZoon, focusing on prevention and disease control of zoonoses, identifies stakeholders through a contextual inquiry and value specification [72]. An extensive list of stakeholders is identified and analyzed in order to involve the right parties to come to conclusions.

Design thinking

Design thinking is an established way of working within the innovation process of corporations and institutions [39][55][67]. It supports stakeholders with identifying solutions by going through an iterative approach with the use of numerous tools [39]. Additionally, design thinking may provide a way for moving into new perspectives to create a “newly shared and coherent set of beliefs”. According to Liedtka [2013] [36] this is hypothesized to be achieved through the “emphasis on visualization and prototyping”. Within case studies, sessions with stakeholders are organized in order to frame challenges [14]. As described by the IDEO design thinking way of working this can be done with a fixed structure. Empathize, define, ideate and prototype [33].

Design thinking has in successful ways been applied for risk identification. An example found is the study by Lewis et al. [2020] [35]. For risk identification, this study concludes design thinking helped in being more efficient in decision making. Within the define stage, the approach helped for “narrowing, selecting, and refining the risk.” Design thinking has been applied within policy making as well, a context where this study eventually aims to. As mentioned by Mintrom [2016] [44] design thinking within policymaking can help through participant observation, open-to-learning conversations, mapping, and sensemaking.

Design thinking with a multi-stakeholder can provide a new perspective on the challenge of prevention and disease control. Studies found illustrate that design thinking methodology and tools are able to create a new shared perspective. Within the studies found, however, the perspective and shared understanding stay confined to the human actors, despite representing animal and environmental actors [14][72].

One Health approach

The One Health (OH) approach is a widely used paradigm that is used to “to provide more effective, evidence and systems-based health interventions” [64][25]. The approach focuses on the health of animals, humans, and the environment. Prevention and disease control is at the heart of OH, where the goal is to include the interest of animals and the environment subsequent to that of the human. The approach is mentioned within policies and frameworks [10][26][72]. However, concretely implementing OH is “unfortunately rare” [64]. The effect of the approach is therefore questioned and critiqued [23][56]. Especially as executing multidisciplinary collaboration with a goal of shared understanding requires intensive coordination. As mentioned by dos S. Ribeiro et al. [2019] [58] veterinary, environmental and medical experts should work together within interdisciplinary teams through “integration of real world expertise for knowledge co-creation”.

However, as argued by Friese & Nuyts [2017] [23] OH still creates hierarchy by seeing human health as first priority next to animal and environmental health. The anthropological concept of post-humanism goes further, imposing no hierarchy between actors [20]. Post-humanism is used in combination with design technology to

bring stakeholders into the perspective of the non-human by following the non-human actor [23]. A post-human perspective can create a better understanding of the relationships that cause zoonotic transmission instead of focusing on a chain of causes, currently done within public health [56].

A more pragmatic approach is required for OH in order to support stakeholders in considering decisions across multiple perspectives [47][64]. Additionally, within this study, the One Health paradigm is approached with a post-humanistic lens, seeing animals and the environment as equal to humans. In order to achieve a greater sense of perspective taking for stakeholders [23]. In order to retain familiarity, the term 'One Health' is used within this study for describing the non-hierarchical relationship between animals, humans, and the environment.

Awareness

Awareness is described as: "knowledge that something exists, or understanding of a situation or subject at the present time based on information or experience" [16][73]. This research also describes awareness in the broadest sense, not focusing on one type of knowledge. Within other research, awareness is widely described as one of the first stages for changing behaviour within certain practices or environments [68]. Within the transtheoretical model of Prochaska et al. [2019] [52] this phase is described as precontemplation (no awareness) and contemplation (awareness). The transtheoretical model for behaviour change is applied within practices ranging from healthcare, on an individual level to education and public awareness programs [30]. Other models of behaviour change include the behaviour model of Balm [3] and the I-change model from [70]. Both models mention openness and understanding as part of becoming aware as first steps in changing behaviour.

Within risk management, behaviour change models are often used to create risk awareness and therefore reduce risk for the targeted audience [22][62]. Depending on the study setting, different strategies may have an effect on increasing risk awareness. In the paper by Freivogel et al. [2020] an education video helps to increase risk awareness and therefore reduce risk. Within multi-stakeholder projects using behaviour change models can cause a major change in implementation, risk awareness is the first step in this process [45]. In addition, reaching awareness amongst different stakeholder groups is seen as a challenge. Doing this is important for engagement and alignment further into the risk management process [41].

Conclusion

Risk management with a focus on prevention and disease control has provided measures and regulations to prevent outbreaks from occurring within (intensive) livestock farming [15][29]. Biosecurity measures in some cases are applicable to nature-inclusive farming [18]. However, defining zoonotic risks remains a complex, wicked problem with a need for multi-stakeholder alignment [72].

Design thinking methodology can support stakeholders by connecting involved parties and by letting stakeholders empathise with different perspectives [36][39]. In addition, design thinking has shown to be an effective way to provide opportunities within RM cases [14]. The addressed importance of the One Health approach provides an opportunity within the project to implement the approach into the Design thinking methodology in a pragmatic way. The study therefore combines a design thinking session with focus on risk identification with a pragmatic One Health perspective. The One Health perspective in this research is viewed through a post-humanistic lens [20][23]. The effects on awareness of stakeholders within the session is measured. Awareness encompassing knowledge and understanding about all aspects of the zoonotic risk challenge.

By doing this a new variation of a design thinking session is proposed which is hypothesised to create increased awareness by alleviating blind spots for stakeholders. Providing perspectives across all parts of OH, aiming to simplify the wicked problem of prevention and disease control. This is the first step in increasing the shared understanding of zoonotic risk and therefore zoonotic literacy within nature-inclusive farming [4].

METHODOLOGY

This case study followed a multi-stakeholder research through design approach [7]. The research focuses on gathering qualitative data through means of a contextual inquiry which includes 9 expert stakeholder interviews (Table 1). The stakeholders were conducted through a stakeholder identification conducted through stakeholder mapping [54][72]. Second, a multi-stakeholder design thinking session was conducted. For this session a design thinking session with One Health view was designed consisting of 4 exercises. Following the session, two evaluation methods were conducted. A UEQ was sent out to participants in order to investigate experience in a quick manner. In addition, individual evaluations were held through means of short interviews set up using the Most Significant Change technique (MSC) [13]. Lastly, a questionnaire was sent out to non-expert stakeholders, in this case farmers. A video was included about the project to illustrate the earlier conducted session. The research process can be overviewed in Figure 1. A set of findings and insights are presented within this study to show the effects on awareness and experience of stakeholders within this session and possible positioning of the session.

Throughout the project a group of experts was consulted. The expert group is related to BrabantAdvies and consists of three members. The expert group provided guidance, feedback and input throughout the study. As all three expert members were part of the

Table 1: Participants of the contextual inquiry interviews

| Interview number | Participant number | Stakeholder/expert | Function |
|------------------|--------------------|----------------------------------|----------------------------------------------------------|
| P1 | 1, 2 | ZLTO, LTO | Portfolio manager healthy animals, policy worker |
| P2 | 3 | GD Animal Health | Manager Swine Health Department Royal GD |
| P3 | 4 | Utrecht University | Vet-microbiologist and parasitologist |
| P4 | 5 | GGD | Physician Society and Health; Infectious Disease Control |
| P5 | 6 | Senior Global Health consultant | Vice-chairman |
| P6 | 7 | Wageningen University & Research | Professor, Emerging and Zoonotic Viruses |
| P7 | 8 | Het <u>krulstaartje</u> | Owner, student |
| P8 | 9 | BrabantAdvies | Policy advisor |
| P9 | 10 | BAJK | Director |

multi-stakeholder session (Table 2, participant A2, A4, A7) , the findings have been taken up in the findings of the contextual inquiry, session and the discussion.

Contextual inquiry

First, a stakeholder identification and mapping was conducted through means of consults with the expert group and literature research. A stakeholder list was created and relevant stakeholders were contact. Following this, semi-structured interviews were conducted across a variety of stakeholders to understand the current context and knowledge about the topic [46] (Appendix C). The interviews were held separately per stakeholder and lasted half an hour to an hour each. A topic guide was used to guide all interviews in a similar direction. During the interviews general notes were written down. All interviews were recorded under consent from a consent form and later transcribed using Microsoft Word Transcribe [43] and edited afterwards using intelligent verbatim transcription [34]. The transcripts were used to call back to quotes within future steps of the research. The interviewed stakeholders including corresponding functions are listed in table 1.

Multi-stakeholder Design thinking session

Using the Design thinking approach from IDEO [33] and the FMEA tool as structural inspiration a session with 4 assignments

was created [60]. The tool was iterated upon multiple times and discussed with the expert group accordingly. Based on the contextual interviews and prior made stakeholder list, stakeholders were invited for the session. All members of the expert group participated. In total, 7 participants joined the session. An overview can be found in table 2. No farmers without any previous knowledge on zoonoses were present during this session as the study aimed to find out changes in awareness for experts first. Organising the session with a threshold of expert level would lessen the chance for confusion and need for prior education about zoonoses. The session was recorded and notes were written down during the session by an Industrial Design student joining the session to assist.

Session evaluation

Interviews

Following the multi-stakeholder Design thinking session, evaluating interviews were conducted with 5 out of 7 attendees. Each interview was semi-structured and lasted between 10 and 20 minutes (Appendix D). The questions within the interviews were set-up taking inspiration from the ‘Most Significant Change’ (MSC) technique [13] to deduct the biggest change for participants using the session. The interviews were transcribed using Microsoft Word Transcribe [43] and edited afterwards using intelligent

Table 2: Attendees of the multi-stakeholder design thinking session

| Attendee number | Stakeholder | Participated in contextual interview | Participated in User Experience questionnaire | Participated in evaluation interview | Comment |
|-----------------|-------------------------------------------|--------------------------------------|-----------------------------------------------|--------------------------------------|--------------------------------------|
| A1 | Q-support | No | No | No | Was only present half of the session |
| A2 | BrabantAdvies | No | Yes | Yes | |
| A3 | BrabantAdvies | No | Yes | Yes | |
| A4 | Topigs Norvin | No | Yes | Yes | |
| A5 | GGD | No | Yes | No | |
| A6 | Het <u>krulstaartje</u> | Yes | Yes | Yes | |
| A7 | Doctor MG, environmental medical science. | No | No | Yes | |

verbatim transcription [34]. All interviews were recorded under consent. The transcripts were used to call back to quotes within future steps of the research.

User Experience Questionnaire

Next to the evaluating interviews a User Experience Questionnaire (UEQ) [31] was sent to the session attendees. The questionnaire was directly downloaded from the UEQ website in Dutch and taken over in Google Forms. Eventually 5 out of 7 participants filled out the UEQ (Table 2). Participants A1 and A5 had too little time for the evaluation interviews to be conducted. Afterwards, the UEQ was analysed using the analytical tool provided on the UEQ website (Appendix F).

Farmer questionnaire & video

Lastly, a video was created explaining the goal of this research and the iterated session assignments. This video became part of a questionnaire which was sent to farmers from BAJK and ZLTO. Both questionnaires were sent within a newsletter of the concerned organisation and filled in anonymously under consent. The questionnaire was structured as follows (Appendix G):

1. Questions about current zoonotic risk knowledge within nature-inclusive farming
 2. Showing the video
 3. Asking about opinion and imagined experience with the tools.
- In the end, X farmers participated in the questionnaire.

The questionnaire was eventually filled in by 2 participants. One farmer partly executing a nature-inclusive initiative (Farmer 1) and one regular farmer (Farmer 2). Both farmers have cattle and let visitors on their farm.

The amount of participants was too small to deduct quantitative findings from. The questionnaire was unfortunately sent to farmers around the time new nitrogen regulations were announced in the Netherlands [1]. So focus for farmers was likely on this subject matter.

DESIGN

For the design of the session, the Design Thinking methodology [33][36] and the structure of the Failure Mode and Effect analysis (FMEA) tool [61] were used as an inspiration for creating the exercises within the design thinking session. The FMEA is originally used to identify risks within products but provides concrete steps to identify risks and has been used in a variety of sectors [9][32]. The template of this tool was examined and the columns provided within the tool were used as a starting point for creating the assignments within the session.

As the session mainly focused on risk identification, only the first two phases of the Design Thinking process were run through [36]. The first two exercises cover the ‘Empathize’ phase, the third and fourth the ‘Define’ phase. Before the session a small introduction about the topic, introduction round and question round was provided (Appendix E). The 4 assignments were designed as follows:

Nature-inclusive change cards & map

As a first assignment nature-inclusive change cards were created. The aim of the cards is to empathise with the context of nature inclusive farming [36]. Participants were asked to share knowledge and brainstorm about possible ideas [36]. A way to familiarise with each other, understand the scope and expand understanding of nature-inclusive farming. The cards included photos to illustrate the context. The assignment itself did not focus on creating an holistic

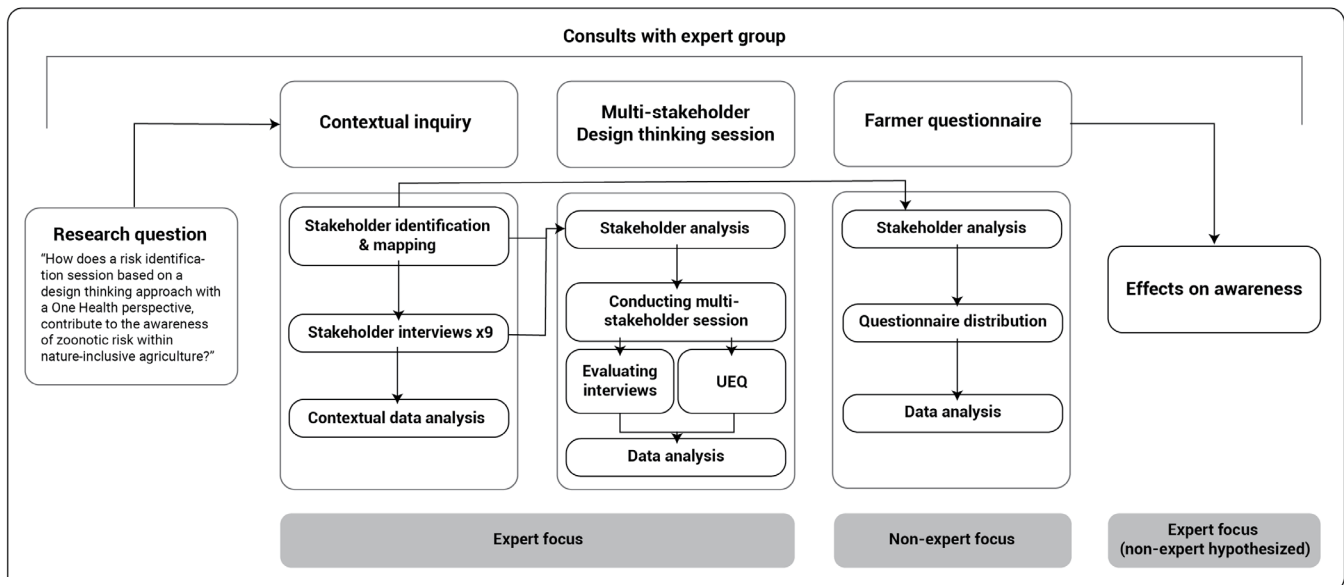


Figure 1: Design research process overview

view of the situation, rather a focus on specific changes and vectors to narrow down to identification.

Additionally, a map of a farm was provided to serve as inspiration and a discussion tool. A map was chosen to illustrate the nature-inclusive farming context and get stakeholders acquainted with a real life situation. The research by Ashley et al. [2] uses the FMAE tool and introduces a map of a healthcare environment to better identify risks. The map in this study had a significant effect on finding unknown risks.

During the session participants were asked to list changes within nature-inclusive farming on change cards. Three examples were provided within the session which were derived from the contextual interviews. The examples listed were: contact point between animals and visitors, open grassland, pathway next to farm. Each participant was asked to list zoonotic risks under a specific nature-inclusive change.

One Health personas

As a second assignment persona cards were handed out to participants. Personas are a widely used technique within interaction design to illustrate scenarios and engage participants effectively. In addition, personas can be used to display both quantitative and qualitative data [53].

Personas seemed a fitting way for stakeholders to change perspectives towards different actors as the cards verbalise a personality. This is done showing needs, gains and pains, a technique used within design thinking methodology [17]. In addition, personas have the ability to personalise the non-human. So both animals and the environment can be verbalised into a first-person perspective [21][66]. A persona can thus create empathy by

moving outside of a human actor and into a non-human one by presenting it as human-like. With feelings, motives and frustrations. Helping to physicalize OH as well [64].

For the session, four personas were created to empathise with different actors of the One Health approach: A farmer, a visitor of a farm, a pig and the environment. Participants were asked to examine, edit and complement the personas before giving feedback within a discussion.

One Health empathy maps

The One Health empathy map is an iteration on a customer empathy map used within service design methodology [74]. The customer empathy map is used to design persona's and therefore create empathy for a particular actor. According to [19] it describes the 'environment, behaviour, aspirations and concerns' of a customer.

As the persona exercise focuses on three different actors surrounding OH. An empathy map is provided for each OH actor. In order to specify the behaviour, aspirations and concerns for a specific context a possible risk for zoonotic transmission from exercise one is chosen as a shared perspective. As a result, the exercise aimed to overview different perspectives in a structured way. Creating a stepping stone for designing desired solutions that take into regard all perspectives. Visualising concerns and behaviours to understand other actors to greater extent and balance interests against each other [19].

Participants were asked to choose a zoonotic risk from exercise one themselves and fill out the empathy maps within duo's. Each group was then asked to compare the way actors behaved, experienced and felt within a situation and communicate the findings to the other group.

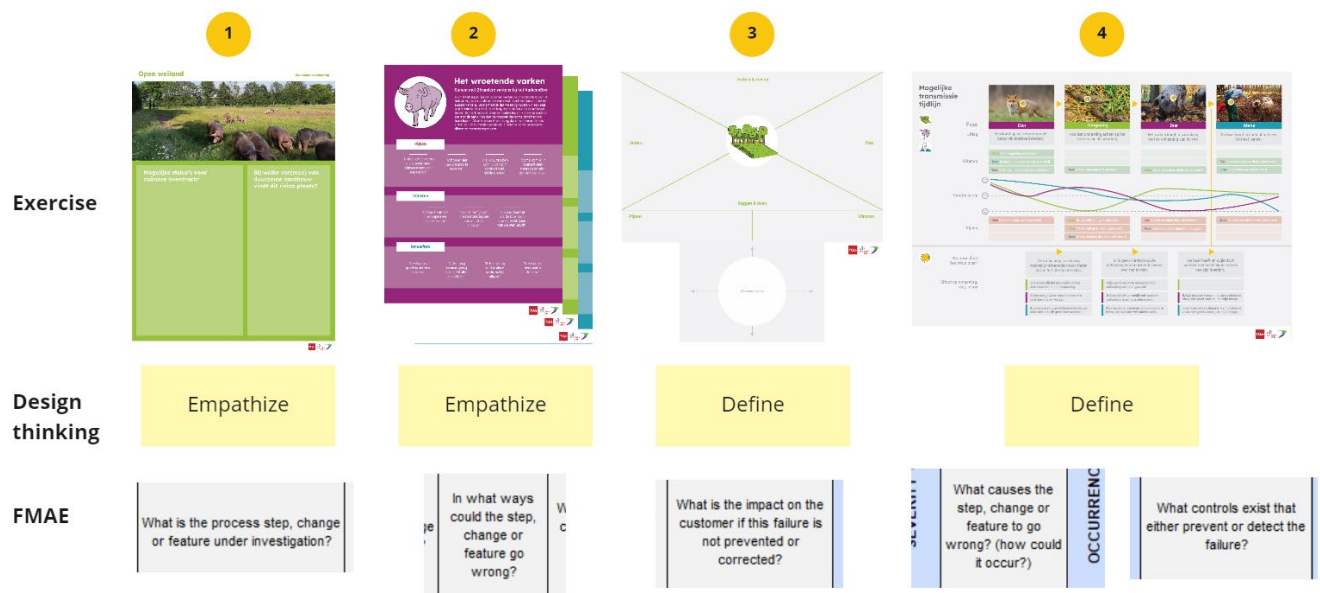


Figure 2: Session assignments with Design Thinking and FMAE structure

Possible transmission timeline

For the last assignment it was decided to create a tailored version of a customer journey, often used within Service Design methodology [74]. A customer journey shows a process through time from the perspective of an actor. It is used to identify ‘moments of truth’ where the experience of an actor can improve [74]. Translating this to prevention and disease control would mean identifying solutions for biggest risks.

By taking the structure of a customer journey a transmission timeline is created. As the previous assignments focused on the perspective of animals, humans and the environment, this assignment addresses the perspective of a zoonoses itself. In order to better understand why a certain transmission takes place. Again visualising this through a designerly approach, being able to discuss complex risks in a more simple way [36].

As mentioned by [23] a more post-human view of OH would “follow the non-human”. The customer journey structure allows to follow a disease through time. A virus persona was created to provide a clear perspective of a zoonotic disease spreading within a specific scenario. Stakeholders were asked to look at a filled out example made by the researcher and create a timeline themselves of the zoonotic risk within exercise three.



Figure 3: The multi-stakeholder design thinking session being conducted at the Provinciehuis in Den Bosch

Pilots

Before the multi-stakeholder session two separate pilot feedback sessions were conducted to gather feedback about the exercises within the session. The first pilot was conducted with two students from Industrial Design at the University of Technology in Eindhoven. The second pilot feedback session was held with one expert from the expert group (A2). Each assignment was explained similar to the real session. Feedback was gathered and incorporated. Mostly small changes were made. However, exercise one and two were initially switched around. It appeared better to connect exercise two to exercise three. In order to have participants

first empathise with the environment and afterwards with the stakeholders.

Data analysis

The qualitative data from the contextual inquiry, design thinking session and the evaluation interviews was processed following a thematic analysis structure [51] conducted via Miro. To identify clusters within the contextual inquiry and later the design thinking session and evaluation interviews, codes were created using a coding scheme. Each interview, the session and each evaluation was coded resulting in a set of quotes. Afterwards all quotes were grouped underneath themes. The themes naturally occurred while conducting the coding process. For the contextual inquiry 12 codes and 4 themes were created, For the design thinking session and evaluation of the interviews 16 codes and 9 themes were created.

FINDINGS

The findings deducted from the data analysis are described below. First the findings from the contextual inquiry are described. The findings are described underneath 4 themes, connected to the themes found within the data analysis. Afterwards the results from the UEQ are described. Following are the findings from the session evaluation interviews. These findings are divided underneath 3 main findings and 8 sub findings, again related to the earlier data analysis. Lastly, the findings from the farmer questionnaire are presented.

Contextual inquiry

Current risk identification & regulation

Following the contextual interviews it appears the topic is of interest and importance for stakeholders involved. Most participants described there is increased risk within nature-inclusive farming as animals come into contact with humans more compared to intensive livestock (P2, P3, P5, P6). However, within nature-inclusive farming the scale of animals held is significantly smaller. As a result, there is a shift in risks (P1, P3, P4, P9). Participant 5 even mentioned that past situations have shown farming in an open system caused more zoonotic transmission. Hence, the shift to farming in a closed system took place in the first place (P1).

Stakeholders mentioned that although this shift takes place, there are little to no specific regulations for nature-inclusive farming currently in place, some of the risks are researched (P3, P4, P5, P9). Most of the regulations are just advice (P7). In addition, the shift in risks is, as known to the participants involved within this study, not described into a document yet. As a result, it becomes difficult for the government to start and tackle the challenge (P6).

Different perspective on risks

Following the contextual interviews it was noticed that different stakeholders had different views on zoonotic risk within nature-inclusive farming. Stakeholders within a managing or policy function see the problem on an holistic level, tackling the system

from a larger level. For instance, many nature-inclusive initiatives situated in close proximity could cause a new network of transmission (P3, P5). Participant 7 however, a farmer tackling zoonotic risk within his nature-inclusive farm, executes many practical solutions to reduce risk already: “We place double fences to prevent people passing by from throwing something into the meadow” In addition, not all stakeholders seem to be aware of the shift in risk within nature-inclusive farming and see little difference with intensive livestock farming (P8, P9). A confirmed indication for the need for more alignment across stakeholders.

Complexity of topic

Complexity of the challenge became noticeable as stakeholders addressed the values and considerations of the government and farmers. It was mentioned farmers often shift or start with nature-inclusive farming because of idealism; a desire to do well for animals and the environment. Essentially, creating a separate group of farmers (P1, P4, P5, P8). This imposes two challenges. Introducing strict regulations may discourage farmers to start working with nature-inclusive farming. This might stagnate innovation, which is not desired (P4, P7). Secondly, nature-inclusive farms differ a lot from each other and farmers regulate farms differently as there is little to no specific policy. Most farmers are aware of zoonotic risk, mostly affiliated with organisations like LTO or BAJK (P2). Others will be less aware and therefore will not act upon risks (P2, P5, P7). Expert stakeholders have, as a result, little to no overview if farmers are aware.

Moreover, zoonotic risk is far from the only challenge for farmers to deal with (P5). Farmers have to deal with many regulations while trying to run a healthy business, considering economic values as well (P1, P5, P7, P9). Regulations about nitrogen emissions [1], climate change and the ongoing war in Ukraine play a significant concern for farmers (P2, P5, P9). As mentioned by participant 9, all farmers highly value hygiene and animal health as this is an important motive to keep their business running. However, because of the many challenges farmers face, zoonotic risk is placed ‘low on the agenda’ (P5). Farmers have little intrinsic motivation to understand how zoonoses transmit (P9).

Current processes

Currently, when a farmer starts a new initiative the municipality is advised by the GGD (P4). The GGD uses an assessment tool to assess if an initiative meets safety and environmental requirements [27]. The literacy on zoonotic risks within the GGD has increased over the past 20 years. As a result, zoonoses are part of the assessment within the tool, however, specific risks for nature-inclusive farming are not included (P6). In addition, monitoring of farms in the Netherlands is intensive and farmers who are part of a network (ZLTO, BAJK) receive information about zoonotic risk regularly (P1).

The municipality, on the other hand, uses the tool of the GGD as an advice and takes into account many other aspects when authorising a new farm (P4, P6, P8). The municipality too needs to weigh

interests of different human stakeholders, animals and the environment (P4). Each municipality has a focus on their own interests. Zoonotic risk management for the transition to nature-inclusive farming per case is therefore based on organisational structure and zoonotic awareness of individuals at a municipality. Although, because of the Q-fever outbreak, zoonotic awareness has increased within municipalities (P8). Further increasing literacy for policy makers, officials and experts is recognized to be just as important as the increase for farmers (P6, P8).

Experience with multi-stakeholder design thinking session

Following the contextual inquiry, the findings from the design thinking session are described. First the UEQ results are described. Having been analysed through means of a provided tool. Afterwards the findings from the evaluation interviews are described across 4 main and 9 sub themes.

User Experience Questionnaire

Looking at the results of the UEQ questionnaire. The usability score of the session is positive based on all items within the questionnaire. Especially attractiveness, efficiency, stimulation, and novelty showed above average performance. On a scale of -3 to 3 these items score higher than 2 (Figure 4)

The parameters perspicuity and dependability, on the other hand, score below average but are skewed positive. Deriving from the UEQ items, the tool is perceived as slightly complex and unpredictable. Two items that show less adequate results are unpredictable/predictable (dependability) and complicated/easy (perspicuity).

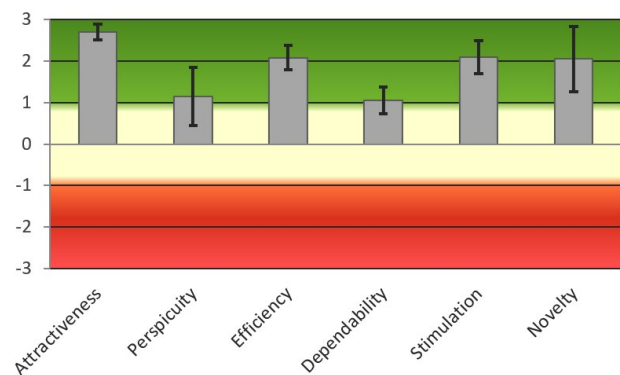


Figure 4: UEQ data analysis on 6 subthemes

Within the UEQ analysis the 5 parameters are divided across attractiveness, pragmatic quality and hedonic quality (Figure 5). Attractiveness (2.7) and hedonic quality (2.08) score above average (more than 2). Pragmatic quality is scores positive but less significantly (1.48). Due to the lack of participants, however, the significance of all parameters except perspicuity are not significant, looking at the Guttman's Lambda2. The results from the UEQ

should therefore be seen as a support to the findings within this research.

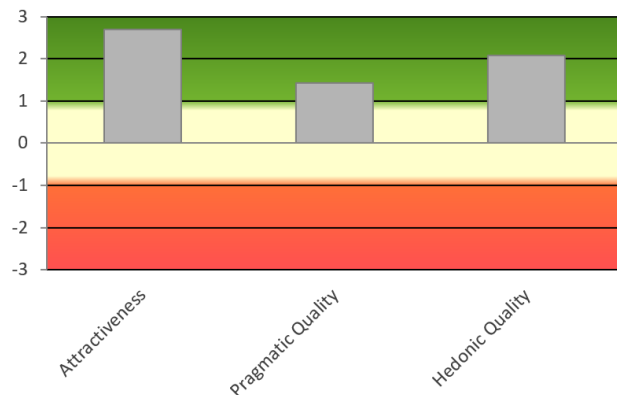


Figure 5: UEQ data analysis on 3 main themes

Design thinking approach in practice within case study

The exercises within this session were received with enthusiasm by attendees and showed a different way of working than previously used to within this context: “Design thinking is new - otherwise you do the same thing over and over and conclude the same stuff.” (A2). In addition, working with predefined design thinking exercises provided a sense of guidance for participants (A4, A5)

The Design thinking structure was regarded as helpful as “The first assignment gives you the room to think, how does this exactly work?” (A7). Doing the exercises separately from each other brings “more creativity” (A3), although the session was already seen as a way to “support you to get creative.”

Visualisation and playfulness. Moreover, the visual and playful nature of the session (A2, A4, A7) provided both inspiration as well as overview within the complexity of the issue: “The map of exercise 1 helps in visualising where possible risks may occur.” (A2). However, visualisation within the session felt like showing an ideal and oversimplified picture (A2, A7) for several participants: “Map gives a romanticised & simplified picture, but it helps to illustrate what we are talking about.” (A2)

Holistic as well as focused. According to attendees the session provided a “birds-eye view” (A4) of the topic. Looking holistically at the complex issue by looking at a broad stakeholder ecosystem. However, the session still describes “a concrete situation” and “funnels the subjects where you want to talk about” (A3). As an effect of the both holistic and focused view, participant A1 mentioned the session illustrated the complexity of the problem as well.

One Health perspective taking

All stakeholders present indicated the exercises provided a way for the attendees to look at the issue from a different perspective than

previously used to, especially the OH exercises: “I was forced to watch the problem from another perspective.” (A2). The exercises seemed to remind the different stakeholders, who were mostly used to discuss topics without any guidance of a tool, about other actors in society: “Without session, you look over things because you look at the problem from one side. Overlooking what society thinks.” (A4). In addition “You get a much quicker idea of how the other experiences the situation. (A3).

The personas supported attendees into empathising with the different actors the most: “The cards about the other perspectives. In which you get into another person's perspective brought me the most.” (A3). Working with the OH was initially described as quite vague, however, the session illustrated that: “Empathising with animals says something about the animals being a living being.” (A2) Participants felt going into another was unique about this session as “Otherwise you stay in your own role” (A4).

Complexity within OH perspective taking. However, empathising with an animal or the environment remained difficult for most attendees: “Empathising for the environment or pig was difficult.” (A2) Filling out the exercises therefore became a hard task as stakeholders are “(...) not that practically invested into the topic.” (A2)

The empathy maps expanded on the perspective taken by participants. Participants, however, found the exercise more difficult (A4, A7) as “you should know the risks beforehand to fill it out” (A7). All interviewed participants except A6, on the other hand, mentioned the transmission exercise was difficult through a lack of knowledge and guidance. Not being able to empathize with all perspectives through time.

Knowledge sharing between stakeholders

Simplified discussion starter. All participants mentioned the session provided an easy way to have a valuable and focused discussion without reading big reports (A2, A3, A4, A6, A7). This is done through asking simple questions (A7). In addition, participant A3 mentioned: “I am able to inform others working in another discipline”. Within normal stakeholder discussions, participant A2 mentioned the discussion stagnates because of opposing views. Participant A2 hypothesises: “The session may take fears away by providing solutions.” The discussion within the session was, as a result, very vivid and interesting: “It helps me to relieve me from the blind spot” (A2).

The exercises guided attendees towards a focused discussion around the topic of nature-inclusive farming. Even going as far to question the existence of nature-inclusive farming entirely: “Netherlands maybe is too small for a nature-inclusive approach.” (A1). In general, the discussions were held on a quite holistic level. As a result, the session only created more overview for participant A6, thus not extensively focusing on practical risk identification although being a partial focus of the exercises.

Increased awareness through knowledge sharing Participants A3 and A4 did not experience a change in direct awareness of zoonotic risk. Participant A4 mentioned, however, that: “You become more aware of the perspective of the other stakeholders. Awareness of other perspectives increases.” For participants A2, A3 and A6, gathering new knowledge means becoming more aware. Especially interesting was the notion of participant A6, a farmer who works with nature-inclusive farming: “I now look differently at certain aspects within my business. What can I do differently in the future?” and “What the veterinarian told about trees being a natural filter, it made me think.” Showing that knowledge shared may change the mindset of other stakeholders.

Multi-stakeholder presence & connection

Through knowledge sharing, working in groups and the group size participants felt a connection with each other (A3, A4, A6). Participant A6, for instance, mentioned: “The session showed me that I should talk to more stakeholders when innovating within my company”. Illustrating an increased awareness on the stakeholder ecosystem surrounding nature-inclusive farming.

The presence of different stakeholders was, however, discussed afterwards. Stakeholders mentioned that experts from all parts of the OH should be present to conduct a more valuable discussion. Currently, the experts were invited randomly which caused an imbalance in expertise available. Participant A2 mentioned: “Now the balance was off. No one was present from environmental expertise. Otherwise there would be more insights.” Attendee A4 recognized that specific experts should be present to identify specific risks. Illustrating extended multi-stakeholder collaboration is desired, but should be considered looking at levels of expertise. As participant A4 mentioned: “You need predefined knowledge to go into this session.”

Farmer questionnaire

Although having a very small sample size, the farmer questionnaire partly confirmed early notions of experts regarding current awareness. Both farmers saw the risk of zoonotic disease on their farm as low and saw themselves as aware of zoonotic risk. Zoonotic risk for cows is indeed lower compared to, for example, pigs and chicken [4]. Both farmers mentioned economic values to be of importance for not starting a nature-inclusive initiative.

Farmer 1 mentioned to notice no difference between zoonotic risk within regular livestock farming. In addition, this farmer mentioned to have no interest in learning more about zoonotic risk as this farmer indicated to know enough about the subject already. When showing the video provided within the project, the farmer mentioned becoming slightly more aware about the risks. The farmer noticed the contact between wild animals and farm animals as a new risk: “I never thought about wild and farm animal contact in this way.” Despite noticing more risk than prior to the questionnaire, the farmer did not seem to be interested in learning more about zoonotic risk. In addition, the session assignments did not come across as pragmatic within the video.

Farmer 2, on the other hand, mentioned to be aware of wild animals being at risk within nature-inclusive farming. This farmer was also open to learn more about zoonotic risk and noticed discussing about zoonotic risk is of importance. However, the farmer mentioned to the presented session would be of little value. Again, the tendency of joining such a session was low. This farmer mentioned the risks for nature-inclusive farming are bigger than the public thinks. Which is a reason for this farmer to not start a nature-inclusive initiative.

DISCUSSION

The discussion describes a view on the current context followed by three insights based on the findings presented earlier. Each insight roughly corresponds with a finding from the session.

Prevention and disease control is a complex, multifaceted and multi-stakeholder challenge and asks for advanced alignment between stakeholders [72]. Like other ecological challenges, prevention and disease control involves human, animal and environmental actors [4][11][25][26][72]. Within prevention and disease control increased risk is caused through increased animal to animal and animal to human contact [4][11][18]. This is the case within nature-inclusive farming as well. Whilst being executed on a smaller scale, a shift in risks occurs as animals are brought into an open-system. Being exposed to vectors from outside such as wild animals or visitors [18].

The contextual interviews expanded on the complex view of the challenge. Stakeholders described prevention and disease control within farming as only a small part of the challenges farmers face. Economic and environmental challenges have higher priority for farmers and policy makers as a result [1]. Having little to no specific regulations causes a group of farmers to not be interested in and aware of specific zoonotic risk within nature-inclusive farming. Creating awareness for experts to more easily impose desired regulations therefore is as important as making farmers more aware to understand zoonoses and intrinsically act upon a more bio secure farm. As can be noticed within the results from the farmer questionnaire.

As this study researched the effects on awareness of the design thinking session for experts, the effects and following positioning is described for this stakeholder group. Afterwards, a broader view on the possible effects on other stakeholders is described.

OH Design Thinking supporting a system thinking view

Although many research has shown this [14][36]. Looking at the UEQ and session evaluation the strengths of the design thinking approach become apparent within this case study as well. Participants received the session as a pleasant, structured, understandable, creative and a surprising way of working. The session confirmed design thinking is an appropriate approach used within risk management and policy creation [44]. Supporting

discussions through means of a guided session using a bottom-up approach [5].

Despite being a simplified manner to discuss the topic the session was still experienced as complex. Because of the introduction of additional stakeholder perspectives through means of the OH approach [10][47]. Asking attendees to step outside of a personal stakeholder bubble and take on an unknown and non-human perspective, rather than asking to empathize with another human perspective [23]. As a result, participants felt like moving into the role of another actor and thus becoming empathic for a non-human actor, rather than for the human stakeholder (representative). This shows participants started to get feel more open about the subject matter. Described by Balm [2000] [3] as the first step in become aware and changing behavior. Although experienced as a difficult task, the (non-human) perspective taking achieved a sense of systemic overview as well, being aware of actors within the ecosystem. Illustrating to stakeholders the overlap between three different networks, through empathic exercises, a goal trying to be achieved while introducing the OH paradigm [25][58]. Showing this overlap simultaneously creates a top-down approach to the challenge [24].

Implementing OH into design thinking ensures increased systems thinking of stakeholders involved as well [59]. Understanding an holistic and, in the case of this study, a post-humanistic perspective of the challenge. Design thinking, on the other hand, has the ability to make sense of complexity of the system by introducing imagination and creativity [44]. The OH approach is therefore verbalized and physicalized in a pragmatic way. This redeems critique on the OH approach for not being difficult to implement within policy making in a pragmatic way [64]. In addition, it illustrates the interplay between Design and Systems thinking. Incorporating the strengths of both approaches in order to address: “the gaps and increasing chance of creating sustainable solutions to the wicked problems facing organizations and society today.” [50] This finding is best illustrated through the discussions stakeholders had within the session. While on the one hand stakeholders had holistic discussions about the mere existence of nature-inclusive farming in the Netherlands. Other discussions focused on practical solutions already imposed by the nature-inclusive farmer present. Showing a rich discussion can flourish from systems thinking and design thinking view.

Effect on awareness for session positioning

Identification of (new) zoonotic risks within nature-inclusive farming itself seemed too complex to be encompassed within a 2,5 hour multi-stakeholder session. As a result, awareness about zoonotic risks itself did not significantly increase for experts, neither did creating overview for risks itself. However, as a result of a focus on risk identification, knowledge sharing did occur and contributed to stakeholder awareness. A direct consequence of the simplified structure design thinking provides [36]. Especially the lesser experienced expert seemed to provide from knowledge

sharing. Illustrating a diverse group of stakeholders ensures increased awareness.

As mentioned, the perspective taking through the combination of systems thinking and design thinking provides stakeholders with the most significant change in awareness. Moreover, the collaborative exercises within the session aligned the perspectives between stakeholders, creating a shared and coherent understanding, a feature of design thinking described by Liedtka [2013]. Hence the discussions described before started easily as mentioned by stakeholders present. This was not a given during prior discussions.

This change illustrates how the session can be positioned best as an alignment exercise for a multi-stakeholder expert group. Aligning perspectives in order to try and support a fair, empathic and collaborative discussion amongst stakeholders with diverse needs [36]. The systems thinking and design thinking view provide a way to frame and reframe the zoonotic risk challenge [50]. In addition, this view supports the understanding of the stakeholder ecosystem. Providing awareness into which stakeholders should be invited throughout the risk management process to eventually identify risks and sustainable solutions [50][59].

As the effects of the session arise from the Design thinking and systems thinking methodology. The facilitator within the session should have experience with handling either one of the two approaches in order to “create an environment where these differing views are honored within the context of the larger system.”[50] In order to have discussions stay balanced between the pragmatic and the holistic.

Importance of stakeholder assessment and knowledge management

The session provides a way for stakeholders to identify stakeholders within the system and invite them accordingly. However, an initial stakeholder assessment is important for the session to illustrate an holistic system. In order for the OH approach and thus system thinking to provide optimal risk management later down the line [75]. This means actors from the human, animal and environmental sector should be present to provide their perspective. This would mean increased awareness of knowledge across the risk management process [41].

As a result, a sound stakeholder assessment is needed before conducting such a session. Several studies show ways to soundly map stakeholders using stakeholder mapping and inquiries [44][54]. These studies, however, do not make a direct consideration of inviting stakeholders to cover the OH paradigm, instead look at, for instance, power and legitimacy [72]. The session designed within this study may follow as an alignment exercise that, for instance, can co-exists next to the method proposed by van Woezik [2016]. In order to more pragmatically implement a OH perspective that exists outside of that of human

values alone. Adhering to a post-human perspective which sees all actors as equal [23][56].

Looking broader at other stakeholder groups. When involving lesser-experienced or non-expert stakeholders within this session an assessment is needed on the expert level and awareness of stakeholders. Participants mentioned the session requires a considerable amount of previous knowledge. Some experts within the session struggled with filling out the session itself. In order for the session to create fruitful discussions, alignment on perspectives and understanding between stakeholders, participants should contain a certain level of knowledge. To participate and contribute to the session.

Within this session, previous education is therefore necessary for non-expert stakeholders to connect with expert stakeholders. One could argue, non-expert stakeholders would benefit much from attending such a session in terms of increasing awareness. However, targeting unaware stakeholders, such as farmers, remains a challenge.

LIMITATIONS

This research shows interesting insights related to the alignment of stakeholder perspective and the use of the session within the risk management process. However, there are several limitations to the study.

While the OH approach is used in order to have participants move into another perspective and as a result become more aware of other actors within the system. The session within this study is not tested without the OH approach. Other studies show design thinking sessions and empathic tools achieve perspective taking, creating a shared understanding and empathising with different actors as well [14]. Moreover, it was the first time many stakeholders within this research worked with design thinking. In hindsight, this study should have included a second stakeholder session where only human actors were introduced. In order to investigate the difference between a post-humanistic and humanistic approach to OH. Looking if the OH exercises make a difference in stakeholder decision making, valuing animals and the environment as more equal to humans. Moreover, it could be argued that designing the design thinking session with different assignments would have resulted in different results as well.

Secondly, the stakeholders within the session were invited randomly as many stakeholders were not available at the time of the session. In addition, the paper by van Woezik et al. [2016] was found after inviting the stakeholders. Using the methodology provided in the paper of van Woezik et al. [2016] would have influenced stakeholder identification and session composition. It must be noticed that inviting a different group of stakeholders would cause a different discussion, interplay and outcome of the session. This was mentioned by participants as well and is

especially important for assessing the effect of the OH approach within the session.

Moreover, all stakeholder invited currently are open to discuss this topic. As a result, no conflicts between participants occurred during the session. There is uncertainty if something like this would happen with, other, less involved stakeholders. While the session places stakeholders outside of their own perspective, the session could still lead to conflicts because of clashing interests or closed mindset. Where stakeholders are not willing to change their view about a certain subject.

Lastly, no farmers without knowledge of zoonoses were directly spoken to. The findings and conclusions therefore only give a view on expert experience and change in awareness. It can only be hypothesised farmers or other non-expert stakeholders benefit from being involved in the session. Especially questioning if farmers actually feel the need to join such a session. The study therefore biases towards an expert view, not describing the experience of a large group of stakeholders. One could argue farmers benefit more from stricter regulations and policy, which take into account farmer needs. Empathising with farmers through other design methodology or empathic tools. However, as seen by the farmer questionnaire. There certainly are farmers who can become more aware about zoonotic risk within nature-inclusive farming.

FUTURE WORK

As this research did not extend to iterate on the tool, several iterations are proposed. Moreover, future steps come forward from the discussion and limitations described.

The tool should be iterated to provide a way for more guidance. This should be done through means of adding additional explanation and examples. This would focus the session less towards risk identification itself and more towards knowledge sharing and perspective taking across the OH approach. For example, the transmission timeline should be walked through with all stakeholders. A case should be provided to create the transmission timeline.

In the future, the session should be conducted with non-expert stakeholder groups in order to assess whether the session is desired and fitting for this kind of stakeholder. Additional research should find out if education on zoonoses will fit for this stakeholder group. Or whether other solutions work better to involve non-expert stakeholders. Increasing awareness of zoonotic risk. General practitioners were mentioned as a stakeholder group which might benefit from such a session, with the inclusion of additional prior education.

Moreover, the introduction of the OH approach should be researched with more specificity. Finding out the difference between regular design thinking and design thinking with a OH view. Additionally, different stakeholder groups and sessions must

show the consistency or difference in discussion results and experience.

Lastly, several participants within the study mentioned the session design is generalizable. Meaning the session can be applied to other wicked problems as well. The session may be stripped down to the risk identification, design thinking and OH components and build up again using appropriate mapping and content. Future research must find out if a design thinking session with OH view can be applied for different wicked problems.

CONCLUSION

To conclude, within this case study on zoonotic risk identification within nature-inclusive farming, risks have not been overviewed prior, nor is there any regulation as risks are fairly unknown. In addition, nature-inclusive farming includes some contrasting beliefs. There is a need for awareness across both expert and non-expert stakeholders.

The effects of the design thinking session with OH view on awareness is twofold. The design thinking methodology provides stakeholders with a way to navigate through the complexity of the challenge. With its strengths in visualisation, structure and simplicity. On the other hand, the OH perspective provided a way to empathize with perspectives outside of that of oneself. This twofold creates an interplay between systems thinking and design thinking. Incorporating strengths of both approaches which created easy and valuable discussions on both an holistic as well as pragmatic level.

Risk identification and creating overview itself is too complex to encompass within such a session. This illustrated how such a session can be positioned as alignment exercise to warm up for a risk identification and risk management process. In addition providing a way identify the right stakeholders. Aiming for a pragmatic, non-human valued perspective. The session can therefore co-exist next to other stakeholder identification methods. To eventually create an open and aware mindset for involved stakeholders.

Future work must iterate on the tool to focus it more on aligning perspectives instead of risk identification. Future work must involve other expert stakeholders to research if any conflicts arise and if the session is effective and desired to be used by non-expert, adding prior education.

ACKNOWLEDGMENTS

I would like to thank all stakeholders and participants involved within this study. Especially BrabantAdvies and the expert group I had contact with during the length of the study, this being Myrtille Verhagen, Anne Staadegaard and Henk Jans. I would also like to thank my coach at the University of Technology Eindhoven, Lu Yuan, for coaching me during the project and providing me with feedback and advice. I also want to thank Pom Smit for assisting

me during the multi-stakeholder session and Jaime Calvo Mõnton for supporting me as well.

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