Anticipating a plausible future of disinformation for the Ministry of Health

Master Thesis Design For Interaction
Delft University of Technology
Ties Schotel

Preface

A question I was asked a lot when explaining my graduation project was: 'How does this graduation for the government on the topic of disinformation link to your master at Industrial Design Engineering?' A valid question, with an answer connected to one of the paths design has taken over the past decades. The field has moved up along the orders of design (Buchanan, 2001).

This journey has taken the field along product design, interaction design and service design. The design field started out to design tangible human-centered products, ready for mass production. With the emergence of the internet, smartphones and cheaper touchscreens, designers used their methods and perspectives to create better user experiences and interfaces of digital products. The next wave was service design, where designers did not only focus on redesigning a touchpoint in a user or customer journey, like a product or an interface, but on the whole journey. Service design is maturing, looking at what is taught at the bachelor of Industrial Design Engineering, how people are talking about the field and the amount of service design agencies.

Now, it seems the field is in the growth phase of a new wave: systemic design. Designers are moving up in abstraction levels: from concrete - products to abstract - systems (Van der Bijl-Brouwer & Malcolm, 2020). Systemic design helps to solve wicked problems, which are open, dynamic, networked and complex (Buchanan, 1992). Disinformation is such a problem.

Systemic design is a logical method to use in government. Wicked problems arise often in governmental organisations, because the government deals with social issues for large groups of people. As the (systemic) design field holds methods and perspectives that could help with these wicked issues, it is only logical to try and help policy makers designing new policies, or even becoming policy makers ourselves. Jeroen van Erp advocates for a design for politics master (Van Erp, 2021) and people like André Schamineé (2018) are pushing design into governmental organisations.

So, disinformation is exactly the kind of problem designers are fit to solve and the government is exactly the place where to do that. Armed with more and more methods and tools from design methodology research and other fields of research like the futuring field.

I made a similar journey myself. When I was 10 I fell in love with design after going to the Dutch Design Week. You couldn't stop me making lamps and model chairs. At Industrial Design Engineering in Delft, I learned more about product design. The next step was an interaction design internship at Fabrique, where I learned UX design. I followed that path for a while, creating websites with my design company that I run together with Jesse Geurtsen and Sanne Keizer. Slowly we got projects where we could create services and now we are starting to help organisations steer towards a shared vision within complex contexts through a systemic approach.

Systemic design, policy design and futuring within the government for the problem of disinformation is at the core of this graduation. I hope my graduation project will create new knowledge for these fields. Next to this I hope it helps just a bit to put systemic design, policy design and futuring on the map within governments.

Before I continue, I want to thank the following people: Tamas Erkelens for the opportunity to do this great project within the Ministry of Health, Welfare and Sport. Sebastiaan van Lunteren for your support and guidance, especially how to deal with government politics. All the team members and other colleagues at the Ministry of Health, Welfare and Sport for the help, ideas and fun. I felt a close part of the team. A team that is not just talking about design within the government, but is actually doing it. Peter Lloyd for giving me the freedom to make this project my own. Roy Bendor for your great help on futuring, opening worlds I didn't know existed. Discovering this field felt like coming home, with amazing minds to guide me further. Thank you for sticking up with my endless questions about Anticipatory Governance. All the people who contributed to the project, such as participants of the interviews. Your insights are what made this project possible Finally, my friends and family, supporting me in all kinds of ways I am truly grateful for.

The ideas in this thesis are from Ties Schotel as part of a graduation research from the TU Delft. The ideas are specifically not those of the Minister or Ministry of Health, Welfare and Sports or any other governmental institution.

Furthermore, the ideas from any participants are said in their own name, not in the name of the Minister or Ministry of Health, Welfare and Sports, or any other governmental institution.

Summary

Context and problem statement (Chapter 1)

Disinformation, false or misleading content that is shared deliberately, can be a danger to public health. When citizens don't follow evidence-based treatments or measures and do take non proven, unuseful or dangerous treatments (Freeman et al., 2022; Montagni et al, 2021; Prieto & González, 2021). This became clear especially during the COVID-19 pandemic. More broadly it is a danger to democracy.

Within the Ministry of Health, Welfare and Sport there are several hurdles to effectively deal with disinformation. Too narrow and present focussed problem frames are used, with little alignment and a lack of starting points for concrete interventions.

In response to these problems, my design goal is to catalyse a broader and anticipatory problem frame of disinformation, find concrete starting points for interventions dealing with disinformation and align key stakeholders.

Method

A combination of methods is made (Chapter 2). First, systemic design (Meadows, 2020), finding elements, mechanisms and starting points in a system, enables to create a **broader** problem frame. Second, anticipatory governance (Guston, 2014) adds the temporal dimension, creating an **anticipatory** problem frame. It consists of four phases. *Foresight*, creating plausible future images. *Engagement*, involving people inside the organisation to respond to the plausible future. *Integration*, implementation of those responses and *ensemble* harmonising these efforts. Third, experiential futures (Candy, 2010) enable alignment between stakeholders through future prototypes: objects as if they came from the future.

Section 1 - Foresight

Expert interviews and consultation of academic, popular 'mainstream' and 'fringe' literature is conducted (Chapter 3). This leads to a (dis) information system map (Chapter 4) showing mechanisms that influence the system like doubt, trust, crisis and polarisation. Currently, the system is unbalanced. Yet, there are leverage points where interventions can bring back balance. The second outcome is a driver and trend analysis showing how the elements in the system map might develop. A new systemic and anticipatory problem frame is proposed (Chapter 6) that reveals new threats, but also opens up possibilities to bring balance.

Section 2 - Engagement

A future scenario (Chapter 7) is written that communicates the systemic and anticipatory problem frame. Two aspects are central:

> *In 2033, we will live in a country with ideological splintering. Due to climate change, an extreme heatwave during the summer causes a great threat to public health.*

This scenario is developed into experiential future prototypes (Chapter 8, Figure 1). The future prototypes were used in a 1:1 simulation with key stakeholders in the government (Chapter 9). Participants were asked 1) to reflect on the future that was embodied in the artefacts, and 2) to suggest interventions inspired by the future prototypes. The simulation showed alignment (Chapter 10) on the new anticipatory problem frame and even sparked a shared future vision:

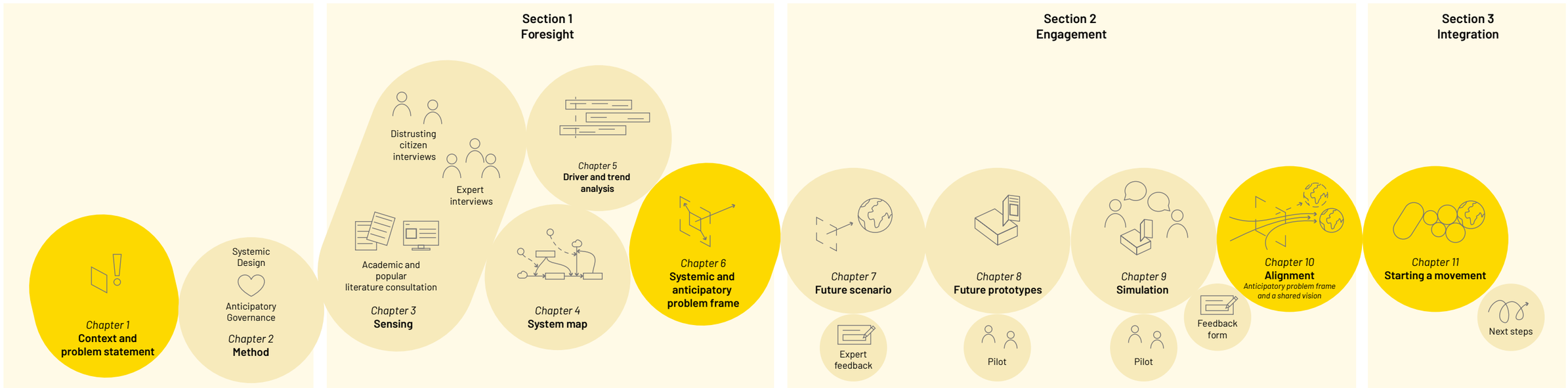
> *Becoming an empowering government based on mutual trust.*

Section 3 - Integration and Ensemble

A disinformation team is initiated, together with a policy maker from the Ministry. This makes sure the results from this project can be integrated after the delivery of the thesis.

Figure 1. Future prototypes

Figure 2. Overview of thesis



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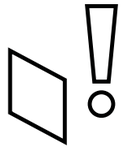


Chapter 1 -
Context and problem statement

Chapter 1.1
The disinfodemic

With COVID-19 came a disinfodemic
In the beginning of 2020, the COVID-19 pandemic came over us. With the virus came a flood of disinformation, called the 'disinfodemic'. Fake information about several themes was spread (Posetti & Bontcheva, 2020). The origins and spread of the coronavirus disease was doubted, for example that 5G networks are making people sick, not the Coronavirus (not true, see Staff, 2020). False and misleading statistics were spread such as the false statement that 1 in 3 of Dutch citizens has psychological complaints because of Covid crisis (Borst, 2020). Economic impacts were twisted, such as the suggestion "that social isolation is not economically justified, and even claims that COVID-19 is overall creating jobs" (Posetti & Bontcheva, 2020). Journalists and credible news outlets were discredited, for example the accusation of the Daily Mail exaggerating the size of the pandemic (Burger, 2020a). Furthermore, there was disinformation on the impacts on society and the environment with messages that dolphins are back in Venetian canals (not true, see Daly, 2020). Symptoms, diagnosis and treatment were the target of fake news, for example the message that vaccinations kill people (Boer, 2022. This is not true, fact checked by RIVM, 2022) and that hydroxychloroquine helps against the virus (not true, see Apotheek.nl, z.d.). Furthermore, politicised content was appearing to mislead for political advantage, with the Time magazine with armed soldier of WHO (not true, see Corral, 2022) on the cover as a prime example. Lastly, the headline that Ministers don't take 1.5 meter distance into account (not true, see Burger, 2020b) is an example of celebrity-focused disinformation. For even more examples, take a look on Poynter or Nieuwscheckers.

Several high placed officials and doctors see disinformation as a great threat.

> **Ursula von der Leyen**, President of the European Commission: "There is an increased number of fake news about the coronavirus outbreak. [...] It's a massive wave, breeding on the ground of uncertainty, anxiety and a rapidly changing news cycle. I'm concerned that some of them can really harm people" (European Commission, 2021).
>
> United Nations Secretary-General **António Guterres**: "As the world fights the deadly COVID-19 pandemic – the most challenging crisis we have faced – we are also seeing another epidemic: a dangerous epidemic of misinformation" (United Nations, 2020).
>
> **Marc van Ranst**, full professor of virology at the Catholic University of Leuven, said the following in a roundtable discussion with parliamentarians and the Ministry of Health, Welfare and Sport: "The fight against fake news, we have to tackle this everywhere. [...] The recent paper in Nature Scientific Reports shows quite nicely that willingness to vaccinate is directly correlated to where you get your news from and what you look at on social media as well" (Tweede Kamer, 2022).
>
> **Dr. Vivek H. Murthy**, Surgeon General of the United States: "Health misinformation is a serious threat to public health. It can cause confusion, sow mistrust, harm people's health, and undermine public health efforts" (Office of the Surgeon General, 2021).

What is disinformation?

Two types of false information are distinguished. The first is misinformation, which is "incorrect or misleading information" (Merriam-Webster, 2022), spread without the intention to do harm. Misinformation doesn't always have to be false, it can also be the framing of true information in such a way that it is misleading

The second is disinformation. "Disinformation is when misinformation is used to serve a malicious purpose, such as to trick people into believing something for financial gain or political advantage" (Office of the Surgeon General, 2021).

One can establish false information in two ways. Firstly, by exposing faulty logic, where conclusions actually don't follow the premises. Secondly, by researching if the empirical evidence of arguments is justified or supported. This is based on argumentation used in an internal document that uses ideas from Karl Popper (1959), David Hume (2016) and Daniel Bovac (1990).

The dangers of COVID-19 disinformation

The officials agree: disinformation can be dangerous. There are several reasons for this. First of all, disinformation can manipulate citizens to ignore evidence based treatment (U.S. Department of Health and Human Services, 2022). During the pandemic, citizens turned down the vaccine or dismissed safety measures. Secondly, disinformation can make people use non working or dangerous alternative medicine, like Hydroxychloroquine or Ivermectin. Thirdly, there is a broader danger of the decline of trust in government, science, media and the system of democracy.

Scientific research makes the consequences of disinformation clear. There are large amounts of disinformation and large amounts of people who believe in disinformation. Believing in conspiracies leads to a lower intention to vaccinate.

The amount of disinformation is undeniable, with 31.9% of articles about nine topics related to the main conspiracy narratives being fake. An Italian study (Moscadelli et al, 2020) scraped the internet for articles posted between 31 December 2019 and 30 April 2020 on the nine topics. This resulted in 2102 articles which the researchers labelled as fake or verified, using scientific knowledge at the time. 31.9% of those articles were fake which were shared 2,352,585 times, accounting for 23.1% of total shares. In 6 out of 9 search topics (Vitamine C, Vitamine D, Garlic, 5G, laboratory and HIV), fake articles have a higher chance of being shared. The other 3 topics are vaccines, conspiracy and origin.

Besides a large amount of disinformation, a large amount of people believe in conspiracies. An English study (Freeman et al., 2022) held a survey with 2501 adults in England, asking for their beliefs in conspiracy theories and their adherence with government measures. "Approximately 50% of this population showed little evidence of conspiracy thinking, 25% showed a degree of endorsement, 15% showed a consistent pattern of endorsement, and 10% had very high levels of endorsement."

Believing in disinformation leads to turning down vaccins, an evidence based treatment. Freeman et al. (2022) say "Endorsement of specific or generic coronavirus conspiracy beliefs is significantly associated with less self-reported adherence to each government recommendation". Montagni et al. (2021) add to this: "bad detection of fake news is related to being hesitant or anti-vaccination." Of 1647 people above 18 in France, 18.6% (306/1647) were anti-vaccination and 10.9% (180/1647) were hesitant to take a vaccine. Of those that were anti-vaccination or hesitant, respectively 21.9% and 22.2% were bad at detecting fake news, against 12.3% in the pro-vaccination group. "Intention to get vaccinated was associated with agreement with fake news". If you believe in fake news, there is a higher chance of not taking the vaccine or hesitating. (Montagni et al, 2021).

Furthermore, "Misinformation, amplified by social networks, have eroded the public confidence on vaccination, causing an increase in the number of outbreaks of diseases that were already controlled, as happened for measles in 2019" (Prieto & González, 2021). It is clear action has to be taken to deal with disinformation.

Chapter 1.2
The Ministry of Health, Welfare and Sport

The Ministry of Health, Welfare and Sport, the client organisation in this project, has to deal with the dangers of disinformation. The organisation has the task to take care of public health and well-being. The ministry does this by making sure healthcare is of high quality, available and affordable. Next to this it stimulates healthy behaviours and tries to discourage unhealthy behaviour (Rijksoverheid.nl, 2022). In the next section, I will elaborate on the current situation of dealing with disinformation and its dangers at the Ministry. What follows is a problem statement and design goal.

Locating my team in the Ministry

I will be working as part of the Design team that works closely together with the Data team. The Data and Design team, together with Team Dashboard and Team Research, forms Team 2 of the Department of Covid-19 Information and Coordination (PDCIC, Appendix 1). In the broader scope of the Ministry, PDCIC belongs to the overarching department (Directoraat-Generaal) Public Health.

Concerning decision making in the organisation, the closest stakeholder is the team manager of Design who is my mentor. Every two weeks we discuss the project, decisions are discussed on a process level. The manager of Team 2 is an important stakeholder as he steers the projects the team is doing. Finally, the Director of PDCIC is the final decision maker relevant to my project. He decides, together with the Team 2 manager, whether or not projects are done.

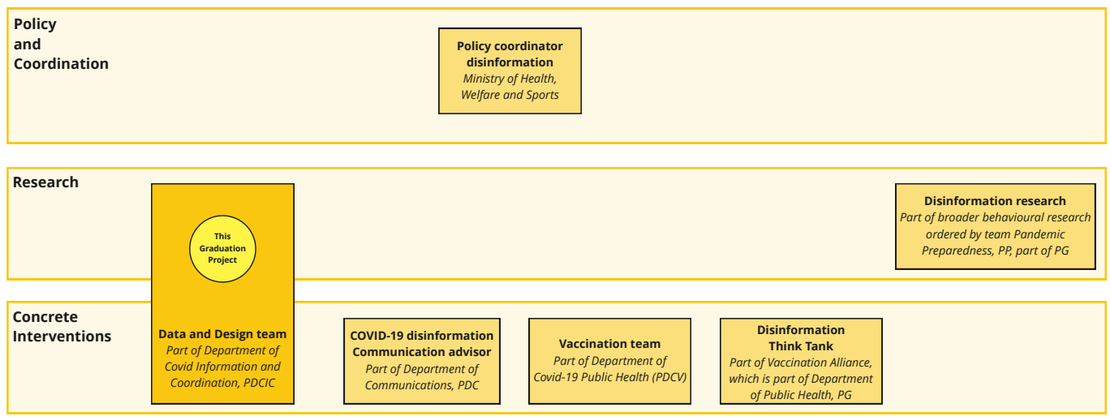
The Ministry's efforts on disinformation

At the start of this graduation project, there are several stakeholders involved with disinformation within the ministry (Figure 3).

First, there is a policy coordinator for disinformation. The task for this coordinator is to coordinate the efforts on disinformation within the government. However, this is a part-time role with seemingly low priority. There is little communication or coordination.

Secondly, during the COVID-19 pandemic, a full-time communication advisor started working on disinformation. The communication advisor at the COVID-19 communications team within the communication department, told me how they dealt with disinformation. The team hired an external company to monitor disinformation and created factual content to debunk the disinformation. This content was spread through different channels like the government blog

Figure 3. Disinformation efforts within the Ministry of Health, Welfare and Sport



website, for example about vaccines (Ministerie van Algemene Zaken, 2022) and vaccinating children (Ministerie van Algemene Zaken, 2021a) They also created branded content on specific platforms such as Ouders van Nu.

Thirdly, the vaccination team had to deal with disinformation during the pandemic. The responsible policy maker was in close communication with the communication advisor to debunk false information about vaccinations.

Fourthly, a disinformation think tank works on the topic. In 2019, the disinformation think tank is established as part of the Vaccination Alliance. This alliance has the goal to increase vaccination coverage, with the think tank having the sub-goal of dealing with disinformation around vaccination. On the think tank platform, experts on disinformation, doctors and relevant semi-governmental institutions come together and exchange signals of disinformation. The members of the platform act on the shared signals voluntarily and on their own behalf.

Fifthly, the team Pandemic Preparedness is involved. This team has the responsibility to prepare plans for the next pandemic. They established that disinformation can influence behaviour and issued the topic as part of behavioural research.

Finally, the Data and Design team, part of the Department of Covid Information and Coordination, seeks to take part in the disinformation efforts. The manager of the team is convinced the disinformation problem is important and sees his team as a possible competent contributor. At the start of 2022, just before this graduation project started, a quick and dirty design project was started in which there was mainly a brainstorm between the communication advisor disinformation and a member of the vaccination team responsible for handling disinformation. They advised to start a dedicated disinformation team, however, no actions followed. Nevertheless, the director of the Covid Information and Coordination Department seems to have an interest in disinformation, according to the team lead of the design team. Further conversations to validate this assumption were not held.

The government's efforts on disinformation

When zooming out, the disinformation efforts Government wide are coordinated by the Interdepartmental Task Force disinformation. The Task Force is led by the Ministry of Internal Affairs. Every Ministry provides a policy coordinator, who in turn leads the efforts of their respective Ministries. In Figure 4, the organisation is mapped on three axes: focus, level of concreteness and internal/external.

The different Ministries emphasise different aspects of the disinformation problem. The Ministry of Internal Affairs is mainly focussed on the democracy undermining properties that disinformation has. The 'security' Ministries like the Ministry of Defence, Justice and Security and Foreign Affairs focus on foreign actors and threats for the safety of the nation. Then, the Ministry of Education, Culture and Science is focussed on education and media literacy. Finally, the largest part of the Ministries is focussed on the dangers of disinformation on themes that have their responsibility, such as public health for the Ministry of Health or Nitrogen for the Ministry of Agriculture, Nature and Food Quality. Although these differences are described clearly here, this is interpreted by the author after a lot of conversations. Efforts are in fact not coordinated clearly. Even more so, from my knowledge, Ministries in the latter category don't actually take action on disinformation.

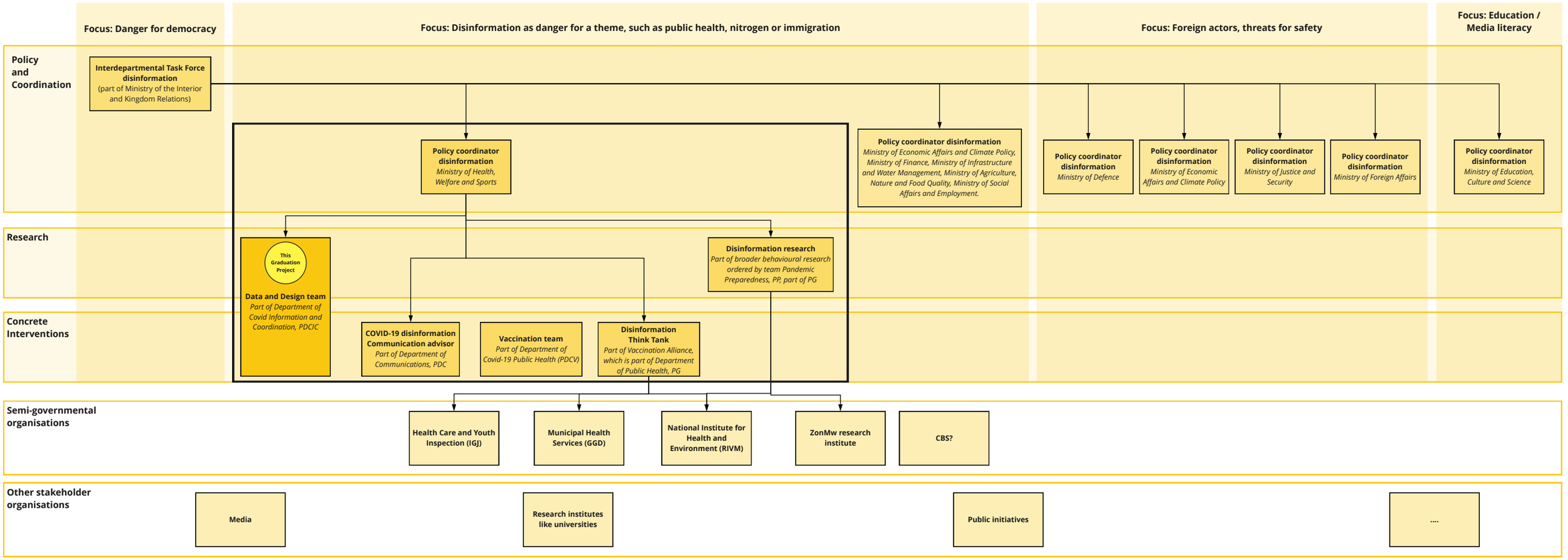


Figure 4. Overview of different stakeholders within the Ministry of Health, Welfare and Sport. The black box shows the scope of Figure 3.

Disinformation efforts are operating at different levels, the third axis. Firstly, the policy coordinators act on a level of policy and coordination. They take a helicopter view on the problem and provide the frames for more concrete efforts. The second level is that of research, understanding the problem of disinformation better. On the third level, stakeholders work on concrete interventions dealing with disinformation.

On the third axis, internal and external stakeholders are differentiated. The previously mentioned stakeholders are part of the government core. Semi-governmental institutions like the National Institute for Health and Environment (RIVM) or Municipal Health Services (GGD) are involved in disinformation. Further away from the government, public organisations like the media and research institutes work on disinformation.

Shortcomings in the current efforts

There are several shortcomings in the current efforts for disinformation. Firstly, the stakeholders are too isolated, with few communication amongst each other and not working towards the same goal. The Policy Coordinator from the Ministry of HWS explains that too little of each other's expertise is used and the wheel gets reinvented too much when it comes to disinformation. He emphasised that the organisation needs to have a vision to work towards with disinformation and a policy framework from where concrete actions can be taken.

Secondly, the Ministry of HWS currently frames disinformation as a COVID-19 problem. This frame is problematic because it focuses on *one* theme in the *present*. This means the frame doesn't prepare the Ministry for future developments of disinformation. It is easily imaginable how a new health related theme, department transcending theme, or even broader, society, might be negatively impacted by disinformation. How should the government deal with disinformation about another theme in future society?

Thirdly, the efforts often stay in abstract policies, with few concrete interventions actually trying to push the disinformation problem in the right direction. Within the Ministry of HWS, there are some interventions, but there are no clear examples from other Ministries.

Fourthly, the concrete interventions that do exist are from the Communication Department in cooperation with the Vaccination Team or the Think Tank. These are mainly communication efforts, revolving around debunking, while more types of interventions are possible. This shows a fixation on the frame that disinformation is an *information* problem. Often an even more narrow frame is used: disinformation is a *social media* problem. These frames prevent looking at other aspects of disinformation and only inspire solutions that are formed around information and social media. What is not seen with this frame?

Chapter 1.3

The project

Problem statement

To conclude, during the COVID-19 pandemic, the Ministry of Health, Welfare and Sport had to react to disinformation. Disinformation can be a danger to public health, as it can make citizens turn down evidence-based treatment and instead take unhelpful or even harmful alternative treatments. In a broader sense, disinformation is a threat to democracy.

Within the Ministry there are several hurdles to effectively deal with disinformation.
Firstly, unproductive problem frames such as 'disinformation is a *COVID-19* problem' and 'disinformation is an *information* problem' are often used. These frames are too narrow, not ready for future developments and don't inspire new interventions to adequately address disinformation. Secondly, there is little alignment between stakeholders working on disinformation without a shared problem frame and vision to work towards. Lastly, there is a lack of starting points for concrete interventions to deal with disinformation.

Project goal

In response to these problems, my design goal is to catalyse a broader and anticipatory problem frame of disinformation, find concrete starting points for interventions dealing with disinformation and align key stakeholders on the new problem frame and starting points.

A broader problem frame takes into account more aspects of disinformation than the original problem frame.

An anticipatory problem frame is a problem frame that takes into account how problems could look like in the future, within the disinformation theme.

Interventions are anything that the government produces. These can be policies, events, services, products.

Concrete starting points for interventions are ideas or directions for further development of the interventions.

Alignment is the act of aligning perspectives, opinions and goals into the same direction.

Key stakeholders are the civil servants in the Ministry of Health, Welfare and Sport that work on the disinformation topic or make decisions about efforts in the disinformation topic.

Research questions

1. What is the broader and anticipatory problem frame?
2. What are starting points for interventions dealing with the problem frame?
3. How can key stakeholders be aligned on the problem frame and starting points?
4. How can the problem frame and starting points be integrated in the organisation for further development?

Scope

This project is scoped in the following ways. First, I have looked 11 years into the future: 2033. This is originally based on three terms in politics. This time scope indicates that I will look further than the normal scope in government, which is until the end of the current term. However, I won't look ahead 20 or 30 years. This is too far ahead for the organisation for now. 11 years seems specific, but it is a general indication of the time scope, with a 2-3 year margin. Pinpointing future scenarios on exact years isn't useful in futuring.

Second, the project is for the Ministry of HWS in the Netherlands (NL), which makes my scope the Netherlands. Disinformation happens across borders, so research into the systemic and anticipatory problem frame is done broader, but the focus will still stay on what happens in the Netherlands.

Chapter 2 -

Method: Anticipatory governance with systemic design

In this chapter, I will elaborate the method for this project. First, I will outline the method of anticipatory governance combined with systemic design. Secondly, a theoretical basis is formed about these two methods. Finally, the process is presented.

Chapter 2.1

Combining systemic design and futuring

Using systemic design to broaden the problem frame

Systemic design enables me to achieve the design goal of catalysing a **broader** problem frame of disinformation and finding concrete starting points for interventions dealing with disinformation. Systemic design is the act of finding the relations of phenomena to get a better grasp of the system and to find leverage points to influence the system towards a certain desired outcome (Meadows, 2008).

In systemic design one looks for mechanisms that influence a phenomenon. The systemic thinker is forced to think further and ask "but what mechanism influences that mechanism?". This mindset is what's needed to stretch the problem frame and look at more aspects that influence disinformation. In Chapter 2.2 more details are shared on the workings of systemic design.

Using anticipatory governance to anticipate a plausible future and align key stakeholders

The next goal is to create a broader **anticipatory** problem frame. To complement systemic design, futuring adds the temporal dimension to the problem frame. Futuring is the act of sensing patterns of change and creating scenarios of how the future might be (Smith, 2020; Inayatullah, 2013). Guston (2014) elaborates how anticipation can prepare policy makers for plausible futures. And according to Coates (1985, p.30), futuring enables one to 'create policy frameworks (vision) and strategy that is more fitting, flexible and anticipatory of change'. In short, futuring helps to look ahead.

More specifically, anticipatory governance (Guston, 2014) is used. He identifies four phases. During foresight one creates plausible future images an organisation should prepare for. Many tools can be used to create plausible future images. Then comes engagement, involving people within and outside the organisation. A disposition is created towards the plausible future(s) and responses are thought of. The ideas are implemented in the organisation in the integration phase. These phases are sequential, but should come together in ensemble, creating a harmony of foresight, engagement and integration efforts within the organisation that lead to a shared vision.

These phases fit the research questions perfectly. During *foresight*, the first two questions are answered: what is the broader and anticipatory problem frame and what are starting points for interventions dealing with the problem frame? In the *engagement* phase, the third research question is answered: how can key stakeholders be aligned on the problem frame and starting points? Then, in the *integration* and *ensemble* phase, the final research question is answered: how can the problem frame and starting points be integrated in the organisation for further development?

Using experiential futures to align key stakeholders

A future scenario, created in the foresight phase, gives the organisation a common future to work towards or avoid it. Guston points out how foresight, as part of anticipatory governance, can create opportunities 'for dialogue and more reflexive decision making' (Guston, 2014).

To achieve an alignment between key stakeholders, a written scenario is not sufficient enough. **Experiential** futures are needed (Candy, 2010). Scenarios that can be experienced first hand, through movies, objects, experiences or other media as if they came from the future. By doing this, futuring provides ways to engage with uncertainty instead of avoiding it. To have productive conversations about 'What if?' (Smith, 2020; see Figure 5). So, entangled in Guston's anticipatory governance framework, is the creation of experiential futures (Candy, 2010).

The strong combination of systemic design and futuring.

In conclusion, systemic design and anticipatory government are complementary. Systemic design creates more robust and plausible futures. The method identifies how the system of (dis) information works and which mechanisms are relevant. It helps to focus the search for patterns of change. Furthermore, where systemic design makes one look *broader* at the problem and find starting points that were previously not linked, futuring enables to look *farther*, finding starting points that currently do not exist. The problem frame is stretched in two dimensions: the systemic axis and in the temporal axis. Anticipatory governance, together with experiential futures, enables the Ministry to align on the stretched frame and starting points to deal with disinformation.

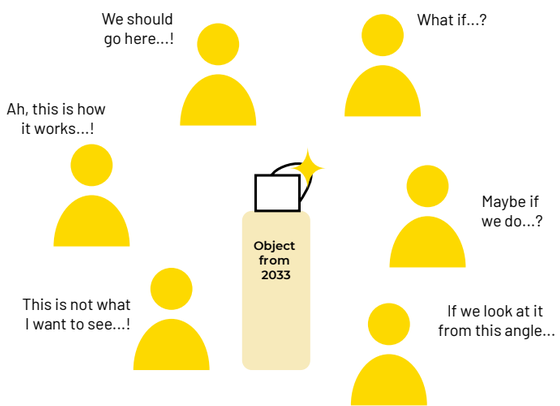


Figure 5. Experiential prototypes of future scenarios enable the organisation to reflect on plausible futures and align efforts to achieve or avoid certain aspects of that future.

Chapter 2.2

Theoretical understanding of system mapping and foresight: building blocks

Before I continue elaborating on the process, some theoretical background information needs to be provided. First, the building blocks and important workings of system mapping will be elaborated. Secondly, the building blocks of futuring are shown. Thirdly, the link between the system map and foresight is discussed. Lastly, the evaluation criteria for experiential futures are presented.

System mapping

Stocks, flows and clouds

A system map consists of different elements (Meadows, 2008). The first would be stocks. In the simple example of a bathtub in Figure 6, the stock would be the amount of water in the tub. Second, there are inflows, the water coming in from the faucet, and outflows, the water going out of the tub through the drain. The stock increases with an inflow larger than the outflow and decreases with an inflow smaller than the outflow. The stock will stay the same when both flows are zero or the same. Finally, the clouds represent boundaries of the system. These can represent the plumbing in the house, the water supply chain or the sewage system. When mapping a system, one consciously decides on where to simplify the system. Theoretically, a system with no clouds would mean a system of everything happening in the world. As this is not possible, the system is simplified.

Balancing and reinforcing feedback loops

Another part of system maps are feedback loops (Meadows, 2008). These control and steer the inflows and outflows so that stocks increase or decrease. They can be balancing or reinforcing.

Balancing loops are goal-seeking. In Figure 7, a simple coffee example is displayed of a hot coffee cup cooling down. There is a discrepancy between the coffee temperature and the room temperature. This discrepancy determines the speed of the cooling outflow. Eventually the discrepancy is nearing zero, which means that outflow is near zero and coffee temperature is the same as room temperature.

Reinforcing loops are growth seeking. Let's take the example of money in a bank account (Figure 8). The amount grows with interest added, which is calculated by the interest rate times the amount of money. The more there is in a bank account, the higher the interest added is. Over time the amount in the bank account increases faster and faster. The higher the interest rate is, the faster this process goes. These loops are runaway loops where growth is exponential and not stopped by a certain ceiling or floor.

How stocks influence other stocks: mechanisms

To elaborate further, stocks can also influence other stocks. In the case of the simple example in Figure 10, the amount of sunscreen sold is amplified when there are more sunny days in summer. I use the terminology of mechanisms: more of X means more of Y, Less of X means more of Y etc.

Leverage points

Leverage points are dials in a system one can turn to achieve a certain goal in the system. This could be to increase or decrease a certain stock, it could be to balance a runaway reinforcing feedback loop, or other goals. To illustrate, an (over) simplified system map of skin cancer is shown in Figure 11. The amount of people with skin cancer in society is a problem influenced by multiple mechanisms. Let's say the amount of sunny days and percentage of sunscreen used during a sunny day amount to less or more people with skin cancer. To increase the percentage of sunscreen used on sunny days, the government could use the leverage point of regulation to make sunscreen usage compulsory on sunny days.

In a system, there is no 'solution', but balance

Working towards a 'solution' is not an appropriate

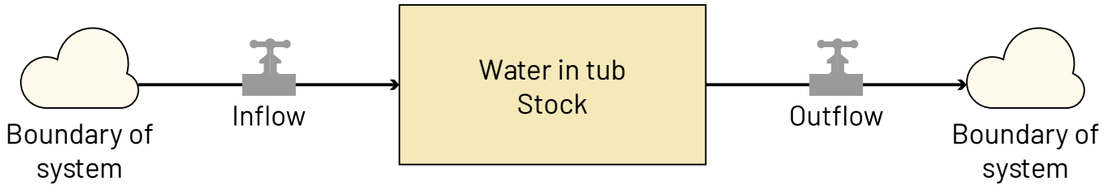


Figure 6. A simple structure of a bathtub. Adapted from Meadows (2008).

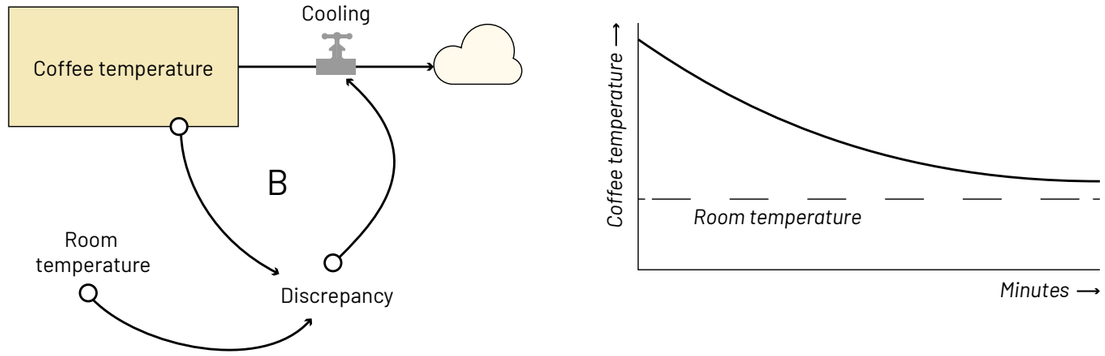


Figure 7. Balancing (B) feedback loops. Adapted from Meadows (2008)

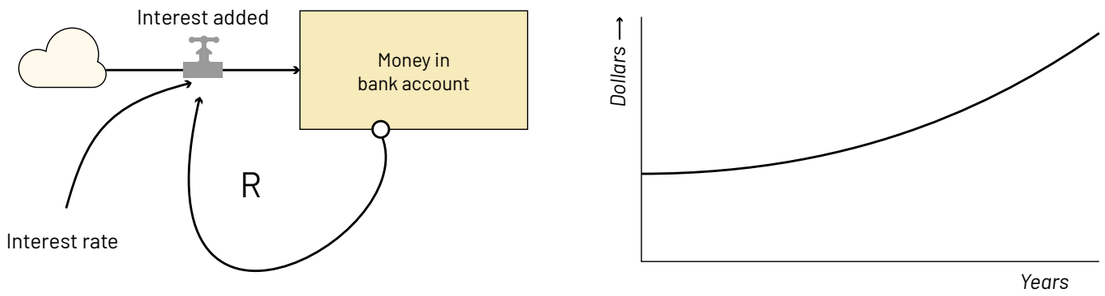


Figure 8. Reinforcing (R) feedback loops. Adapted from Meadows (2008)

term in the context of systems. The goal is to (re) establish a **balance** (Meadows, 2008).

Futuring

Looking for plausible futures

Voros (2003) differentiates between four types of futures (Figure 9). **Probable** futures are futures that are likely to happen based on the continuation of current trends. This is often called a forecast, where prediction is the goal. **Plausible** futures are based on trends that could happen, grounded in what is known and understood. This can be explained as foresight. **Possible** futures are based on trends that aren't impossible.

These three variants are 'neutral' in the sense that they are about what *might* happen, not what is *desired* to happen. However, it is also possible to create a **preferable** future (Puglisi, 2001), normatively judged based on values.

For the task in this project, I'm trying to research a plausible future to anticipate. As disinformation is such a complex problem, trying to predict the probable future of disinformation is an impossible task. Possible futures on the other side, are not useful enough. Next, because of the lack of alignment and presence of the right problem frames (chapter 1), creating desired futures is not yet possible, however needed they are. Plausible futures are thus the best level of probability to aim for in this project.

Signals, trends and drivers

Futuring tries to create 'images' of the future, which are built from thoroughly researched building blocks: signals, trends and drivers (Smith, 2020; Figure 12). The smallest building blocks are **signals**. These are facts, things that happen. Examples are easily found in newspapers: 'Elections won by party X', 'A new school started' or 'New technology invented'. Clusters of signals that indicate a trajectory make a **trend**, the next building block. Trends are patterns of change, happening over a number of years. Patterns can be increasing or decreasing, in a linear, exponential, or cyclical way. Examples are a decline of a previously large political movement, increase in certain types of schools or the growth in usage of a technology. Trends are caused by the final building block: **drivers**. These are long-term phenomena that are the reason certain trends happen. One can think of capitalism, climate change or neo-colonialism.

In theory, the future looks like Figure 12 on page 21, described by signals, trends and drivers. Based on drivers, trends will emerge and disappear, and events (signals) will happen. This is the case for the present, but also in the future. Naturally, one cannot predict the future and create such a clear 'image' of the future as done in Figure 12. However, one can use drivers, as they are very long term, to envision and anticipate plausible trends and events that might happen in the future.

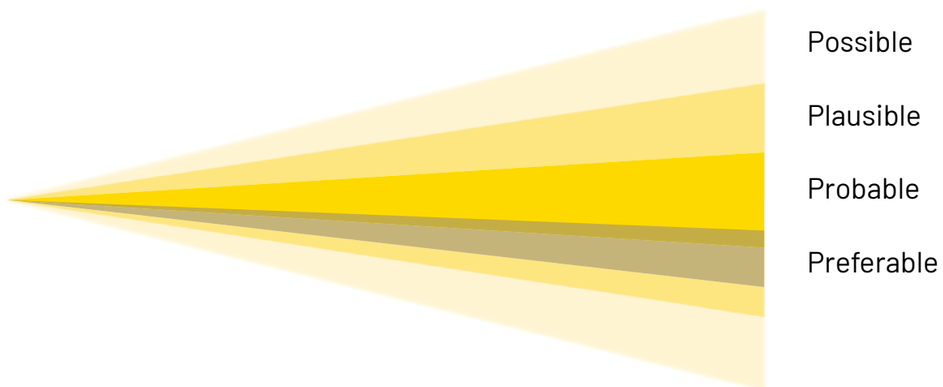


Figure 9. Different types of futures. Adapted from Voros (2003).

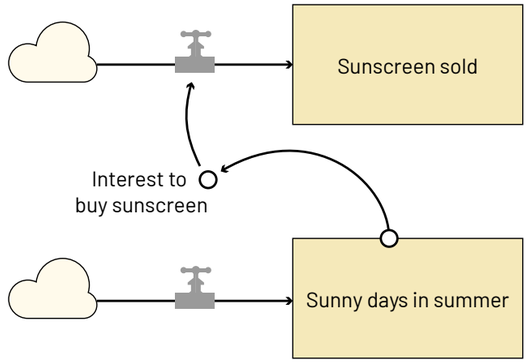


Figure 10. Simple example of the system of sunscreen sold.

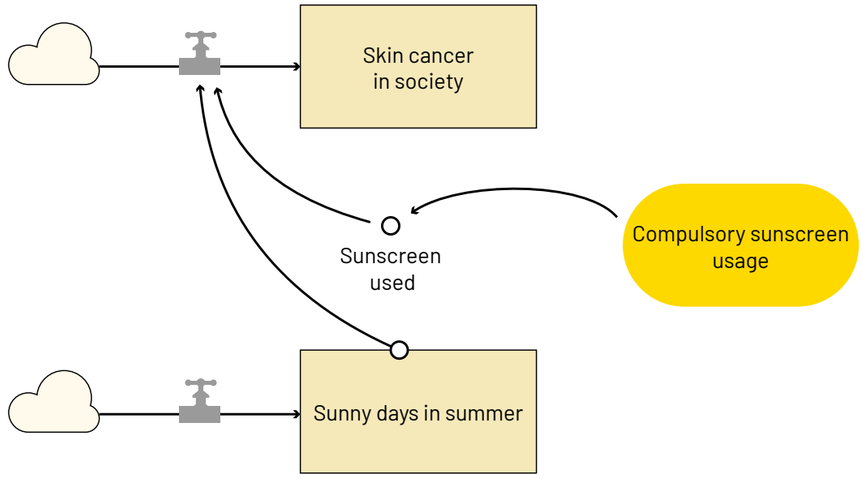


Figure 11. Simplified example of wicked problem 'skin cancer in society' with the leverage point in bright yellow.

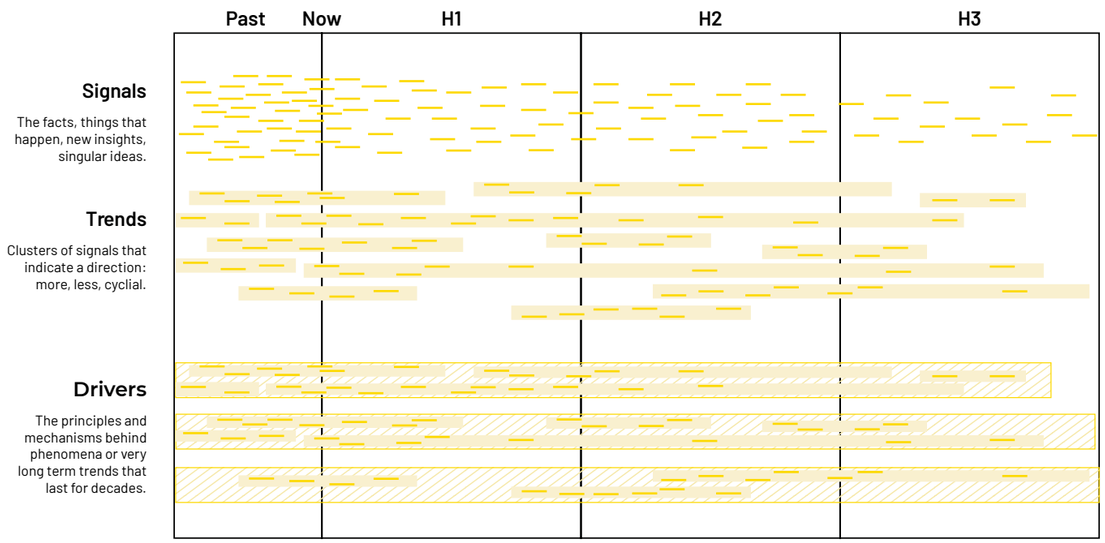


Figure 12. Theoretical future image. In practice, trends and signals in the future (H1-H3) are not as clear.

The relationship between the system map and trends/drivers

In this section, the relationship between the building blocks of systemic design and futuring is clarified. Firstly, the stocks and mechanisms from the system map inform which phenomena to research in the driver and trend analysis (Figure 13, number 1). Secondly, knowledge from the mechanisms help to identify plausible changes in the future. If an increase in a certain stock X is identified, and it is known from the system map stock X increases stock Y, a conclusion can be drawn that stock Y will also increase. This way, a more robust and plausible future is formed (number 2). Thirdly, in theory a 'future state' of the system map can be created (number 3). This last step is not done explicitly in a system map, as I will use the 'future state' as a starting point for experiential futures, as will be described later.

In the example of skin cancer, sunny days and sunscreen the stock of 'Sunny days in summer' is the starting point. How might this change over time? One might identify the driver of climate change that will drive for more sunny days. By using the mechanisms from the system, the scenario could be shaped as a world with a higher number of people with skin cancer. This insight can be used to adapt the system map so it shows the future state (link 3 in Figure 13). The government might be inclined to create interventions to deal with this future state.

I want to conclude this section with a note on co-evolution. Borrowing the term from Dorst & Cross (2001), who use it to describe the parallel development of problem and solution. After defining the problem and working on a solution, often designers reframe the problem, work on solutions and so on. Although the steps in the process are presented as being linear, in reality, a co-evolution will take place between the system map and driver/trend analysis. These iterations will improve the quality of the outcomes , forming a better basis for scenarios, experiential futures and eventually decisions.

Evaluation criteria for experiential futures

Evaluating experiential futures depends on the aim of the work (Baumer, Blythe & Tanenbaum, 2020). The authors have identified different evaluative frameworks, such as critical design, narratology, user studies and entertainment. My project goal is closely related to the frame of 'user studies'. I'm using design fiction to elicit reactions about disinformation from key stakeholders in the organisation. The reactions to the proposed design fiction show the underlying concerns and values on the topic of disinformation. Furthermore, experiential futures can engage participants to co-create solutions.

In the concretization step of the evaluative framework of Baumer, Blythe & Tanenbaum, I came up with several criteria. Scenarios and future prototypes should be 1) clear, as otherwise it is hard to engage with the content, 2) plausible and 3) relevant, so the results are useful and concrete for the ministry to use, 4) persuasive, making sure that it inspires participants to create anticipatory interventions or policies and 5) revealing of concerns and ideas about the future.

I can operationalize these criteria with the following questions:

Clarity
- → How clear is the scenario?

Plausibility:
- → How likely do you think this scenario will happen?

Relevance:
- → How useful is it to anticipate the events outlined in the scenario?
- → What are scenarios or events that could be more important to anticipate?

Persuasiveness:
- → How inspiring is the scenario to create new anticipatory interventions or policies?
- → What are ideas for interventions and policies to deal with the events posed in the scenario?

Revealingness:
- → Which concerns and ideas does the scenario raise?
- → What goals should the government set in reaction to the scenario?

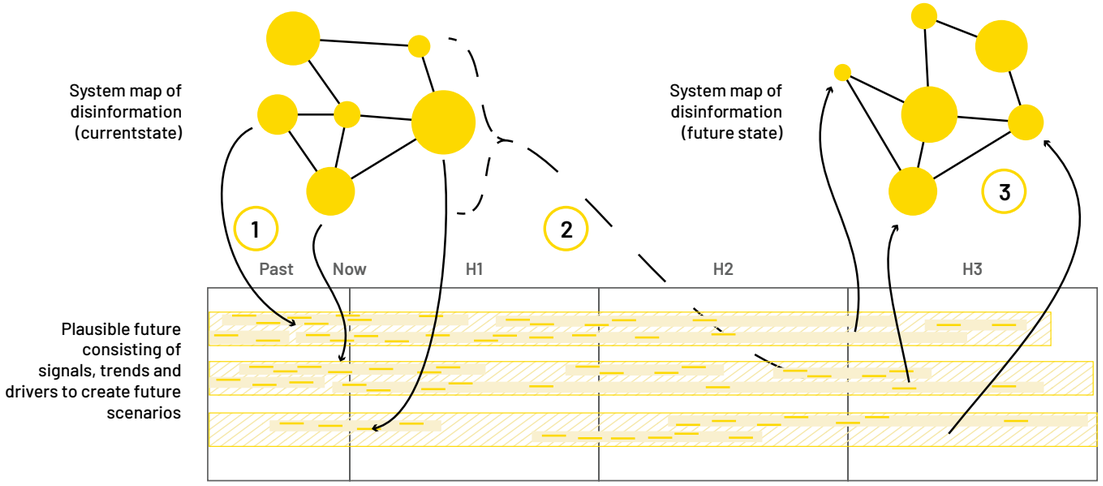


Figure 13. Relationship between system map and developments

Chapter 2.3

Process

Section 1 - Foresight

Sensing (Chapter 3)

Creating robust system maps and identifying signals, trends and drivers needs research through multiple sources of information (Smith, 2020). In futuring literature, this is called sensing. Sensing in futuring means finding small signals that point to patterns of change. When translating this to systemic design, sensing means finding the stocks and mechanisms of the system. I will consult academic and popular sources, do interviews with internal and external experts on disinformation and do interviews with citizens believing in disinformation. As the creation of a system map and driver/trend analysis is a co-evolutionary activity, research is an ongoing process in the foresighting phase.

System map (Chapter 4)

Using the data from the sensing exercises, I will create a system map of disinformation. Through an iterative process, I will draw the map and verify this with literature. In steps, the map is built up. Then, the system map is completed with leverage points.

Driver and trend analysis (Chapter 5)

Once a system map is created, I can continue creating a driver/trend analysis map in three steps (Smith, 2020). In sensing, I will start out with finding signals (Figure 14, step 1), relevant to the system map mechanisms. These signals are mostly happening in the past, now or close in the future. Some signals are situated in the further future through long-term plans, for example a building that is finished or announced new regulations. The second step is to cluster signals into trends (Figure 14, step 2), but already identified trends by experts are used too. I have to validate these trends by finding the signals that belong to this trend. It is important to be critical at this stage. Finally, trend clusters are shaped, identifying drivers (Figure 14, step 3).

I will go back and forth between signals, trends and drivers to strengthen them, but also to remove any building blocks that are not necessary. I will do this to keep the amount of blocks manageable and relevant. Eventually a clear signal/driver/trend map is formed. Signals and trends revolve mostly around the present, while drivers can be prolonged towards the future. These drivers are the base for the anticipatory problem frame in Chapter 6.

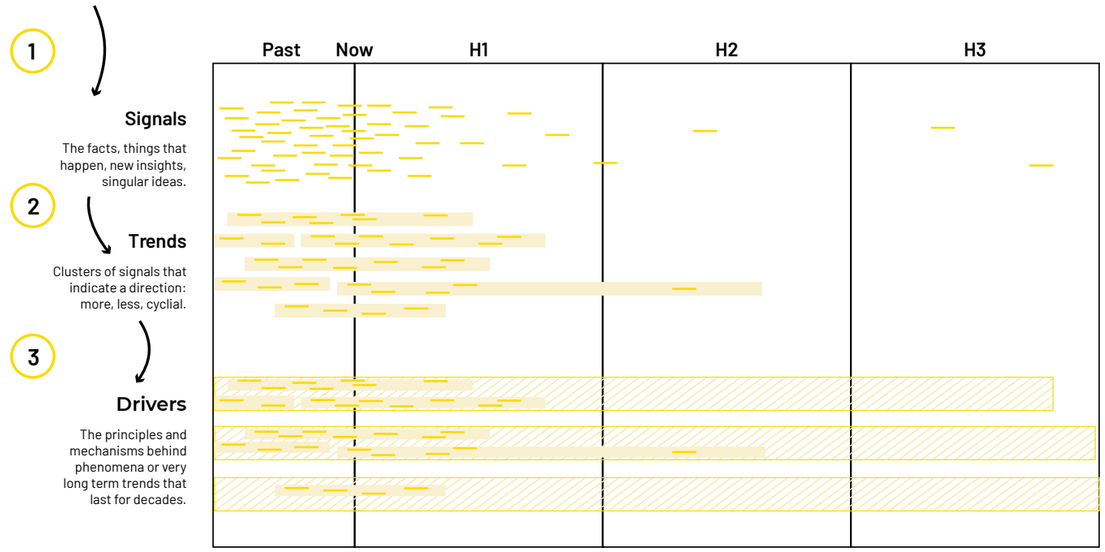


Figure 14. Gathering signals (1), clustering signals into trends (2) and clustering trends into drivers (3). Notice how signals don't appear far ahead in the future, trends extend into the future and drivers are extended even further, creating a base to think of plausible trends and signals to happen in the future.

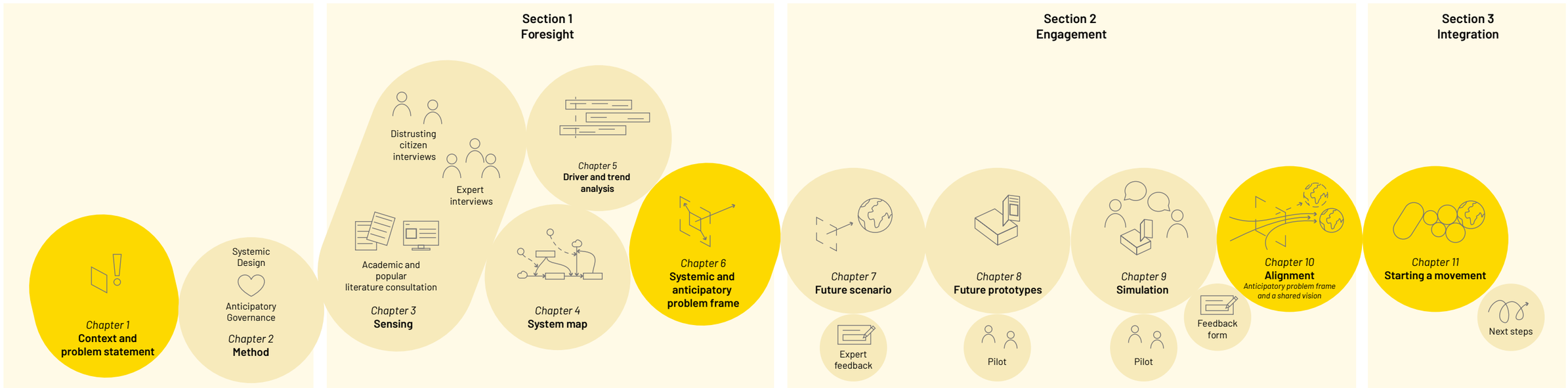


Figure 15. Overview of the process. Each of the steps touch each other, to show the tight links between them. Each step is needed for the next. This shows the robustness of the process. Each orange circle represents a main conclusion crucial for the process. Also, when in a rush, these chapters are the ones to read.

Systemic and anticipatory problem frame (Chapter 6)
In Chapter 6, the systemic and anticipatory problem frame is distilled from the system map and driver/trend analysis.

Section 2 - Engagement

Future scenario (Chapter 7)
The next step is to create a scenario that communicates the systemic and anticipatory problem frame. For this, the following question is used: 'How might the world look like, looking through the anticipatory problem frame?'. A world where the identified drivers cause trends and events to happen. This is ultimately a creative process where a world is created through an iterative writing process. The scenario is evaluated by experts and improved.

Future prototypes (Chapter 8)
With the backbone of the scenario solid, the following step is making the future experiential. An experiential future uses all steps from the experiential futures ladder (Smith, 2020, adapted from Candy & Dunagan, 2017). The scenario describes the world and the specific future state. In this next step in the process, the situation, people and stuff levels (Figure 16) are brought alive through the creation of future prototypes. Specific future prototypes are created to act as speculative artefacts, described by Dunne & Raby (2013). These types of prototypes have deliberate gaps or unclarity to evoke new ideas with policy makers. The future prototypes are tested and improved with a pilot.

Simulation (Chapter 9)
Together with stakeholders I will conduct a simulation to reflect on a plausible future and ideate on possible interventions. It will consist of looking at, playing with and talking about the future prototypes (Figure 17). The goal is to achieve alignment on the new anticipatory problem frame and starting points to deal with disinformation. This alignment will be tested through questions during the simulation and an evaluation form after the fact. The simulation is tested and improved through a pilot.

A simulation can be interpreted as an elaborate future, almost game-like, in which the participant can act, and the simulation responds to these actions. In this project, the simulation will be less elaborate. Nevertheless, the term is used, because this is a known term in the organisation for thinking about the (near) future, which makes it more accessible.

Alignment (Chapter 10)
In the alignment chapter, which can be interpreted as a discussion, the results of the simulations are interpreted. I explain the alignment on the systemic and anticipatory problem frame and starting points for interventions dealing with disinformation.

Section 3 - Integration

Starting a movement (Chapter 11)
The integration and ensemble phases are an ongoing process of starting, experimenting and improving interventions dealing with disinformation, next to ongoing foresight and engagement efforts. This is outside of the scope of this project, however, a start is made for the integration phase. A disinformation team is initiated to make sure the results from this project can be integrated right after the delivery of the thesis. With this team, an initial project is started to define a prioritised short-list of 12 starting points for disinformation. The start is made, but the project is not finished within the scope of this graduation project.

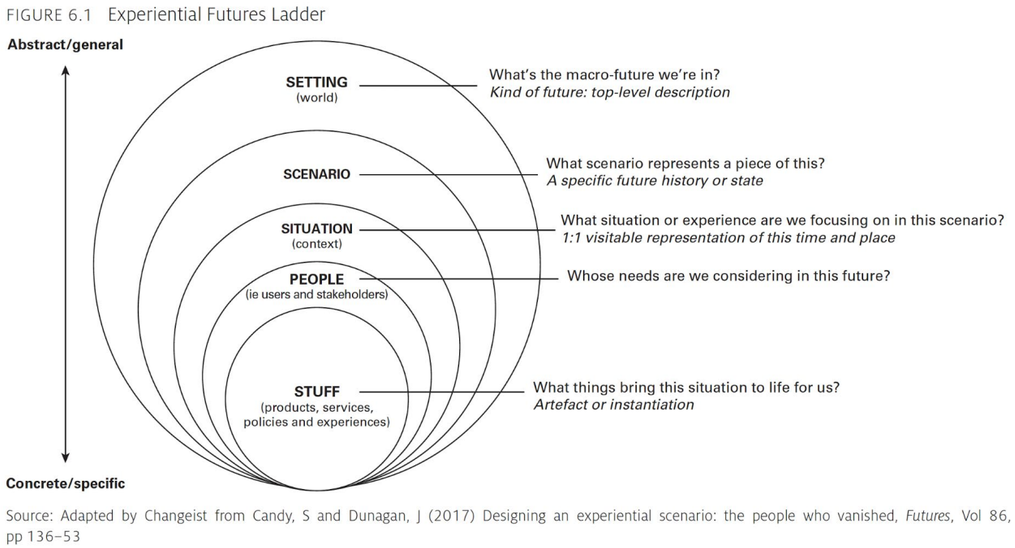


Figure 16. Experiential futures ladder (Smith, 2020)

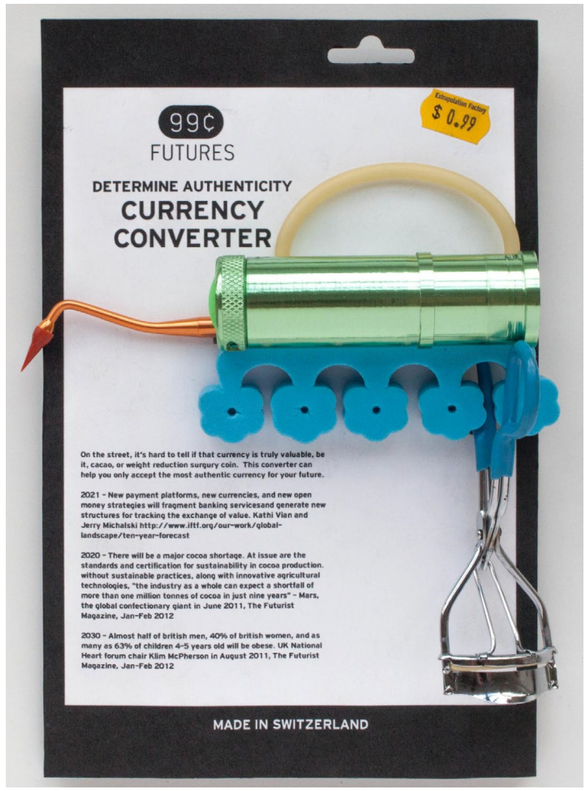


Figure 17. Example future prototype from Extrapolation Factory (Woebken & Montgomery, 2013).

Section 1 - Foresight

Chapter 3 - Sensing

In chapter 3, research setups are shared of an ongoing literature consultation, interviews with experts on health and disinformation and interviews with doubting or distrusting citizens.

Literature consultation research setup

The goal of the literature consultation is two-fold. First, I want to gain an understanding of the disinformation system (systemic design). The second goal is to find patterns of change in the disinformation system (futuring).

My literature review consists of focussed and active searching for and reading of material, but is mostly an ongoing activity of reading the news, social media, articles and more. I've made sure to have a breadth and depth of sources: variety, type, viewpoint, scale (Smith, 2020). For each of the research goals, insights are gathered. See Appendix 4 for more details on the research setup.

Expert interview research setup

The research setup for the expert interviews has the same goals as the literature consultation: gaining understanding of the disinformation and finding patterns of change in the disinformation system.

I will hold semi-structured one-on-one interviews of 1 hour long. The interviews were recorded and insights gathered. The research is approved by the Human Research Ethics Committee at TU Delft. The full research setup can be found in Appendix 5. The participation list can be found in Table 1.

Interviews with distrusting citizens

In a third research track, I have interviewed distrusting citizens to understand their perspective better. In semi-structured one-on-one interviews of 1 hour I will try to answer the question: what are the personal stories of doubting and distrusting citizens? The research is approved by the Human Research Ethics Committee at TU Delft. The full research setup can be found in Appendix 6. The participation list can be found in Table 2.

Results from sensing activities

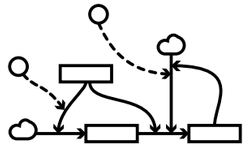
Data from the interviews are directly interpreted into Chapter 4 - System map, which acts as a combined results and discussion section. It is supplemented over the course of this project with data from the ongoing literature consultation. Data from the interviews and literature consultation contributed to a database of trends and drivers (Appendix 9). This is interpreted in Chapter 5 - Driver/trend analysis, which acts as a discussion section.

Code	Description	External/ internal
A	Communication advisor for COVID-19 in the Communication department of the Ministry of HWS	Internal
Jaron Harambam	Assistant Professor of Participatory AI at the Athena Institute, VU University Amsterdam. He is expert on conspiracy theories, news and platform politics.	External
C	Professor of Genetics	External
Catarina Dutilh Novaes	Professor at the Department of Philosophy of the VU Amsterdam, working on disinformation	External
F	Scientific researcher at a government research institute	External
G	Stakeholder disinformation at the Ministry of Health	Internal
Ginny Mooy	Expert in anthropology of infectious disease & public health crises	External
J	Data researcher doing research on disinformation on Twitter	External
Stijn Sieckelinck	Lector HVA on youth radicalisation	External
Michael Hameleers	Assistant Professor in Political Communication at the Amsterdam School of Communication Research (ASCoR)	External

Table 1. List of expert participants

Code	Description
H	Covid-sceptic
E	'Alternative' opinion on health

Table 2. Distrusting citizens participants



Chapter 4 - System map

In Chapter 3, data is gathered. In Chapter 4, the data is interpreted and translated into a system map of (dis)information. After an introduction for the framework, I will go into more detail about the different mechanisms. The behaviour of the system is explained, illustrated by the COVID-19 pandemic. Then, leverage points for bringing balance in the system are presented.

Chapter 4.1 System map: Mechanisms of the system

System map setup

The system map consists of two main axes (Figure 18) that form a framework for understanding the (dis)information system. The first axis is that of different groups drifting from trust to doubt to distrust. Based on interviews with Michael Hameleers (Assistant Professor in Political Communication at UVA) and Stijn Sieckelinck, Lector Youth Spot (jongerenwerk) at Amsterdam University of Applied Sciences. The second axis shows the spread of information, based on the main stages proposed by Posetti & Bontcheva (2020b), who comment 'The circuit of disinformation can be assessed in terms of its production, transmission and reception/ consumption'. I added the step of behaviour in this framework, based on the effects disinformation has, explored in chapter 1.

A split is identified between desired and undesired variants of the steps. On the left side, production, transmission, reception of 'true' information that informs 'desired' behaviour. Desired behaviour is, for example, good for public health or democracy. On the undesired side, production, transmission and reception of 'false or misleading' dis- or misinformation leads to 'undesired' behaviour. This means behaviour that is bad for public health or democracy. Doubt can be identified as the bridge between trust and distrusting, between desired and undesired.

This line is in reality very blurry, and it is not my intention to create a black and white world. However, this distinction is useful for understanding the system and finding deeper understanding, nuances and exceptions.

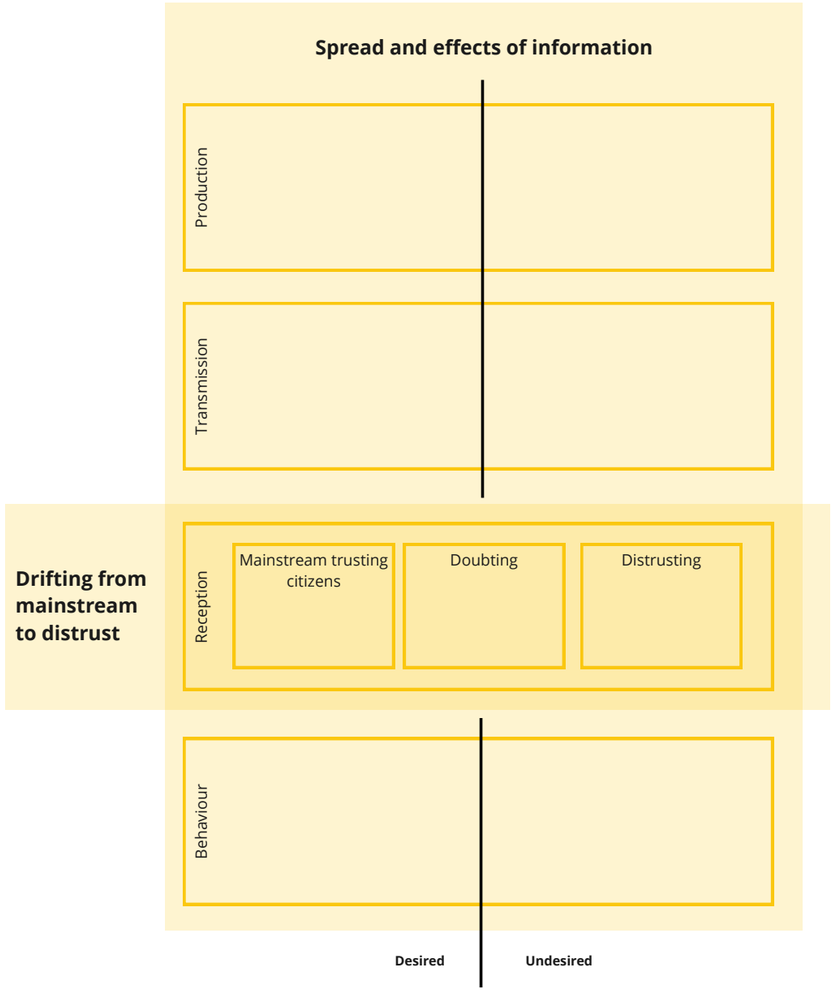


Figure 18. Framework of the system with two axes.

Doubt and distrust

First, I will dive deeper into the first axis of 'drifting from mainstream to distrust'. There are three stocks. The first is the amount of citizens that believe the main paradigma and trust the government and epistemic institutions like the RIVM or universities. These citizens believe in vaccinations, believe in climate change, that society is governed by a democratically chosen government. But, from this group people can start to doubt the paradigma and most of all the information from epistemic institutions. This forms the second stock. Finally, doubt can turn into distrust. Distrust of the government, epistemic institutions, the mainstream.

In the system map (Figure 19), these three stocks are shown, together with a cloud, that marks a system boundary. Citizens are born or migrate to the Netherlands and, for simplicity and relevance, I have chosen that every 'new' citizen enters in the mainstream group. Furthermore, between the stocks, arrows go both ways as doubting or distrusting is not a permanent state, although, as I explain in chapter 5, losing trust is easier than winning back trust.

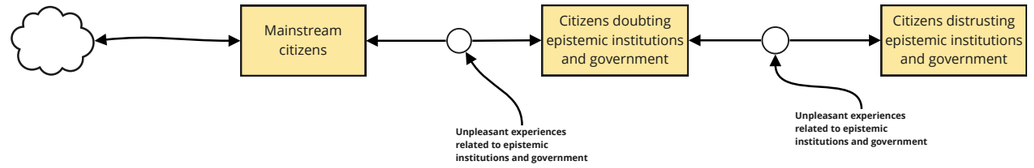


Figure 19. First part of the system, the axis of 'Drifting from mainstream to distrust'.

Doubting, searching, drifting

The flow from citizens towards doubt is influenced by several factors. Michael Hameleers (Assistant Professor in Political Communication at UVA) states that low level doubts are the entrypoint to believing disinformation. These doubts are often well founded. Take examples like the 'mondkapjes deal' or doubts about the effectiveness of the vaccine and being overwhelmed by proof where real and fake are not easy to distinguish. It's often the transparency from government and institutions that is lacking, which leads to doubts. 'They mislead me on purpose' or 'You see, they also don't know anything' are thoughts that can arise. Jaron Harambam also talks about distrusting the official truth as the starting point into believing disinformation and even conspiracy theories (Ivkovic, 2021). Stijn Sieckelinck, Lector Youth Spot (jongerenwerk) at Amsterdam University of Applied Sciences, mentions that not so well handled mistakes by institutions fuel disinformation.

Personal experiences with government institutions can also lead to doubt. This is what I encountered in my interviews with doubting and distrusting citizens. They had personal severe health issues and experienced that 'western' healthcare didn't help them. They gained interest in Chinese medicine and from here started a journey of searching for the truth. People that experienced difficult things because of institutions and measures, are more likely to believe disinformation according to Sieckelinck.

Sieckelinck said in the interview that the spread and belief of disinformation works best amongst people who say "I think further than others" and "I'll decide for myself what is true". This is also what I found during my two interviews with people with 'alternative' ideas. Participant E said "I'm not somebody who just believes everything".

A note on the positive sides of doubt. Doubt in itself is not per se bad. It is a cornerstone of a democratic society and it is the source of good debate. Everybody doubts and this makes the government think about its choices. However, doubt can be the gateway to distrust.

Distrusting, finding others

The further drifting of doubt to distrust is fueled by several motivations. Sieckelinck says "the further people drift away, the more headwind they get for their ideas, and the louder they will go against the dominant view." Besides this, citizens who doubt, try to find others that will support them. In search of answers and belonging they start to distrust the government and epistemological institutions, organisations where research is done to find knowledge.

Distrusting citizens have a lot of things in common. 'Conspiracy theorists' identify all with the idea of 'critical free thinkers' who question the status quo (Harambam, 2017). They distance themselves from the 'sheeple' in the mainstream, that trust and belief in epistemic authorities. On the other hand, they also distance themselves from the 'real' conspiracy theorists. I'm not one, they are! In this way they emphasise their own rationality and superiority.

Although there are similarities, the group of distrusting citizens is not monolithic. There are three currents (Harambam, 2017):

- Activists: this group identifies by trying to push their beliefs, sometimes militantly, to the general public.
- Retreaters: this group starts by changing themselves, by setting the example and through inspiration/radiation convey their

ideas. They don't want to push it and use negative emotions like activists

→ Mediators: this group believes in connecting the general public to 'thinking critically' and conspiracy theories. They are against the use of fear by activists, but also think you should spread the ideas to people in the mainstream instead of only to ones who already belief (retreaters)

Furthermore, Harambam (2021) notices differences between conspiracy theorists. For example, citizens challenging climate change, believe and use scientific methods to try finding the real truth. Anti-vaccination groups however, believe more in holistic and new age influenced ideas on health and the body. Also, his book 'The truth is out there', clarifies that not all conspiracy theories are pushed to the extremes. Theories like lizard people or Qanon do, but there are far less extreme ones.

To conclude, I have set a basis of the framework with a detailed explanation of the path from trusting to distrusting. Several motivations can be identified for citizens to flow from one group to the other.

The effects of information on doubt and trust

One aspect that influences the flow towards doubt and trust too, is information (Figure 20). It can take away doubt in the paradigma. In a much simplified way, 'true' information helps with giving trust in the paradigma. However, the amount of information can create doubt. Too little information makes people insecure about what is happening, too much information can give an overload, making it harder to find and distinguish true from false.

On the other side of true information is false information. As explained before this can be produced with malicious intent, which makes it disinformation, but it can also be without intent, which makes it misinformation. This false information causes doubt, it conflicts with the 'true' information and often proposes new theories for explaining phenomena. The pull from both information and false information makes citizens trust, doubt or distrust.

In the system these mechanisms are depicted by two boxes (Figure 20). The arrows show the influence of the amount of transmitted information or false/misleading information. Both misinformation and disinformation belong to the stock of 'transmitted false and misleading information'. Although intent differs, the actual content and effects are the same. Transmitted information is information that actually makes it to a citizen. For example through the news, other people or social media platforms.

Spread of information

Production

Transmitted information first needs to be produced to be transmitted and received (Figure 21). Different disinformation tactics are used in this production stage (Tilt Studio, 2018). The first is **impersonation**, where a producer of disinformation creates a fake account for a real or fake 'expert' on the topic which endorses the disinformation. Another way of impersonation is the faking of a legitimate news website that spreads disinformation and is used to add legitimacy to the disinformation spread on social media. The second is the use of **emotional** content. This is not necessarily true or false, but it plays on the emotions of citizens, like fear or empathy. Emotional content riles people up to believe disinformation or to act on it in a certain way. The following tactic is **polarisation**. The content is used to further enlarge the gap between political left and right. Then there is the use of **conspiracy theories**, which are theories where powerful and covert organisations orchestrate unexplained or hard to understand events. It makes it possible to legitimise disinformation within a framework. Often these also play on the emotion of people. **Discrediting** is the act of countering any critique on you as a producer of disinformation or the disinformation itself by attacking the source of criticism. Lastly, producers of disinformation use **trolling** to invoke reactions from people in the (digital) media space. By using 'bait', a conspiracy theory or emotional content is used to spread disinformation.

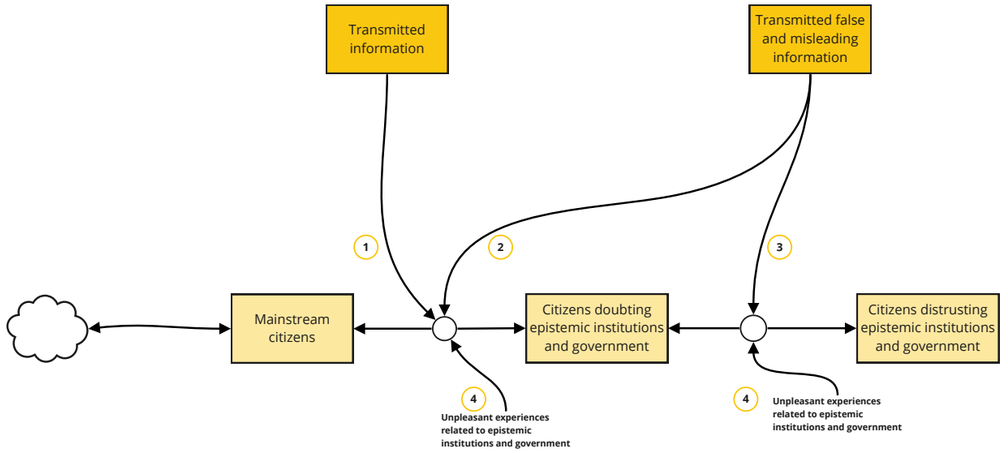


Figure 20. Information added to the system map. (1) Transmitted information can create answers for doubt, preventing doubt to flow into distrust. (2) False and misleading information can make citizens doubt or (3) distrust epistemic institutions and government. (4) Unpleasant experiences related to epistemic institutions or government can cause doubt and distrust.

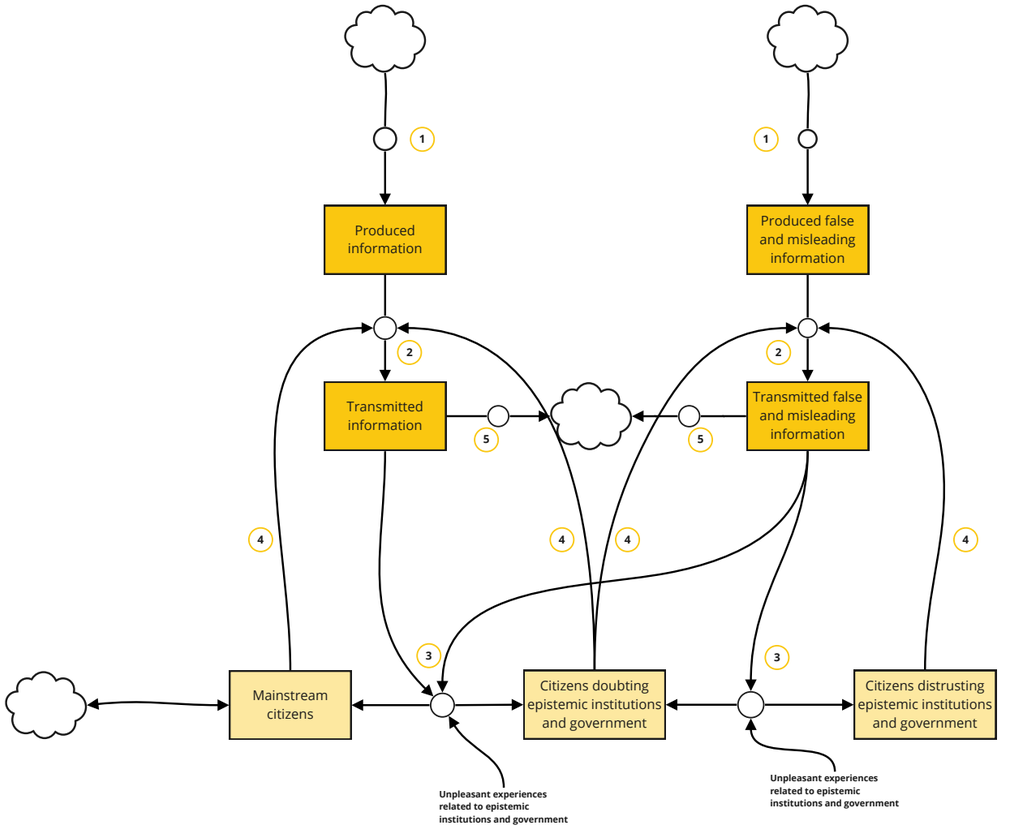


Figure 21. Spread of information added to the system. (1) (Dis)information is produced. (2) This information is transmitted through many possible media. (3) The information is received and if given attention and trusted is engaged with. (4) Information is reproduced. (5) Information is 'lost' and not actively playing a role in the system anymore. For example by newspapers being thrown away or social media content getting lower on timelines.

Transmission
The dis- or misinformation is transmitted through media channels or people (Figure 21). It is the bridge between the producers of disinformation and the people who read/see/hear that information. In the current day and age there are endless opportunities for people to spread information. For the purposes of this I identified some typologies in Appendix 8 for media that can be useful in my research.

Reception
When the information is transmitted, the next stage of (dis)information is the reception (Figure 21). It arrived at the viewer/reader/listener. The model of Dutilh Novaes explains what aspects play a role in engaging with the content (2020).

Attention
There is an abundance of information, the first thing somebody does is give attention to some of that information, and to some not. More sensational or outspoken content gets more attention.

Trust
When attention is given, people will decide if the piece of information can be trusted or not. What confirms one's worldview more is more trustworthy. It is important who a citizen trusts, because that is the information that shapes behaviour.

Engagement
Then, after attention and trust is given to the source, the person will engage with the content.

Reproduction
Based on the decision if information is true or false, the recipient may share the information. In the system, this is how transmitted (dis) information grows. An interesting note during my interview with respondent G was how he mentioned that disinformation starts with a small group, sometimes fueled by outside states, and then spread. At some point it becomes misinformation as "the people" will spread it unconsciously. "I always say, Jan from the street corner, that's the one who picks up on it. He thinks 'damnit, the government tries to undermine me, everything is badly organised, it has to change!'. Jan from the street corner then goes on and tells it to everybody that he knows and we get the trickle down effect that it [a piece of disinformation] comes through in every corner of society." Reasons for sharing disinformation are ignorance of the topic, individual egos, a misguided intention to be helpful or simply human error (Posetti & Bontcheva, 2020a).

In the simplified system (Figure 21), mainstream and doubting citizens reproduce information, while doubting and distrusting citizens reproduce false and misleading information. Ofcourse, there will be exceptions, but this is the most clear way to understand the system.

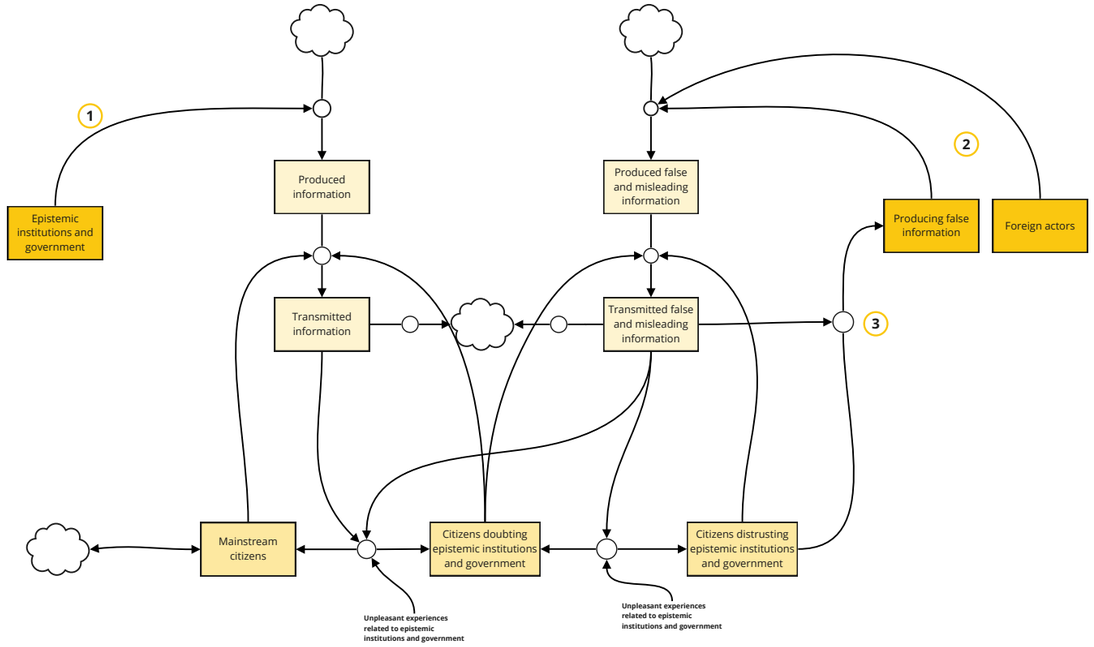


Figure 22. Producers of information and false and misleading information added to the system map. (1) Epistemological institutions create robust information, governments make decisions which are shared as information. (2) Distrusting citizens who actively produce disinformation and foreign actors increase the amount of false and misleading information. (3) Distrusting citizens will become producers of disinformation because of false and misleading information.

Production of information
The next piece of the puzzle shows how information flows from the cloud to the stock of produced information. This answers the question "who produces (dis)information?". First producers of disinformation are discussed, then producers of information (Figure 22). Again, this is a simplified model of reality. In fact, the producers of information, sometimes also produce false or misleading information, however they will not have the intent of spreading false information.

Disinformation is produced by citizens who are not only distrusting, but also, knowingly, want to contribute to enlarge doubt and distrust in society. This is the more radicalised and vocal group of distrusting citizens. There are several motivations for production disinformation, which means to share untrue information with intent (Posetti & Bontcheva, 2020). The first is to undermine confidence and start doubt in society. Secondly, people want to score political advantage. Then there are the reasons to make money, shift blame of a problem to other groups and to polarise people. The group of citizens that flow from distrusting to producing false information, is enlarged by false and misleading information. So, the more mis-/disinformation there is, the larger the group of producing citizens will become.

Not only do internal actors have a role in producing false or misleading information, foreign actors can use disinformation to influence the Netherlands or disrupt society.

On the side of information, there are the epistemological institutions like scientific organisations, universities, journalists and the government. They create 'true' information, that is true in all probability through rigorous research.

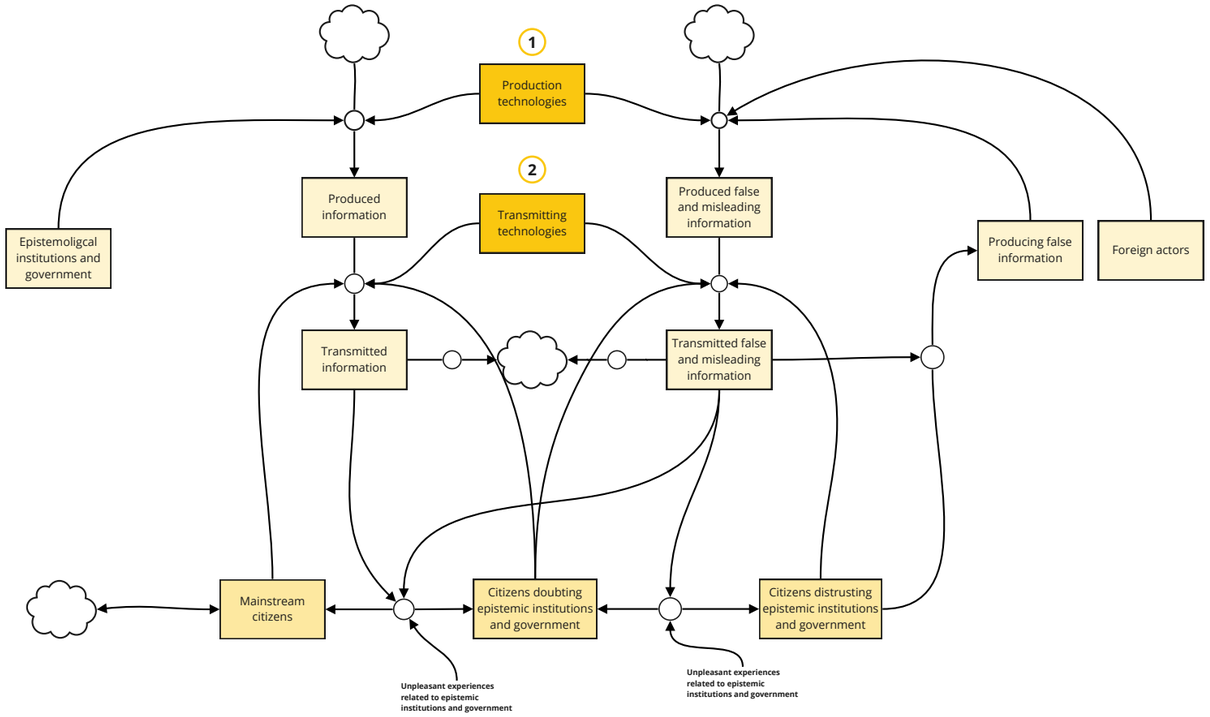


Figure 23. Technology added to the system map. (1) Production technologies like the computer or camera's amplify produced information. (2) Transmitting technologies like the internet and social media amplify the amount of transmitted information.

Technology

Technology plays an important role in the (dis) information system. There are production technologies like cameras, laptops, writing programs etc, that make it easier to create content. Then there are transmitting technologies like social media platforms, internet, television etc. These technologies enlarge the amount of information somebody can get. The more technology you have, the more power you have to spread your information.

Technology is the main amplifier of the amount of produced and transmitted information (Figure 23). With modern technology, information is increasingly easier to produce and spread. Indirectly, technology influences the flow towards doubt and distrust. This is exemplified by social media algorithms showing (transmitting) only certain information towards certain citizens. More on these developments in chapter 5.

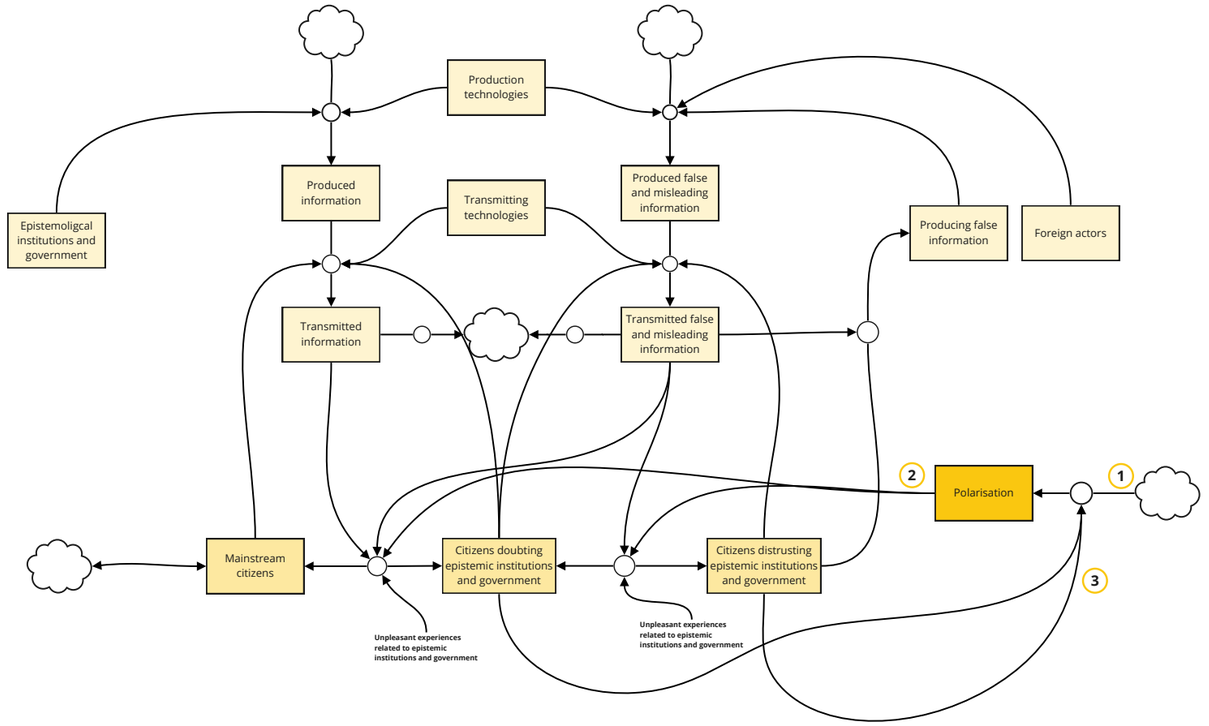


Figure 24. Polarisation added to the system map. (1) Polarisation has multiple reasons for happening, which are outside of the scope of this project, indicated by the cloud. (2) Polarisation has two arrows, amplifying doubt and distrust. (3) The stocks of doubting and distrusting citizens influence the stock of polarisation too.

Polarisation

Next to information, another relevant factor that causes distrust is the polarisation in society (Figure 24). It makes people have a more extreme opinion and go further away from the mainstream. With polarisation comes the forming of polarised echo chambers, online or offline social networks in which outside sources of information are actively excluded. From a paper by Prieto & González (2021), the following excerpt states how polarisation, disinformation and distrust are linked: *"[...] a population might have relevant levels of polarisation or fragmentation, people tend to have more interactions with others with similar views, so they are more frequently exposed to the information that aligns to their values (confirmation bias). Users tend to aggregate in communities of interest, which causes reinforcement and fosters confirmation bias, segregation, and polarisation and leads to the proliferation of biassed narratives fomented by unsubstantiated rumours, mistrust, and paranoia."* Vice versa, doubt and distrust amplifies polarisation in society, which is further explained in Chapter 5.

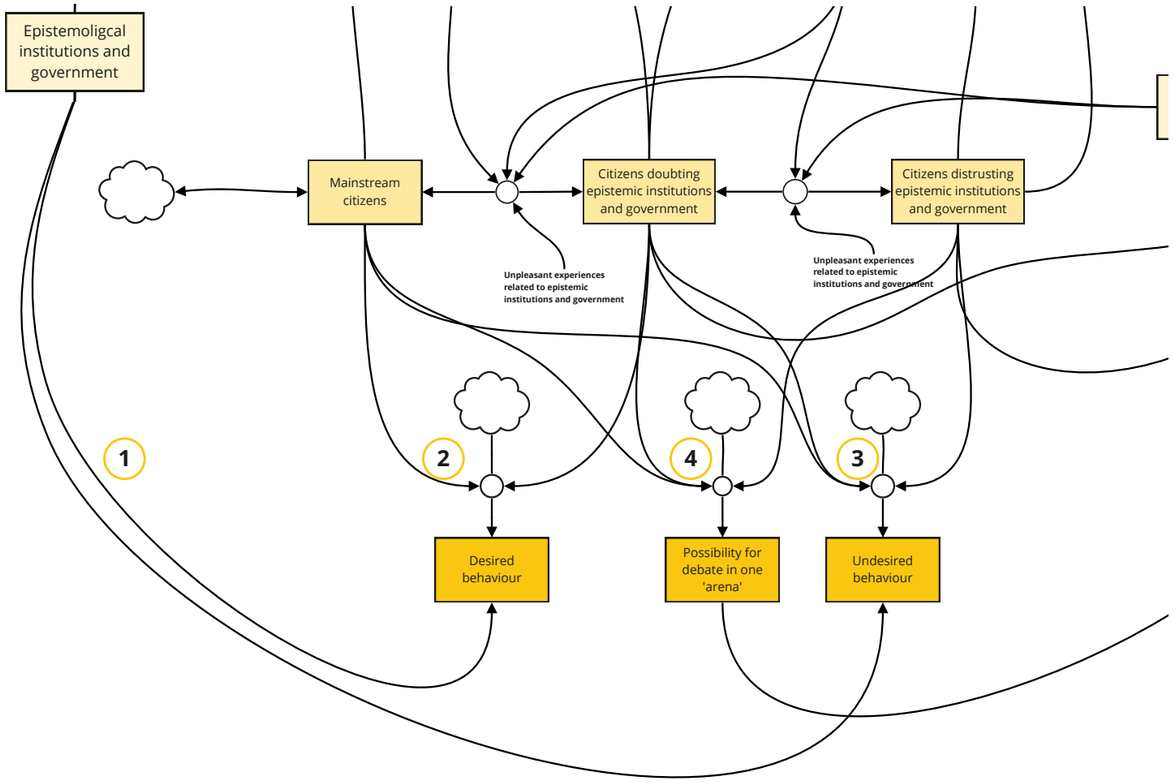


Figure 25. Behaviour added to the system map. (1) Epistemic institutions and government research and decide what is the safest behaviour for society. (2) Mainstream and doubting citizens behave in a desired (safe) way. (3) All citizens sometimes show undesired behaviour, however distrusting citizens will do this more. (4) The possibility for debate in one 'arena' is increased or decreased by the proportion of mainstream/doubting/ distrusting citizens.

Behaviour

The main reason why the (dis)information system is important, is that information influences behaviour (Figure 25). Linking it to the dangers as described in chapter 1, examples of desired behaviour are good for public health, like following measures or taking the vaccine. Undesired behaviour on the other hand, such as not taking the vaccine or taking dangerous medicine, is bad for public health.

In the simplified system of Figure 25, desired and undesired behaviour is informed by epistemological institutions. Mainstream citizens show desired behaviour. Doubting and distrusting citizens show undesired behaviour. Naturally, and as emphasised before, this is not always the case. There are mainstream citizens, who trust the government, who do not adhere to desired behaviour, and doubting and distrusting citizens who show desired behaviour.

Furthermore, in a broader democratic sense, the possibility for public debate is undermined by both mainstream and distrusting citizens. This is due to the mechanisms of information influencing doubt and distrust, and the mechanism of polarisation. Citizens only believe their own information, while ignoring outside views. This makes it harder for public debate to happen. This is apparent in the names polarised groups call each other, like 'sheeps' for people trusting the government, or 'wappies' (crazy person) for citizens doubting or distrusting the government and showing undesired behaviour.

In the system, the possibility for debate is influenced by the different groups of citizens. More doubting and distrusting citizens, create less and less people in the same 'arena' that is the mainstream group. A lower possibility for public debate increases polarisation (Figure 25).

Balance in the system

In the previous sections, the system is explained step by step. Now that the full system is mapped, it is important to elaborate on the behaviour of the system. The first state of the system is balance, while the second is disruption, which will be discussed in the next section.

In balance, there are flows between the trusting, doubting and distrusting groups, but the stocks stay at more or less the same levels. Doubt, as it is a good thing, is present in this balanced society, however, information from epistemological institutions helps citizens to gain understanding and trust. There is not too little information and also no overload. False and misleading information still exists, but is countered by information. Also, distrusting citizens are not in a high enough number to reproduce disinformation in such large amounts that the system will escalate. Polarisation levels are low, which lead to lower doubt and distrust. There is room for debate amongst the whole of society. Finally, in a balanced system, desired behaviour predominates.

Crisis (and elections) disrupt the system

Crisis (and elections) can disrupt a balanced system (Figure 26 on page 43). In this thesis I will only highlight crises, as elections are not directly relevant for the Ministry of Health Welfare and Sports. It is, however, good to understand elections can have a similar disrupting role in the system, because this helps understand the challenge for the Ministry of Internal Affairs, which oversees disinformation efforts in the government.

Crises cause doubt in society. The topic of a crisis doesn't matter. Events are unclear and unpredictable and there is no information yet to help understand the crisis. The information vacuum is filled by false and misleading information, which often gives clear answers to the questions citizens have. Flow to doubt and distrust are amplified by this new information to disinformation ratio. Montagni et al. (2021) comment: "The large spread of misinformation about Covid-19 might be explained by the initial scarce knowledge about the virus among the scientific community and politicians. Confusion generated by the plethora of news across media could have nourished misinformation and lack of trust in scientific evidence, especially in a situation where people have been looking for immediate and reassuring answers regarding the SARS-CoV-2.5."

During crises, polarisation increases, as often hard decisions have to be taken. The options are further apart, and everyone has to have an opinion. With the higher amounts of polarisation, doubt and distrust is even more amplified. "Crises increase polarisation in society", says participant F, a scientific researcher at a government research institute, in our interview.

With modern technologies, the amplification of disinformation, distrust and polarisation is going even faster than in the past.

All these mechanisms make the system escalate. Because there are more citizens who distrust the government and epistemic institutions, disinformation will be produced and shared more. In turn, this will lead to an increase in doubt and distrust, which will create more polarisation, more produced and transmitted disinformation. Eventually, the biggest danger of this escalation, undesired behaviour for democracy is happening.

Three nuances have to be mentioned. First, crises are not the only themes we see disinformation about, for example about 'sunscreen free' or the conspiracy theories in Bodegraven. However, this will not disrupt the system on a societal level the way crises do. Second, crises are complex phenomena. In the starting phases complex societal dynamics are at play. For example, people tend to trust the leader of the country more in the beginning of an all encompassing crisis like COVID-19 or a war. Still, distrust is increasing during a crisis as described above. For the usefulness of the system, I've chosen to simplify these dynamics. Third, crises are not all of the same size, which influences the degree of disruption caused by a crisis. It does seem multiple smaller crises combined can disrupt the system or keep the system unbalanced.

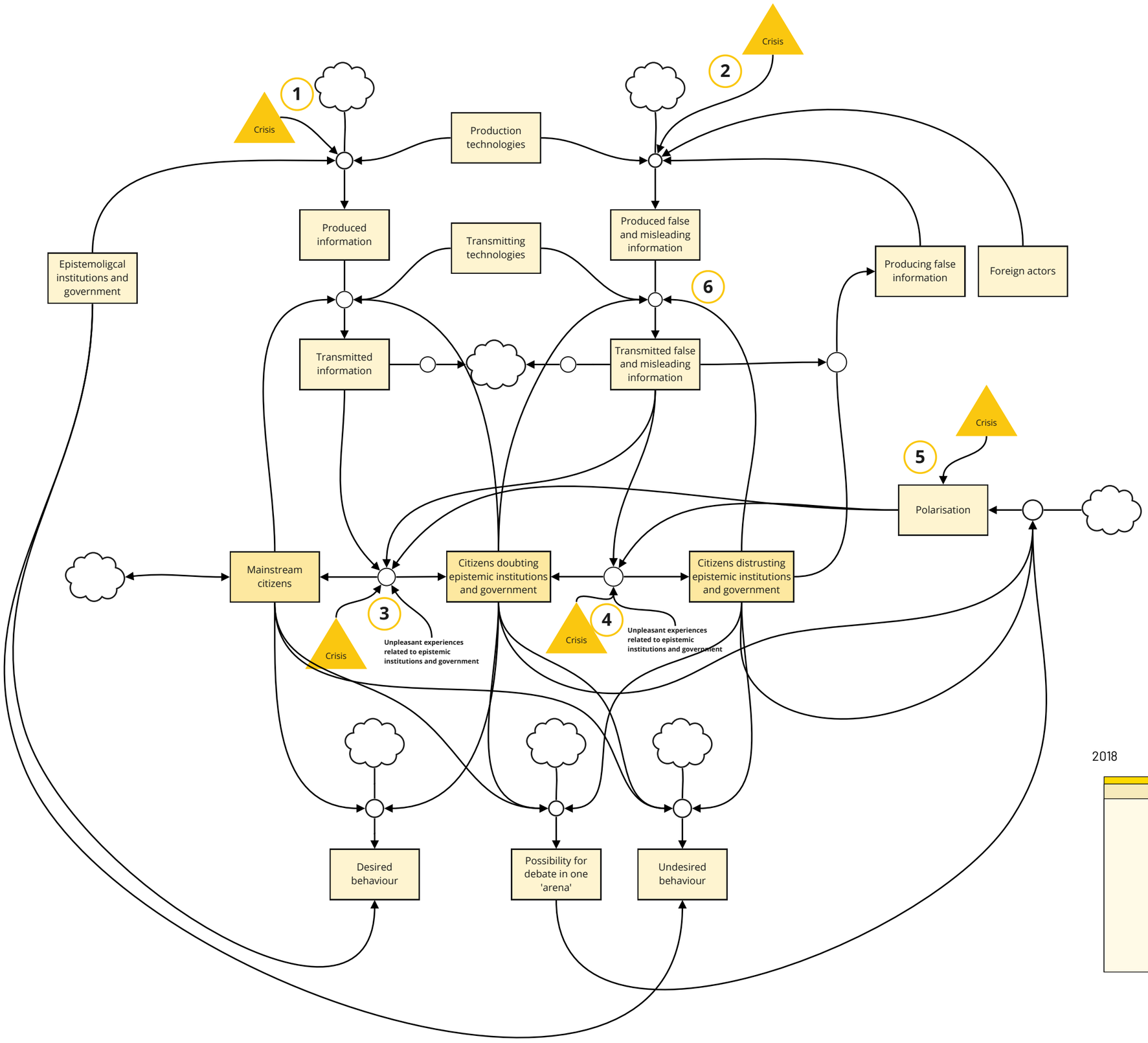


Figure 26. The influence of crises added to the system map. (1) A crisis makes it difficult for epistemic institutions and government to create robust information. An information vacuum arises for (2) false and misleading information to fill the information space. (3) This creates doubt and (4) distrust. (5) Because of the crisis, polarisation grows, leading to more doubting and distrusting citizens too. (6) More doubting and distrusting citizens mean that more false and misleading information is shared, in turn increasing doubt (3) and distrust (4). This is a reinforcing feedback loop, creating disbalance in the system.

Recovery

When the crisis calms down, the system calms down too (Figure 27). "There will always be hardliners spreading disinformation, but most will be less prone to disinformation and less likely to spread it during periods of calmth", says participant G. This is because the 'true' information gets back up to speed, giving more clarity, polarisation backs down and less doubt and distrust is present in society.

However, although the system can back into balance, this takes years. Respondent G explains, "Maybe if nothing really happened for 20 years, we'd have a different conversation. But until those 20 years, until we are 20 years further, COVID is really still fresh in everyone's memory." There are several reasons for this. First, the more encompassing and longer a crisis, the larger the impact on these phenomena. Second, It takes longer for the fringe and doubting groups to gain trust again than it was to lose it. Third, In the wake of a crisis, other topics than that of the crisis that initially amplified distrust and disinformation are spread more easily, giving new reasons for doubt and distrust, even if these crises are less impactful or long.

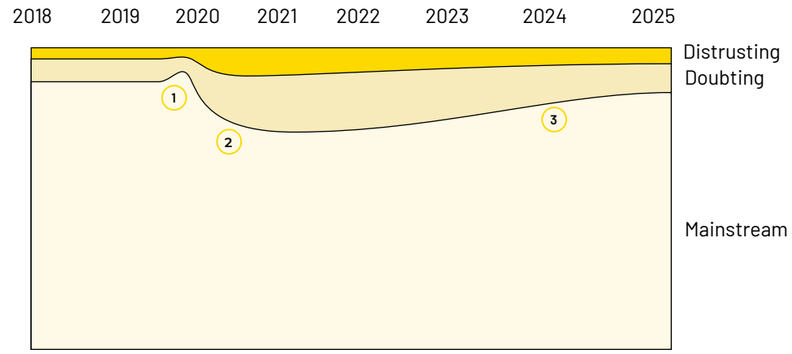


Figure 27. Stock height (amount) of trusting, doubting and distrusting citizens over time. (1) A crisis occurs, and trust is initially increasing. (2) However, after a while, doubt and distrust increases quickly. (3) In the aftermath of a large crisis, it takes longer for doubt and distrust to decrease than it started.

Example of COVID-19 pandemic
During the COVID-19 pandemic the (dis)information system escalated in unbalance. We can use the system map to better understand what happened.

Distrust increased after an initial peak in trust. "We first didn't even see a lot of disinformation around health, but then the crisis happened", says Respondent G. Disinformation filled the information vacuum that existed after the outbreak of corona. Citizens doubted and distrusted the information of epistemic and the government more. A restriciton of citizens' personal freedom further amplified distrust. "Because of the pandemic, the distrusting group has gotten larger," says participant G.

The reinforcing feedback loop (Chapter 2) in the system created unbalance. As the doubting and distrusting group grew, disinformation was shared more and the amount of disinformation producers grew, according to internal research by studio Tilt! This further increased doubt and distrust, further amplifying the amount of disinformation...

In the wake of the pandemic, new disinformation themes arise, and it seems like the grown group of producers and believers of disinformation just jump onto the next topic too. We've seen this in the beginning of 2022. Examples like Monkeypox, where the main storyline was that big pharma allegiadly created the virus to sell vaccines. Or the sunscreenfree hype, where a research showing sunscreen getting into seawater is dangerous for coral is used to argument that sunscreen is not preventative of cancer but increases the chance of skincancer. A affiliate marketing link to 'better' sunscreen was provided, clearly showing the monetary motivations for sharing disinformation.

Now, with a new COVID-19 vaccination campagne and the winter coming, disinformation is again spread under hashtags like #vaccinatieschade (Vaccination harm).

However, participant G says: "Maybe if nothing really happened for 20 years, we'd have a different conversation." The system will gain back balance as described above, but with crises like the Farmers protests, Ukraine or the Energy crisis happening, disinformation has a lot of chances to increase doubt and in turn distrust. In Chapter 5, I will continue exploring drivers and trends to create a plausible future to anticipate.

Chapter 4.2
Leverage points

In Figure 28 on page 47, the green ellipses show the different opportunity areas for the Ministry of HWS. They are called leverage points (Meadows, 2008), which means that turning these points can change dynamics in the system. Throughout my desk research and expert interviews I've collected these points.

The goal of these leverage points is bringing balance to the system, not eliminating false information, that is not possible. This balance happens when doubt is resolved with 'true' information. Based on that information, they exhibit safe behaviour. In a balanced system, citizens can detect false information and know to ignore it. There is more produced and shared information than there is false information. Some citizens start to distrust the epistemic institutions, but there are not enough to bring the system out of balance.

To achieve this system balance, Hameleers stressed in our interview the importance of working on multiple interventions. In the following sections, possible starting points for interventions are presented.

Information from government
Leverage point goal: less doubt and distrust

The first leverage point to bring back balance into the system is information given by the government. There are several possibilities for interventions within the leverage point.

Firstly, it is important to think about ways to provide robust information before disinformation has a chance to spread. The first piece of information that somebody sees is the reference point. Changing a belief (debunking in case of a belief based on false information), does not reach the same amount of people as the information the belief was based on (van der Linden, 2022). In situations like the COVID-19 pandemic, the government needs to quickly produce knowledge, but also have ways to transmit this information quickly to citizens. The question is how to do this.

Next, it is key to be transparent about how the knowledge is created and how decisions are made based on that information, says Hameleers. There are multiple examples where this was not the case, for example during the pandemic with the 'Face mask affair' involving Sywert van Lienden, or in the Uber case around Neelie Kroes. Starting with transparency can take away doubt and create trust with citizens. Taking this strategy can have risks, especially when the government is transparent about not knowing yet. This can create a knowledge vacuum for false information to answer to the public's need for knowledge. Dealing with transparency needs consideration, but experimenting with full transparency on a local topic might be interesting.

Another starting point is trying to make information more engaging. According to Sieckelink, emotional content works best. With more engaging content, the government can gain higher attention and spread the 'right' information faster. The information landscape is filled with large amounts of emotional and attention grabbing content. The government and epistemic institutions need to take the battle for attention seriously, as "They forget to include the emotional side of things." according to Posetti & Bontcheva (2020a). Participant C mentions his irritation with the often difficult way science is presented in the media. Although a government needs to stay 'neutral' and 'official' in some way, a nuanced way of creating more engaging content is necessary.

With quick, transparent and engaging content, the government is more trustworthy and takes away doubt. However, it is also important to provide clear information in the overloaded media landscape. People have a hard time understanding where one can find trustworthy information (source). The Data and Design team in the COVID-19 Information department, already tries to create online platforms that try to bring together multiple sources of information, as one true source of COVID-19 information (mijnvraagovercorona.nl).

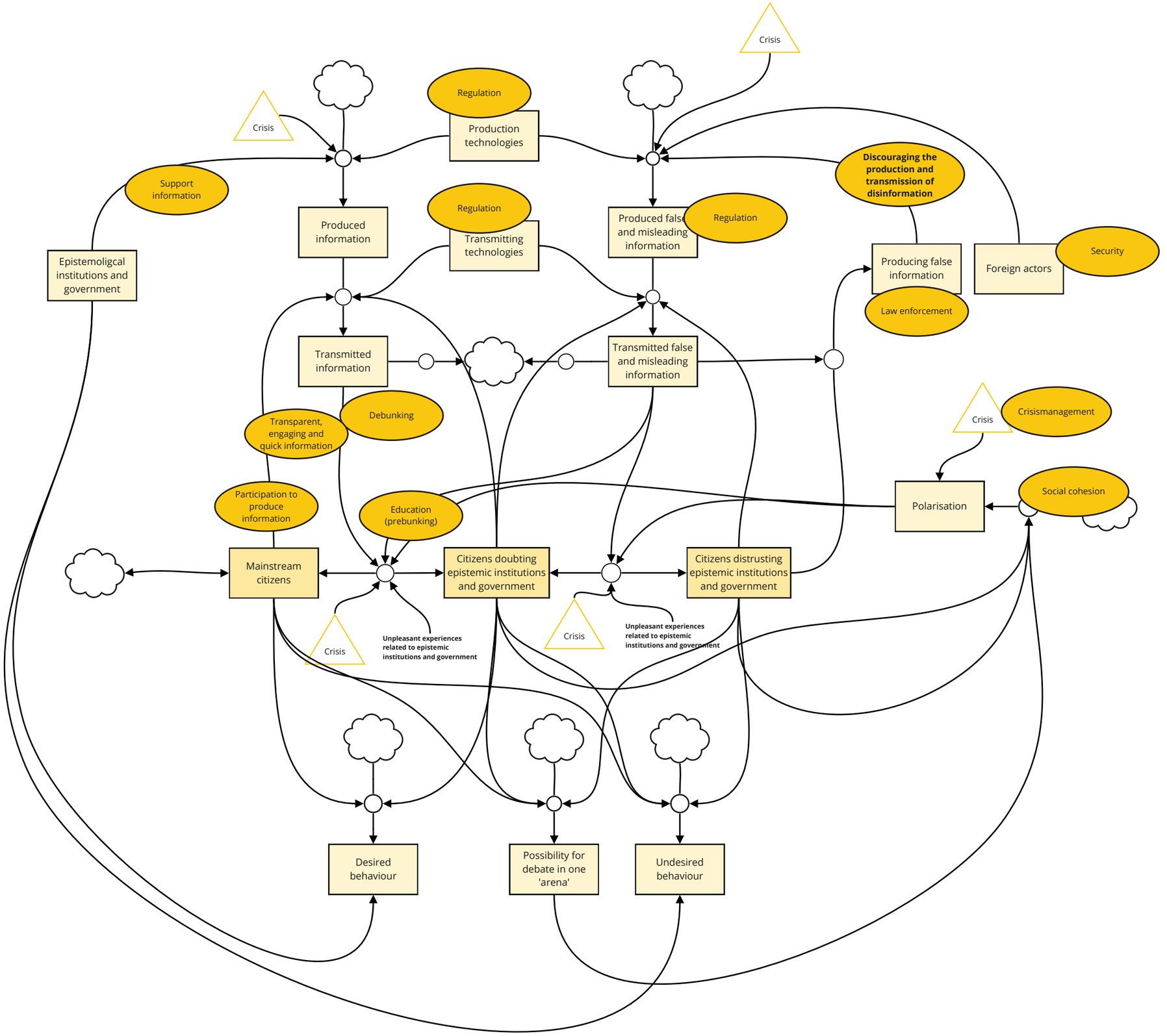


Figure 28. Leverage points mapped onto the system

The final leverage point for information is in its transmission, using leaders in the vicinity of citizens. Stijn Sieckelinck, Lector Youth Spot (jongerenwerk) at Amsterdam University of Applied Sciences, advises to use role models in the vicinity of people, like teachers, sport coaches and general practitioners. This is also what participant F, a scientific researcher, noticed in his literature review on the topic. These are people that citizens trust. When hearing information from them, there is a higher chance of achieving the desired behaviour.

A challenge is finding the right target groups that lost trust in governmental information, and then to find the role models that these citizens do listen to. There are already initiatives in the COVID-19 department, where general practitioners play a role in the vaccination campaign. It could be interesting to investigate the outcomes of that and look into how the government can use the tactic more.

Debunking

Leverage point goal: less doubt and distrust

The next leverage point is trying to correct false information: debunking. The goal is to change the beliefs of people that are based on false information. It starts with fact-checking information: news articles, social media posts, videos and more. There are several institutes that do this such as Nieuwscheckers Leiden and Poynter or individuals like Mark van Ranst. After it is established a piece of information is true or false, it is communicated that this is the case, and if it is false, accompanied by the true information. This is done by the government, news outlets or on social media. An example is the covid FAQ (frequently asked questions see Ministerie van Algemene Zaken, 2022b) by the government and the WHO 'mythbusters' page (WHO, 2022).

Some best practices include leading with the truth, coherence, easy access, repetition, delivery by a highly credible source and ease of understanding (Ecker et al., 2022; van der Linden, 2022; Walter et al., 2020).

Debunking is a difficult leverage point with several downsides. First, fact-checking is hard, as providing information is true or false is a time-consuming and difficult process. It assumes that the debunker knows the 'real' and objective truth, but this statement is hard and unprofessional to maintain, as scholars cannot be fully objective and are influenced by the context. (Harambam, 2021b)

Second, changing beliefs after those beliefs are shaped by (fake) information is also difficult. Fact checks have less traction than the original disinformation and if the debunking is not done correctly, it can result in people believing the false information even more (van der Linden, 2022). Often disinformation is linked to conspiracies that distrust epistemic authorities, so debunking is for them just another piece of evidence that the system is corrupt. (Harambam, 2021)

Third, debunking doesn't solve the real issue. It assumes that the problem lies with people being ignorant, don't understand science or just don't have access to 'the truth'. The idea is that just presenting the facts will help them see the 'real' truth. However, actual problems according to Harambam (2021) include the disillusion with the capabilities of science to produce reliable knowledge, the (too) rational ways of science and the ignorance of emotional aspects of the audience.

In conclusion, debunking is a weak leverage point. Debunking is good at addressing specific pieces of false information, but there are quite a few challenges that can prevent the intervention to have strong and long-lasting effects on the beliefs and behaviours of people (Ecker et al., 2022).

Prebunking

Leverage point goal: less doubt and distrust

Another leverage point is the use of prebunking: helping citizens to recognise and resist disinformation in general or for specific pieces of false information, before they encounter false information. The simplest form of prebunking is distributing factually correct information, because as stated before, the first information that somebody encounters is the anchorpoint for any following information. Hameleers stresses the importance of educating people in a positive way about media consciousness and not to rely only on fact-checking. The government can stimulate a broader media literacy through educational programs like Hackshield for kids or educational articles on disinformation (Ministerie van Algemene Zaken, 2021). This is based on the 'inoculation' theory that draws on the idea of vaccination. By offering small bits of false information or disinformation techniques, in combination with true information and explanation of the techniques, a citizen can more easily recognise and resist the false information (van der Linden, 2020). More examples are the 'Bad News Game' and the variation for civil servants 'Disinformation in your Municipality'.

A challenge with prebunking is that the responses can weaken over time, just like real vaccines do. This can be solved through regular 'booster' shots for the inoculation to remain strong (van der Linden, 2022). Another problem with prebunking is that it needs some idea about false information that people might encounter in the future. When dealing with known false information, the prebunking can only help with people who haven't encountered that false information yet. To solve this problem, more inoculation interventions focus on helping citizens recognise disinformation techniques like those explained in Chapter 4.1 However, with this general approach, it is hard to combat specific falsehoods, which is important as these often have specific problems that need to be addressed (Ecker et al., 2022). In spite of these challenges, research does suggest that prebunking is a good strategy for dealing with disinformation (van der Linden, 2022).

Discouraging the production and transmission of disinformation

Leverage point goal: less disinformation produced and transmitted

There are two ways to discourage the production and transmission of disinformation. First, demonetizing can discourage production (Posetti & Bontcheva, 2020b). One of the motivations for producing disinformation is monetary (Chapter 4.1). Reducing monetary incentives is mostly in the power of social media platforms. They could upgrade credible sources, and in contrast downgrade, remove or demonetize false information. A challenge with this tactic is the reliance on private companies wanting to do 'the right thing'. When they do act, it is hard for independent journalists and researchers to control their actions. It is worth investigating what other ways are to remove the financial gains of producing and spreading fake news.

Second, criminalising information could prevent disinformation from being produced. In quite a few of my conversations I heard ideas about regulating certain pieces of false information, mainly conspiracy theories. This is recognizable in the reaction to the 'Replacement theory' that was spread by public broadcaster 'Ongehoord Nederland' (The Unheard Netherlands). There was a call from politicians and citizens to 'act' against these statements. This group wanted to at least have arguments against the 'Replacement theory' in the conversation as well. Eventually the ombudsman of the Dutch Broadcasting organisation reprimanded the organisation for not being reliable and passively spreading disinformation (NPO Ombudsman, 2022). In the policy brief by Posetti & Bontcheva (2020b), they mention the possibility for criminalising the production and transmission of false information, however, they are very clear in the grave risk that this poses. 'Fake news laws' can lead to a restriction in the freedom of speech, which is a cornerstone of democracy. It can also put oil on the fire of conspiracy theories. By limiting people to talk about their ideas, they will create their own subworld and polarisation will become even a bigger problem, according to Participant J, data researcher on disinformation on Twitter.

All in all, demonetizing and criminalising false information is a slippery slope that should be approached with caution, if approached at all. This is mainly because of the questions: 'what is the truth?' and 'who decides on that?'. Very clear policies and rules have to be written and the execution has to be transparent to avoid society ending up in dystopian worlds without freedom of speech or violent fringe groups.

Regulation to support information

Leverage point goal: more 'true' information

Instead of restricting false information, the Ministry can try to amplify verified information. The assumption is that by doing this, people that doubt certain decisions or ideas (which is a good thing), have a higher chance of seeing true information instead of false information. The government can do this by supporting independent, diverse and quality journalism and providing better access to that media for citizens (Posetti & Bontcheva, 2020b; Ecker et al., 2022). A challenge is to find the right balance. As is explained in Chapter 4.1, an overload in information can also cause doubt.

Regulations for production and transmitting technologies

Leverage point goal: less produced and transmitted disinformation

As shown in the system map, production and technology technologies play a role in the escalation of disbalance in the system. These technologies can be dealt with through regulations. "It is important to scrutinise whether the practices and algorithms of media platforms are optimised to promote misinformation or truth. In this space, policymakers should consider enhanced regulation", say Ecker et al. (2022).

There are several challenges to regulating production and transmitting technologies. First, it is hard to detect content produced by production technologies, which means it is hard to enforce the regulations. Nevertheless, they should be in place and figure out ways to enforce the rules. By doing this, the system will not be disrupted by a (false) information overload. Second, solutions lie with public actors, which can make decisions inconsistent and opaque. Furthermore, there are a lot of different actors that could make efforts less effective. Lastly, transmission technologies like social media platforms, don't hold themselves to country borders. Efforts need to be aligned for different countries.

Participation in truth finding

Leverage point goal: less doubt and distrust

Participation can create trust in epistemic institutions and government. People have the need to participate in creating facts and interpretations (Harambam, 2021a). Evink (2020), stresses the importance of good and transparent interpretation: thorough interpretation of the object of interest with other researchers. Sieckelinck: "There needs to be space for critique from different perspectives and the government should be open for other opinions and not automatically assume an opinion is bad or somebody is going to do something bad". Ecker et al. (2022), say: "More broadly speaking, any intervention to strengthen public trust in science, journalism, and democratic institutions is an intervention against the impacts of misinformation."

Concretely, interventions that enable participation by citizens with epistemic institutions and government are needed. Harambam mentions the idea of 'deliberate citizen knowledge platforms', of which there are examples in Ireland, Canada, Belgium, Taiwan and the European Union. In these citizen assemblies, participants help in the creation or evaluation of laws. This can be translated into truth finding, by opening up scientific experiments. By opening up the black box of fact finding scientists and the lay public can debate how the truth is conceived and discuss which knowledge is trustworthy. This shows citizens how science is done and why the information resulting from research can be trusted. A second example is enabling citizens to give feedback on policies.

Some challenges include making participation engaging, making the topic simple for citizens to contribute, but complex enough to form a respectful challenge. Furthermore, conspiracy theories can challenge the trustworthiness of citizen participation.

Law enforcement / Security

Leverage point goal: less producers of disinformation or influence by outside forces

A perspective often taken by the Ministry of Defence and Ministry of Justice and Security, disinformation can be a weapon by outside forces. This should be combatted through law enforcement and security services. A challenge however, is that disinformation can be started by external forces, but is amplified internally. This means law enforcement cannot be the only leverage point.

Crisis management

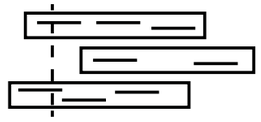
Leverage point goal: lower length and intensity of crises

Because crises are the most important disruptor of the system, good crisis management is valuable, to lower the risk of an accelerated spiral towards doubt and distrust. An example is giving citizens multiple action perspectives for dealing with the crisis. This gives society less fuel for polarisation.

Social cohesion

Leverage point goal: less polarisation

To decrease polarisation in society, and decrease distrust, improving social cohesion could be a starting point. One of the first interventions could be to change rhetoric around information and disinformation. "Calling people conspiracy theorists and continuing the stereotype works counterproductive. It is a tactic in itself to discredit the alternative perspective and remove it from the debate" (Harambam, 2017). An example for social cohesion could be to stop using 'conspiracy theorist', 'wappie' or 'disinformation' as a polarising term in public debate.



Chapter 5 - Driver and trend analysis

In this Chapter the drivers and trends relevant to the system map (Chapter 4) are outlined. They are found through expert interviews and a literature consultation (Chapter 3).

Chapter 5.1 Technologies serving the attention and trust economy accelerate polarisation and blur the line between what's real and what's fake

Driver: Attention economy

Media is optimised for attention and trust

Throughout history there have been big changes in how information is distributed, summarises interview participant Dutilh Novaes from the book 'The Attention Merchants' by Tim Wu. In that book he explains the developments in the fight for attention of people. Mass media changed from newspapers, on to radio, television and then the internet. The economic model revolved around advertising. With this model still in place, it became more profitable when people bought more newspapers, listened longer to the radio and visited your website more often. Higher engagement means more profit.

To achieve higher engagement, two ingredients matter (Dutilh Novaes, 2020): attention and trust (see Chapter 4). So, the more content attracts attention and raises trust, the more one reads, listens, views and shares that information. Consequently, more advertisements are viewed that are intertwined with the content. Media, whether it is offline or online, is optimised for attention and trust.

The following trends are all developments to optimise the attention economy. To create content easier, to gain attention and trust more, to earn more money.

Easy information publishing and transmission on the internet

The invention of the internet improved accessibility to information flows. Additionally, reproducing and sharing content is easier than before, when considerable machines and materials to publish content were needed. Now, this is done with the press of a button. High

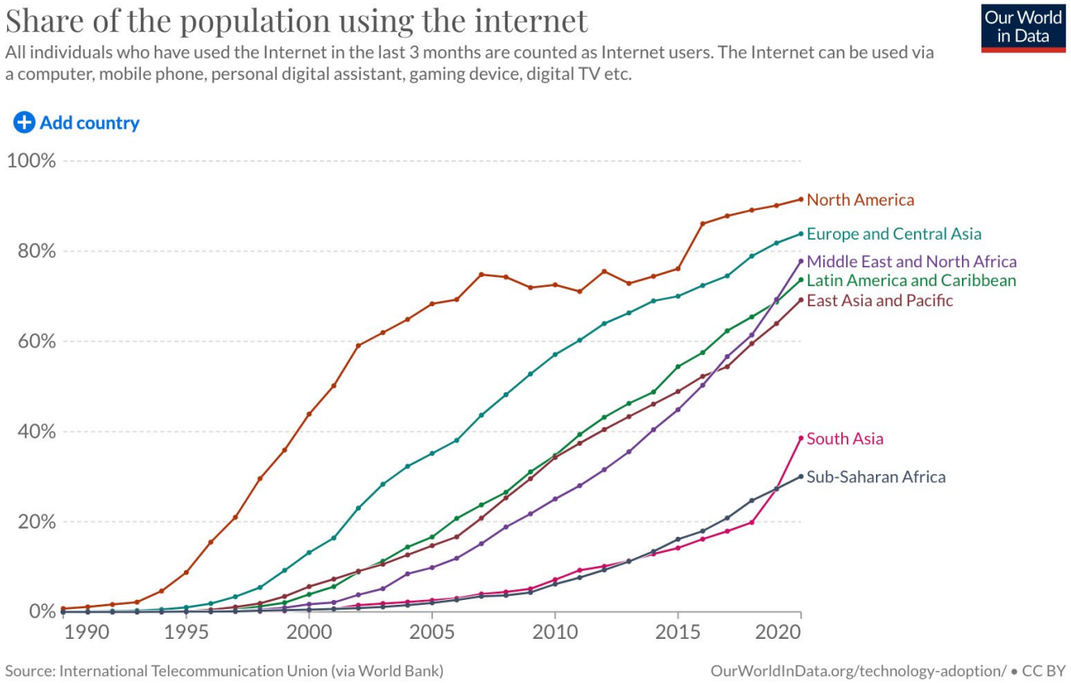


Figure 29. Share of the population using the internet over time (Roser, 2015)

accessibility and ease of information sharing leads to a growth in transmitted information (see system map in Chapter 4).

The internet caused plenty of positive effects, however, the negative effects are clear. First, not only can information be shared more easily, the same goes for disinformation. Second, with the growth of the internet (Figure 29) came an information overload, making it harder to see what is true and what not. The difficulty in distinguishing true from false information causes a growth in disinformation and in doubting citizens.

Power with the powerful

Although it has never been as easy to publish and distribute information, it is getting harder to gain traction. With the growth of the information economy, building up attention becomes more cost intensive, says participant Dutilh Novaes. This means that rich and powerful people or organisations are better positioned to gain and hold attention.

This exposes a reinforcing feedback loop hidden until now. The more traction one's transmitted information has, the more money is earned. The gathered means enable these individuals organisations to gain more traction, which in turn leads to higher profits. Power to influence the public opinion becomes a flywheel that is hard to compete with; power stays with the powerful.

Recommender algorithms create difficulty to interact with diverse sources of information

Recommender algorithms will further disrupt the way of consuming information. This technology was an important key in the optimization of (social) media to keep the user's attention and trust the longest. Through a process of learning the user's preferences, an algorithm shows content that the user will most likely also want to watch. This hooks people to watch more and more of the content they like and stay longer on social media platforms. In a research by Pew (2017), Glenn Edens, CTO for technology reserve at Xerox PARC company agrees: "Misinformation is a two-way street. Producers have an easy publishing platform to reach wide audiences and those audiences are flocking to the sources. The audiences typically are looking for information that fits their belief systems [...]." In the same article, an executive consultant based in North America wrote: "It comes down to motivation: There is no market for the truth. The public isn't motivated to seek out verified, vetted information. They are happy hearing what confirms their views".

Recommender systems are good for profit for the social media platforms, but bad for users' exposure to other sources. The recommender algorithms lead to "filter bubbles" that lack exposure to other relevant sources and "echo chambers" where other voices are actively excluded or discredited (Nguyen, 2020). Because people are constantly exposed to content they agree with, this further polarises opinions towards the extremes. These recommender algorithms seed doubt and distrust according to the system map (Chapter 4). It becomes harder to escape information bubbles.

Machine learning makes production even easier

Machine learning (ML) technology is impacting the information economy as well. With ML, for example from Dall-e 2 by Open AI, creating podcasts from scratch or creating texts from simple inputs is possible. This accelerates the creation of content. This is important because one of the tactics of disinformation producers is to add as much fake news as possible so it gets more attention. ML-powered technologies will make it easier to produce information and disinformation, according to participant F.

Deepfakes further blurry the line between what is fake and real

With an information overload, powerful actors pushing their favoured information, extremes that thrive and difficulty to escape filter bubbles and echo chambers, "deepfakes" blur the line between fake and real even more. Text has always been technically easier to fake. Just signing with a different name could do the job. However, information carriers like sound, image and video were long considered to be reliable, even if content can be staged. If somebody said something on video, then that person must have said it. With the popularity of photoshop, it became easier to fake images. Of course, special effects made it possible to manipulate sound and video. Now, however, deepfake technology is rapidly being developed, the innovation of easily faking video or sound. "At first it was mainly about the written word. You know, anyone can write whatever they want and now video and sound, which used to be reliable, aren't necessarily always true anymore", says participant G. For example, people created a fake video of Mark Rutte saying climate change will become a larger focus (Mommers, 2021), or a fake video of the surrender of Ukraine by Zelensky (Wakefield, 2022). Manipulated text, images, sound and video will make it harder to recognize what is real and what not. According to interviews with experts by Bart van der Sloot et al. (2021), 90% of all digital content will be manipulated to certain degrees.

A technology race is going on where machine learning technologies are developed to combat fake content that is created with the same technology, such as deepfakes (Westerlund, 2019). Furthermore, there are other ways machine learning is used to counter disinformation. Such as a bot checker (Botometer by OSoMe, z.d.), computer plugin that flags false cancer information (Krisberg, 2022) and automated misinformation alerts for public health officers (Public Health Communications Collaborative, 2022).

Unclear impacts of the metaverse

So, the line between fake and real blurs. In texts, imagery, sound and lately even with video. At the same time, new media like the Metaverse is heavily invested in by Meta, where through Mixed Reality, internet users get a far more immersive experience (Marr, 2022). How might this technology open the door to even more manipulation of reality? The answer to this is unclear, which will leave this question as a thought experiment for the reader.

Chapter 5.2

A renegotiation of freedom and control between citizens and government

Driver: Liberalism

The importance of the value of freedom in the Netherlands

In the Netherlands, the continuous popularity of liberalism points at the importance of the value of freedom. For the last 4 elections, the first one being in 2010, the VVD (People's Party for Freedom and Democracy) is the largest (Kiesraad), under the leadership of Mark Rutte. In the last elections, D66 (Democrats 66) was second, liberal with some socialist standpoints. In an analysis of the 2021 elections, Aukje van Roessel (2021) notices how the leftist parties, who call for more government control, are in decline. She writes 'The Netherlands has an internalised liberal nature'. King Willem Alexander explained in his first speech (troonrede) how society is changing from a welfare state to a participatory society (Ministerie van Algemene Zaken, 2019): "[…] the classical welfare state is slowly but surely changing into a participatory society."

Citizens and government push for more control

Although liberalism is at the peak of its power, citizens and government call for control more often. This is the case with healthcare, higher taxation of companies, and climate action.

During the COVID-19 pandemic, the government took more control. Instituting a curfew, strongly advising to take the corona vaccine and introducing the vaccine or test certificates to enter certain buildings. These are highly restrictive measures, to ensure public safety. Recently, the government forced a refugee centre in a village in the east of the country as a measure to lighten the refugee crisis.

For the problem of disinformation, voices for the government to take more control are getting louder. "A small constraint of freedom of speech will stop the spread of dangerous disinformation", says participant C. A clear example is the controversial situation of public broadcaster Ongehoord Nederland (ON, The Unheard Netherlands). In podcasts and news broadcasts, they spread disinformation about nitrogen emissions and promote The Great Replacement conspiracy theory. In response, there has been a loud political and public outcry to act against them. The same goes for social media. Through the law or platform guidelines, social media platforms (have to) act on this outcry. Examples are the situations for social media personalities like Yvonne Coldeweijer that had to rectify advice of diet pills and channel 'Roddelpraat' (Gossiptalk) that had to take a video offline about a Dutch artist. Furthermore, politicians are also reprimanded like Geert Wilders or even removed like Donald Trump. In America, Alex Jones has been fined with large sums because of his statements regarding the Sandy Hook school shooting.

Citizens pull for more freedom

However, the line between removing disinformation and censorship is thin. In most interviews, the right for freedom of speech is mentioned. "The dilemma between the danger of disinformation and freedom of speech is always present. The government will always avoid censorship. Solutions are more about giving society handles to cope with disinformation in a healthy way" explains respondent G in our interview. A research amongst industry leaders done by Pew identified that "the most-effective tech solutions to misinformation will endanger people's dwindling privacy options, and they are likely to limit free speech and remove the ability for people to be anonymous online".

Not only is this apparent for the freedom of speech, the freedom of choice is another topic where citizens are worried. Jaron Harambam states: "pushing one solution for a health crisis, as has happened with the vaccines, creates mistrust."

Government action concerning disinformation, especially groups of civil servants that work on this topic, are quickly branded 'Ministries of Truth'. An example from the United States is the backlash against the Disinformation Governance Board. The Wall Street Journal headlines "Biden Establishes a Ministry of Truth" (Koppl & Devereaux, 2022). The right-wing populistic newspaper 'Wochenblick' gives the Governance Board the same title. Recently, we've seen a similar situation in the Netherlands around the Disinformation Thinktank. This network of experts shares signals of disinformation, which the members individually and voluntarily respond to. Member of Parliament Van Haga deposited critical questions about this group, online blog 'Daniël van der Tuin' wrote an article about it with documents obtained through a 'WOB-verzoek' (a request for government documents) and 'Ongehoord Nederland' talked about it in their show.

Government gives more responsibility to citizens

Next to citizens pulling away from the government, the government is pushing citizens away in certain situations. One of those situations is how the Minister of Health, Welfare and Sport left the response strategy in large part to different sectors, who had to make plans by themselves. Another example in the healthcare sector, the new norm for elderly care is 'By yourself if possible, at home if possible, digital if possible'. Formulated by the Minister of Long-term care, she gives more responsibility to citizens themselves, with the goal to lighten the load on the healthcare system.

Some citizens and government pull towards each other, while other citizens pull away from government

In conclusion, there is a process of pushing and pulling between the government and citizens. On the one hand, citizens ask for a government with a more active role, on the other hand less. On the one hand the government pulls in citizens with more control, on the other hand, the government pushes citizens away with more responsibility. This pushing and pulling from both sides manifests itself in a group of citizens that is more engaged and a group less engaged. The engaged group asks for a government with a more active role. The less engaged group wants more freedom and a less active role from the government.

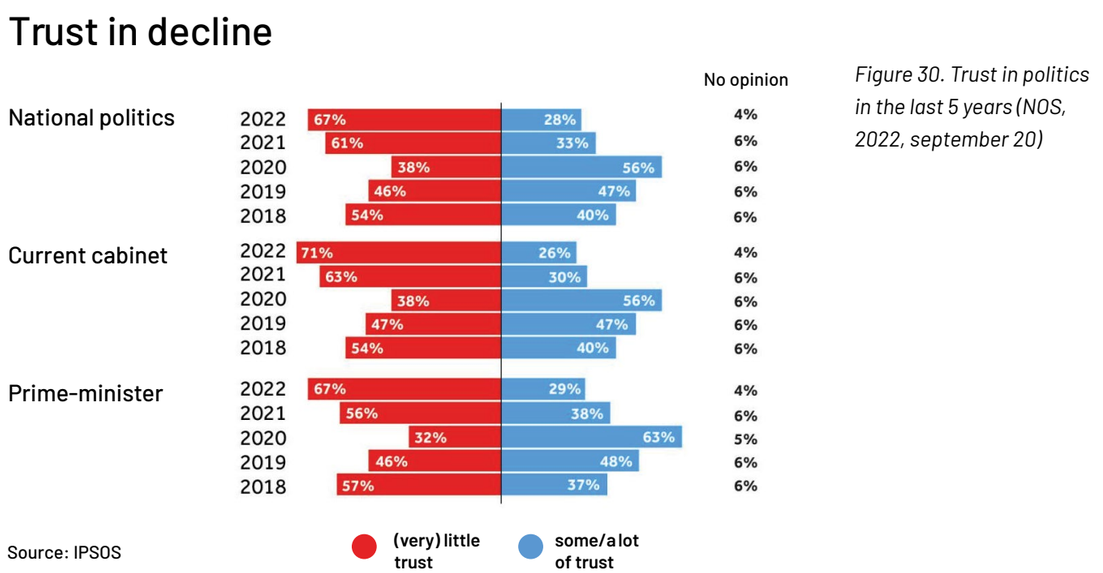


Figure 30. Trust in politics in the last 5 years (NOS, 2022, september 20)

A recent article from the NOS concluded that trust in politics is lower than in the past 5 years (Figure 30), based on research by IPSOS. Only voters from the big two political parties trust the government: VVD with 69% and D66 with 55%. This indicates the current state of the divide between more and less engaged citizens.

Some citizens are getting more engaged with the government. Happening elsewhere too, with citizen assemblies in Canada, Ireland, Belgium, Taiwan and the European Union as a whole. This group feels the freedom and uses this to involve themselves in the governance of the country.

Then there is a group that pulls back from the government. The more active role of the government is reacted to with backlash, as is seen in the Farmers protest movement and in the growing amount of protests like the Climate march, Housing protest and Student protest. Freedom is used to pull back and move away from the government. A striking example of this is a group of people who declared themselves independent from the Dutch government. They have their own passports, are asking back their tax money and are living with their own rules.

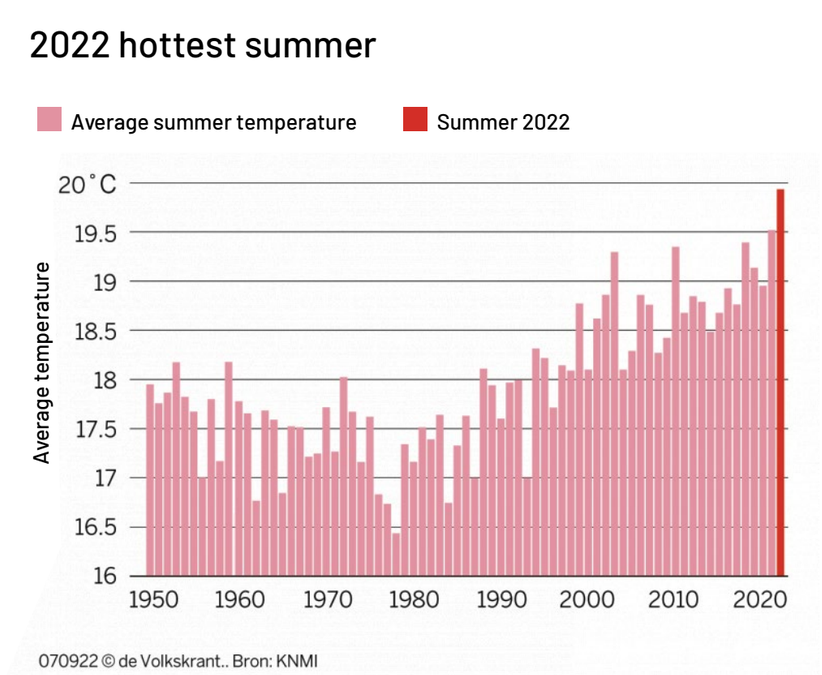


Figure 31. Average summer temperatures since 1950 ("Een zomer vol extremen", 2022), based on data from KNMI.

Chapter 5.3
Climate change and globalisation causes more and more crises

Drivers: Climate change and globalisation

Crises caused by climate change

Because of climate change, more disasters like heat waves and floods occur. In the past 22 years, 14 heat waves occurred in the Netherlands, against 16 in the 20st century (KNMI - Hittegolven, z.d.), this sets a dangerous precedent. The past year, 2022, was a summer of extremes. It was the warmest summer since the 1950s (Figure 31), with far more forest fires than normal and extreme drought ("Een zomer vol extremen", 2022). This is exacerbated by global warming (Figure 32), showing a clear rise of average temperatures globally.

Not only does temperature rise, wet-bulb temperatures also become a threat. Wet-bulb temperatures are measured through a thermometer covered in a wet towel, by which it takes into account the humidity. It "represents how effectively a person sheds heat by sweating" (Stevens, 2022). Wet-bulb temperatures exceeding 35 Degrees Celsius are deadly, but serious danger is posed by even lower temperatures. Although climate models predicted these deadly wet-bulb temperatures to first occur in the 2050's, some coastal subtropical regions already encountered these temperatures and 'extreme humid heat overall has more than doubled in frequency since 1979' (Raymond, Matthews & Horton, 2020).

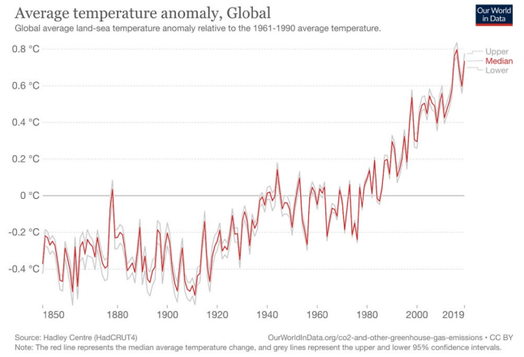


Figure 32. Average temperature anomaly globally

Another risk posed by climate change is flooding. The floods that occurred in July of 2021 in Belgium, Germany and the Netherlands amongst other countries showed this threat. With sea-levels rising steadily (Figure 33), and the Netherlands being a country for large parts below sea-level, risk for floods is high and increasing.

Globalisation amplifies crises or creates parallel ones

As a global economy, countries are interconnected. An event happening somewhere on earth, can impact other countries, or even the entire world. The most recent example being the COVID-19 pandemic.

Furthermore, because of reliability on resources from other countries, crises kick-start new crises. For example, the war in Ukraine caused an energy crisis in Europe, because of reliance on gas from Russia, and a food crisis in Africa, because of their reliance on grain from Ukraine. Another example is reliance on computer chips from Taiwan, which fabricates more than half of computer chips worldwide and even more than 90% for advanced types. With the growing (military) tensions between Taiwan and China, this can expose reliance on chips from Taiwan (NOS, 2022, 9 augustus).

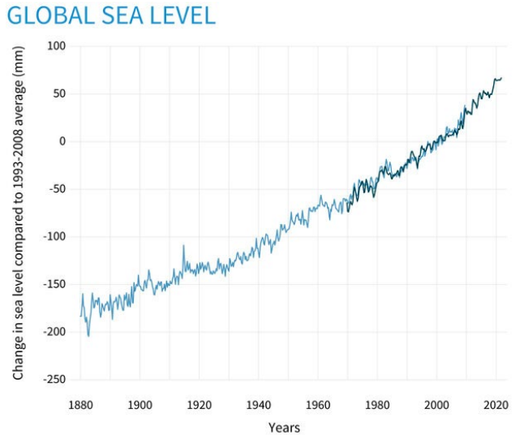


Figure 33. Seasonal (3-month) sea level estimates from Church and White (2011) (light blue line) and University of Hawaii Fast Delivery sea level data (dark blue). The values are shown as change in sea level in millimetres compared to the 1993-2008 average. NOAA Climate.gov image based on analysis and data from Philip Thompson, University of Hawaii Sea Level Center. Source: https://www.climate.gov/news-features/understanding-climate/climate-change-global-sea-level

Chapter 5.4

The constant quest for 'understanding'

Driver: The need for understanding

Technocracy grew in the complicated society

Humants want to understand the world around them and take away doubt. Society created systems, built for the quest for understanding. One of the first of these systems is religion. It explained how tides worked and why crops failed or not. In modern times, the epistemic institutions that create knowledge (epistemology), are research institutes like the RIVM and universities. Through scientific research, they create an understanding of phenomena. The journalistic media is another epistemic institution that tries to describe and interpret events in society.

Information from these epistemic institutions is used to make decisions by governments and citizens alike. However, because of the growing complexity in this world, it is hard to grasp all the information on all the themes that need decision making. This is why society is relying more on a technocracy where experts make the decisions for society. A recent example is the reliance on the Outbreak Management Team for decisions on the COVID-19 pandemic responses. According to Jaron Harambam, one can "actually see an enormous pressure towards technocratization for the past 40 years. [...] I think [our society] will become more and more technocratic."

Trust in the epistemic institutions and the government is in decline.

This technocracy makes citizens distrust the epistemic institutions and the government. Jaron Harambam: "You simply see that the living world of people in their everyday circumstances and the system world are becoming increasingly separated. I think that, just like trust in politics, trust in social institutions, trust in science, it has to do with that perceived distance." This distance leads to opaque decisions in society, leading to a lack of trust.

Trust in epistemic institutions and the government is in decline, apparent in many of the interviews I conducted. "We are not trusted as the government", says participant A. "People in the Netherlands feel threatened by the measures", comments participant C, "Now there is a larger group, compared to before COVID-19, that doesn't trust institutions anymore". "Farmersprotests, these are the alleged start of 'taking back power' from the government", mentions interviewee I. Also, according to interviewee G, the trust in government is in decline and the group that produces, spreads and beliefs disinformation has become larger since COVID-19. On top of that, trust in popular media is in decline too as there is less trust in the news in Netherlands, more and more people let go of the mainstream media ("Vertrouwen Nederlanders in het nieuws gedaald", 2022).

Efforts to gain back trust

In light of these developments, there are examples of epistemic institutions and the government that try to open up and be more transparent. "You do see opposing forces. At the Council of Public Health and Society I participated in dialogue sessions that try to get broader input from professionals, with people from the field in order to reduce the enormous distance between technocracy and the social environment", says Jaron Harambam. As explained above, there are citizen assembly examples from abroad. In the Netherlands, there are efforts to streamline the information about COVID-19 with the new website mijnvraagovercorona.nl and efforts for more clear communication with the 'Direct Duidelijk Brigade' (Directly Clear Brigade).

Citizens finding other sources they do trust

And yet, citizens find other sources of information that they do trust. An internal rapport by Studio Tilt! Illustrates the overall growth in the amount and plurality of content publishers, amongst which more 'alternative' media. With the growth of media that proclaim different 'truths', polarisation is further accelerated.

Disinformation around health specifically has grown rapidly due to COVID-19 crisis. 'Before I saw that there was disinformation, for example around the link between HIV and AIDS, but that was always at a smaller scale', comments participant C

What's more, there is a more fertile ground for conspiracy theories. "Because of Covid, we are in the 'tail' of a crisis, there is fertile ground for disinformation, also other than COVID. Conspiracy theories become more mainstream", says respondent G in our interview. There are several examples. First, the 'sunscreen free' conspiracy theory, argued that sunscreen is actually causing cancer, instead of preventing it. As one might expect from the attention economy driver, messages about this theory were accompanied by an affiliate marketing link to sunscreen that was allegedly 'safe'. The second example are conspiracy theories around Monkeypox. The story is that the virus is spread (like COVID-19) by big pharma or Bill Gates. This is allegedly proven by the fact that some pharmaceutical companies had a monkeypox vaccine ready quickly. Other arguments for the monkeypox disease spread was how the vaccines lowered one's immune system. The third example is the Great Replacement theory, which seems to be more prominent in public debate, also with certain political parties. This theory states that 'western civilization' is replaced by immigrants that will take over the country, jobs and culture.

Citizens acting against sources they don't trust

Besides just ignoring 'mainstream' sources of information, believing and spreading conspiracy theories, some citizens actively harm epistemic institutions. There are several instances this happened or is happening. Firstly, interviewee A told the story of how Telegram groups coordinated negative reactions to social media posts by the Minister of Health, Welfare and Sport. Secondly, requests for government documents are used to discredit the government, by linking comments from those documents to conspiracy theories that aren't related. Thirdly, the 'Just Asking Questions'-trend, where conspiracy theories are implied by asking certain questions. More dangerously, violent acts toward government officials or epistemic institutions are happening. People stormed into a hospital to see if the beds were actually full and during the farmer protests some farmers intimidated the Minister of Agriculture at her home.

Chapter 5.5

The need for social belonging locks in modern pillarization

Driver: The need for social belonging

Polarisation driven by multiple drivers

Several drivers push different developments in the (dis)information system. Additionally, they all influence the mechanism of polarisation. Technology, in service of the attention economy, is optimised in a way that favours extreme opinions and keeps people in the same bubble of sources, furthering differences. The push and pull between government and citizens dividing society in a group more engaging with government and growing parts of society pulling away. Climate change and globalisation causing more and more intense crises, of which opinions towards the extremes are formed. Technocracy causes doubt and distrust, especially in times of crisis, consequently pushing citizens to find alternative truths to believe in. All this forces society into different splinters.

Social belonging locks in polarisation

Humans have the basic need of social belonging. Desmet & Fokkinga (2020) call this the need for Community: "Being part of and accepted by a social group or entity that is important to you, rather than feeling you do not belong anywhere and have no social structure to rely on." These groups can be based on different aspects of life. To illustrate, playing in the same sporting team or going to the same university are both bases for a community. Moreover, the truth one believes in, the view on the world, can be an important basis for social belonging. "There is a common feeling of togetherness with people with 'alternative' ideas. We share the feeling that things are happening now and 'the truth' will come out very soon", says interviewee I. explained by the system map (Chapter 4), citizens can find like-minded people when doubting and distrusting the mainstream, which gives a sense of identity and belonging.

Changing these communities is hard, because groups become part of one's identity, take away insecurities and provide worldviews (Hogg, et al., 2008). Joining groups reduces "feelings of uncertainty about ourselves and the world we live in", according to the Uncertainty-Identity theory (Hogg, et al., 2008). Not only does the cognitive representation of a group describe the group's attributes and its members identity, it also prescribes how members think, feel and behave. Furthermore, groups help to take away existential uncertainty, or anxiety of death/afterlife, by providing cultural worldviews.

However, during the COVID-19 pandemic, citizens changed more from trusting mainstream groups towards distrusting, polarised fringe groups (Chapter 4). It seems crises accelerate leaving the mainstream, while coming back takes more time. "In general, trust in the government declines. Maybe if nothing really happened for 20 years, we'd have a different conversation." says participant G, stakeholder disinformation at the Ministry of HWS. "But until those 20 years, COVID is really still fresh in everyone's memory." Changing group membership towards distrusting groups grew suddenly because of COVID-19, and it will decline more slowly. Uncertainty-Identity theory also explains this, with groups of high unity being better suited for uncertainty reduction (Hogg, et al., 2008). Such groups have clear boundaries, internal structure, fate and common goals.

To illustrate, this polarisation is apparent on different themes. During COVID-19 whether you are pro or anti vaccination. If you believe in climate change or not. Being pro or anti migration. Being pro Russia or pro Ukraine. Pro nitrogen law or against. Polarising themes existed before, but the amount and intensity of crises related to or caused by climate change and globalisation results in more themes where society doesn't agree on. This polarisation on different themes results in multiple groups, as somebody who is pro vaccination is not necessarily pro migration.

Modern pillarization

The forming of these polarised, but different, groups manifests itself into a modern pillarization. Pillarization is the division of Dutch society during the 20th century into groups such as "the Catholic, the Protestant Christian, the socialist and the neutral or liberal (Verzuiling, z.d.)." Harambam sees "A future without truths and where everyone can find their own information, I see as an extrapolation if we do nothing. There is no connection, the risk is now that these groups are turning away from the mainstream, turning away from scientific information, allowing themselves to be tempted to a sort of modern pillarization, standing completely across from each other. What you see in America, that extreme polarisation. Where different groups no longer come into contact with each other.' He adds, "There are now several arenas in which the truth is fought. Each arena is closed off from other groups. There is no connection."

The modern pillarization causes the splintering of more and more aspects of society. The law "More space for new schools" made it easier to start a new school, when there are enough parents to back the plan. Forum voor Democratie, a Dutch right wing party started its own schools. But not only that, they want to have their own dating apps and holiday parks (Van Bekkum, 2022). There are interesting examples in social media too. Donald Trump started Truth Social, Elon Musk has bought twitter to further free speech on the platform and Parler is a social platform that, because of its full freedom of speech stance, is popular with the extreme right wing (NOS, 2021). In healthcare, examples are 'Artsencollectief' (Doctors collective) and 'Wij de ouders' (Us the parents). These groups are not necessarily right or wrong; it is the group formation that is a sign of pillarization. These developments could lead to parallel societies, like Harambam described.

Chapter 6 -

The new systemic and anticipatory problem frame plus starting points for interventions

The goal of this project is to *catalyse a broader and anticipatory problem frame of disinformation, alignment on this new problem frame and concrete starting points for interventions dealing with disinformation.* The first two research questions are: *what is the broader and anticipatory problem frame and what are starting points for interventions dealing with the problem frame?* This is researched through system mapping (Chapter 4) and a driver/trend analysis (Chapter 5). This chapter recaps the new anticipatory problem frame and forms a stepping stone to making the frame accessible (Chapter 7 - Future scenario) and experiential (Chapter 8 - Future prototypes). To eventually enable an alignment on the problem frame and starting points for interventions (Chapter 9 - Simulation).

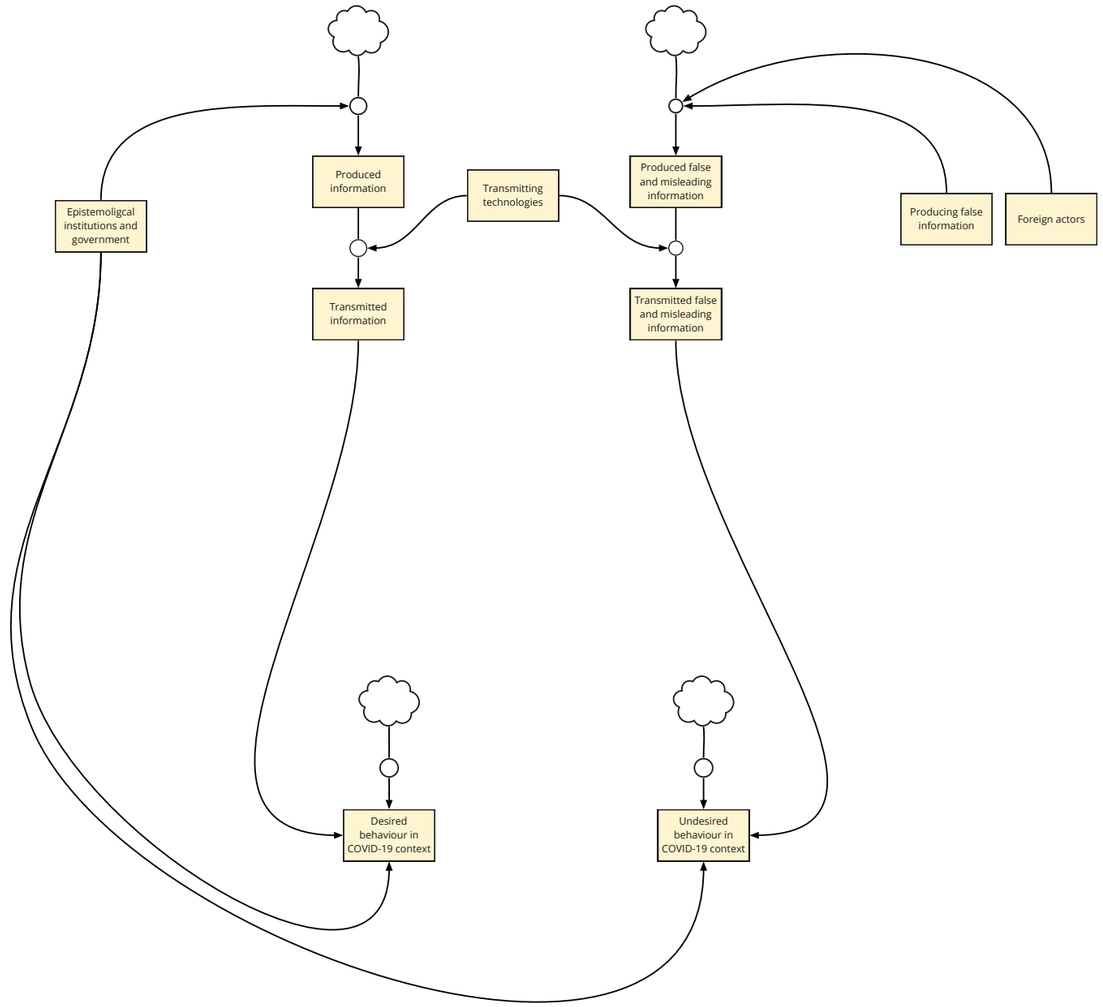


Figure 34. Current problem frame as a system map.

The current problem frame

The current problem frame (Chapter 1) sees disinformation as an *information* problem around *COVID-19*. Figure 28 shows these elements in the system map. Desired and undesired behaviour, decided on by a thorough system of epistemological institutions and government, is influenced by information and disinformation respectively. COVID-19 is the disruptor. Transmitting technologies like social media are seen as the main reasons disinformation has taken a flight

In response to disinformation, the Ministry is mainly doing interventions that have to do with debunking on COVID-19 specific themes. Next to this, media-literacy efforts are done to help people deal with disinformation. Finally, interventions to regulate transmitting technologies are done on a European level.

Based on the insights in this research, the current problem frame is valid and current efforts are useful, at different degrees. However, when looking at the full system map (Figure 28), it is clear that this frame prevents one from seeing other mechanisms that are influencing the (dis) information system. Some of the elements in the full system map are on the radar of some civil servants within the government, but these ideas are not widespread or actively used for interventions.

The new broader problem frame

The full system map (Figure 28) contains the new elements that should be incorporated into the problem frame. This creates a broader problem frame, which I will call a systemic problem frame from now on. First, doubt and distrust can influence which information one uses to make decisions. This could be false or misleading information when distrusting epistemic institutions. Second, polarisation and the possibility of public debate in one arena influences doubt and distrust in society, thus certain behaviour. Third, not only transmitting technologies are to be part of the problem frame, also production technologies are part of the problem frame. Finally, crises are the main disruptor of the system, not only COVID-19, but also other crises, which means other departments of the Ministry or the government should work on disinformation. Even more so, future crises will disrupt the system too.

The new anticipatory problem frame

The aspect of time, with future crises and other developments on the aspects mentioned above, is important to prepare for, as they will influence the balance of the (dis)information system. Through the driver and trend analysis in Chapter 5, an anticipatory dimension is added to the problem frame.

Climate instability and globalisation are plausible to cause more crises. Polarisation is taking on new forms where a renegotiation between freedom and control within society causes a division in a group that is engaging more and a group that is engaging less with the government. Also, because polarisation happens on multiple themes, a splintering is occurring, further accelerated by social media and personalisation technologies. Technologies like deepfakes are blurring the line between real and fake. This, together with technocratic society, constitutes into less trust, influencing the doubting and distrusting mechanisms in the system.

New starting points for interventions

Because of this new anticipatory problem frame, new possibilities have opened up for interventions, explored in Chapter 4.2. Adding to interventions based on the old frame, mentioned above (debunking, media literacy and EU level regulations on transmitting technologies):

- Transparent, quick and trustworthy information from government
- Prebunking
- Discouraging the production and transmission of disinformation
- Regulation to support information
- Dealing with production on top of transmitting technologies
- Participation in truth finding and decision making
- Law enforcement
- Crisis management
- Social cohesion

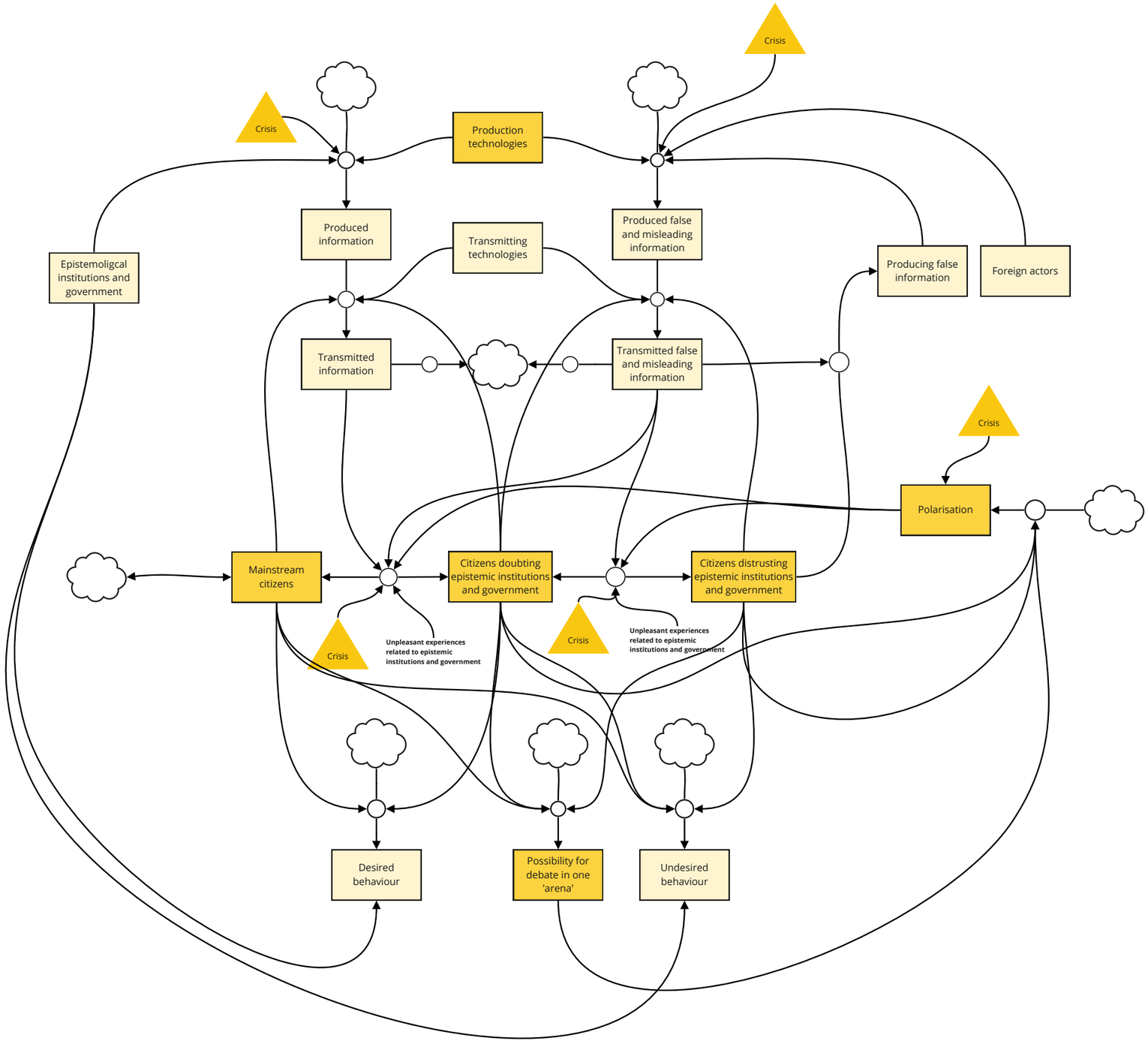
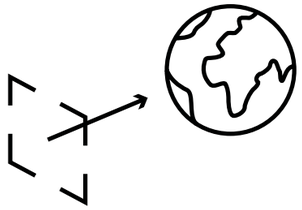


Figure 35. The full system map of (dis)information with new mechanisms that should be incorporated in the problem frame highlighted yellow.

Section 2 - Engagement



Chapter 7 -
Future scenario

The new anticipatory frame, based on the research in Chapters 4 and 5, is a great way to better understand disinformation and its plausible developments. However, it is not accessible enough for an alignment on the new frame and starting points. Because of this, a scenario is written that will form a basis for future prototypes (Chapter 8). A process of ideation and writing is done. The scenario in its final form is presented below. The elements from the new wider and anticipatory frame are meticulously incorporated into the scenario.

Scenario

In 2033, we will live in a country with ideological splintering. Due to climate change, an extreme heatwave during the summer causes a great threat to public health.

Splintering

The mainstream group that believes and supports the established and scientifically proven knowledge has shrunk. Society is splintered in groups, based on climate change, healthcare, immigration, and idealistic preference. Polarisation on these topics has further driven apart the splinters, which started to be the anchor points for identity, replacing historical ways of identity like religion, education, or brands. In the unstable environmental and geopolitical situation, the splinters became a certain stability in the lives of people.

Few communications exist between people from different splinters. There is no more shared arena for discussion and debate. Together with this development, the term disinformation lost its meaning, when it transformed into ‘Ourfo’ (Our information) and ‘Theirfo’ (Their information). Every splinter has its own ‘Ourfo’ and calls the knowledge from other splinters or the mainstream ‘Theirfo’. Many ‘truths’ of reality start to exist. Some might say the Post Truth era finally arrived. Relative truths are dripping down in splinter specific schools, social media platforms and newspapers.

The mainstream group, comprising around 50-60% of society, lives in a highly technocratic society. Experts decide on policies with science as the basis. Over time decisions are getting more complicated and less transparent. This pushes people into doubt and uncertainty. They are looking for more grip and splinters are the places where they can find this. Once in the splinter, people don't listen to the decisions made by the mainstream anymore.

Health crisis because of heat waves
Climate change causes frequent, longer and more intense heat waves in the Netherlands. During heat waves temperatures are reached where it's dangerous to be outside for long, especially for the elderly, the obese and the young. With an ageing population and growth in obesity, further pressure on the healthcare system is unavoidable. Furthermore, smog makes these heat waves even worse. There are water shortages and there is increasing pressure on the food chain.

In response to the heatwaves, the Dutch government has introduced far-going measures, together with the European Union. Cooling gels and face-masks with integrated UV eye-protection are distributed to protect public health. When temperatures are getting too high, the heat alarm will go off and people should head to the AC-halls that are set up in each neighbourhood. To try and fight the effects of climate change, the government restricts meat consumption, car usage, flying and, most painful for a lot of citizens, air conditioning.

The people in the splinters are angry about these measures and there is a backlash. Illegal air conditioners are brought to market that use gas burning and some citizens take unproven cooling pills, which do not work or even worsen the effects of the heat.

"Ourfo" starts undesired behaviour
The splinters want to push these illegal or unproven ways and to gain followers from the mainstream, but also from other splinters. They are motivated by financial and power gain, but also because they genuinely believe in their ideas.

"Ourfo" is produced by the separate splinters to challenge the measures taken by the government. Deepfakes and the metaverse are matured technologies that are cheap and boost the spread of "Ourfo". Highly targeted advertisements for cooling pills based on personal "biodata" are used.

Conspiracy theories go round, such as the theory that the main dermatological companies worsened the heat waves through geoengineering so that they could sell the cooling gels. Protests against the heat wave measures are a regular occurrence, with each splinter taking their own position. The protests become more violent. The splinter specific health care centres don't really help people, which leads to more severe hospitalisation in the mainstream hospitals. Violence against scientists or doctors is seen more often because of "Ourfo"

Lector HVA on youth radicalisation
Two data researchers at Tilt, doing research on disinformation on Twitter
Assistant Professor of Participatory AI at the Athena Institute, VU University Amsterdam. He is an expert on conspiracy theories, news and platform politics.
Scientific researcher
Organisation mentor
Roy Bendor - mentor of this graduation

Table 3. Participants in the scenario evaluation

Evaluation of scenario

Research setup
In an evaluation with experts, the quality of the scenario was tested on the design fiction criteria as mentioned in Chapter 2: clarity, plausibility, relevance, persuasiveness and revealingness. Through an online form, these experts (Table 3) evaluated the scenario that was sent to them. See Appendix 10 for the full research setup and results.

Discussion
Overall, the scenario is received well. There were some questions from respondents that required clarification. The following paragraphs give answer to these questions:

A splinter consists of a leadership and members. The splinters try to gain new members through the use of 'ourfo', information that is made by them and fits the worldview of the splinter. 'Theirfo' is undermined. The target is to create doubt in the mainstream and to persuade the doubters towards their splinter. The leadership uses techniques such as conspiracies, ad hominem argumentation and emotion in their messaging. Technologies are used such as deepfakes to gain followers. The information is spread through advertisements online and offline. The battle for attention is heated and everything is used to gain attention.

When a citizen is interested in the splinter after seeing an advertisement, he/she can download the news apps and social media. On splinter social media, content is moderated so that it fits 'ourfo'. The next step is to sign up to the splinter, which enables you to make use of the closed off splinter services. Mainstream news, social media and services like schools and healthcare are not used by splinter members anymore. Once a member, you are slowly closed off from old friends and family, whilst finding a new group that resonates with your worldview.

Another point of feedback was how the interconnection between the driving forces of climate change and polarisation was lacking in the story. Furthermore, some other questions were about clarity of ourfo and theirfo, how this looks like and how a member shows he is part of a splinter. The answers to these questions have to be shown with concrete objects to understand the scenario.

Chapter 8 - Future prototypes

While the scenario (Chapter 7) makes the systemic and anticipatory problem frame more accessible, a step further is required to achieve engagement and alignment: an experiential future scenario. In Chapter 8, the process of creating and evaluating the future prototypes is shown.

Ideation

In my ideation I used four 'characters' that could have relevant objects to explain the future scenario. First, the splinter journalist (Figure 36), someone that is on the forefront of creating ourfo. It gives the possibility to show how ourfo is created, which topics the journalist covers and how ourfo is spread. Secondly, an internal refugee (Figure 37), fleeing heat or floods, needing objects to deal with the harsh environment. A refugee is moving and seeing different splinters, which gives a storytelling opportunity to show multiple splinters and their perspectives. The third character is the splinter follower (Figure 38). The objects from this person can show the internal workings of a splinter. Finally, a student (Figure 39) could be interesting to show the splinter schools. What stories and skills is she taught? And what school uniform does she wear? From these perspectives I started ideating what objects they might have with or around them.

Design choices

Criteria

I'm using the same criteria that I used to evaluate the scenario as design criteria. In my design choices, I'm not evaluating separate objects that I've ideated, but more the ensemble of objects that together tell the story and tensions in the scenario. The criteria are used to create the combinations of objects in the best way. This is more of an intuitive process to shape the set of objects then a rigorous comparison between the ideas.

Clarity
→ Does the set of objects make the user understand the scenario?
Plausibility:
→ Could this set of objects exist in the scenario?
Relevance
→ Is the set of objects relevant to the scenario?
Persuasiveness
→ Does the set of objects inspire new ideas for interventions and policies?
Revealingness
→ Does the set of objects invite reflection on the scenario?
Then there is one additional criteria. The set of objects is going to be used in a conversation, so a few objects should tell the story.
Efficiency
→ Does the set of objects tell the entire story economically? (with as few objects as possible?)

Process

During the ideation process the idea of creating kits or packages appeared to be an efficient way to tell the story. In combination with a flyer inside the package, the future scenario can become clear. Also, packages and flyers are recognisable and easy to deliver information.

A challenge was to be able to show 'ourfo' and 'theirfo'. The government health kit created an opportunity to give the government's perspective, a higher overview of the situation. The splinter needs a package too.

How do I put these two conflicting packages together? I chose the character of the splinter follower at home. The government's health kit is delivered to everybody's home, also that of splinter followers. For the purpose of familiarity,

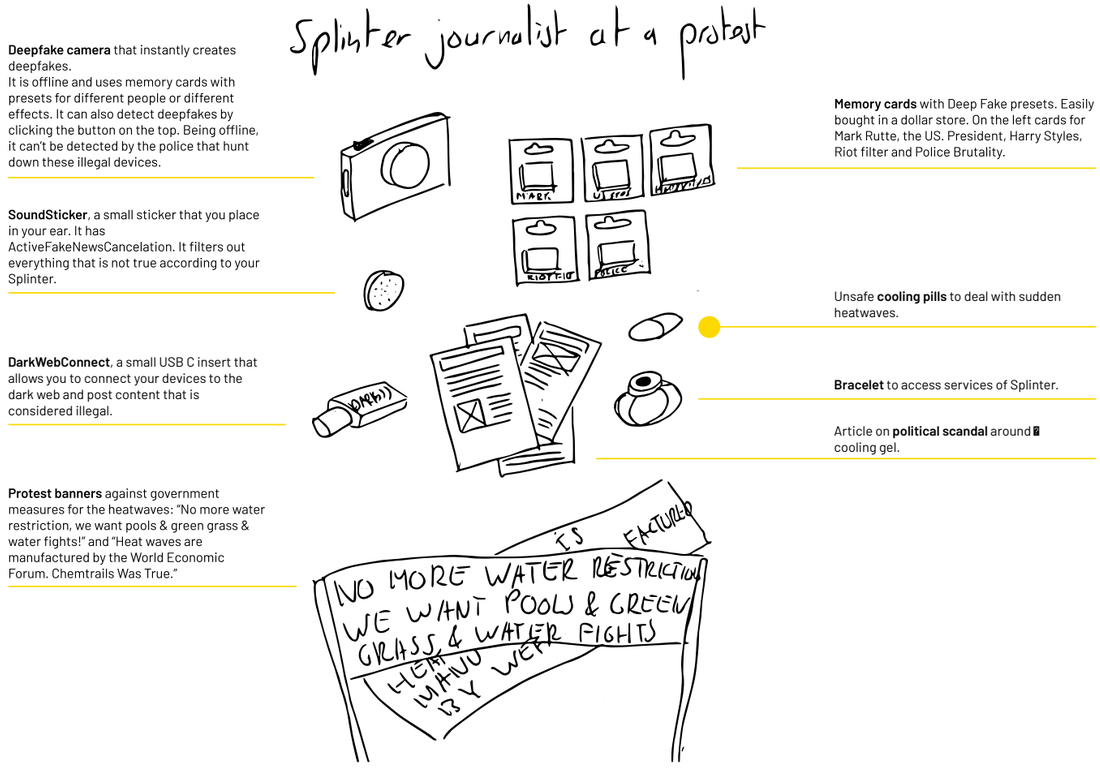


Figure 36. Objects a splinter journalist at a protest might use

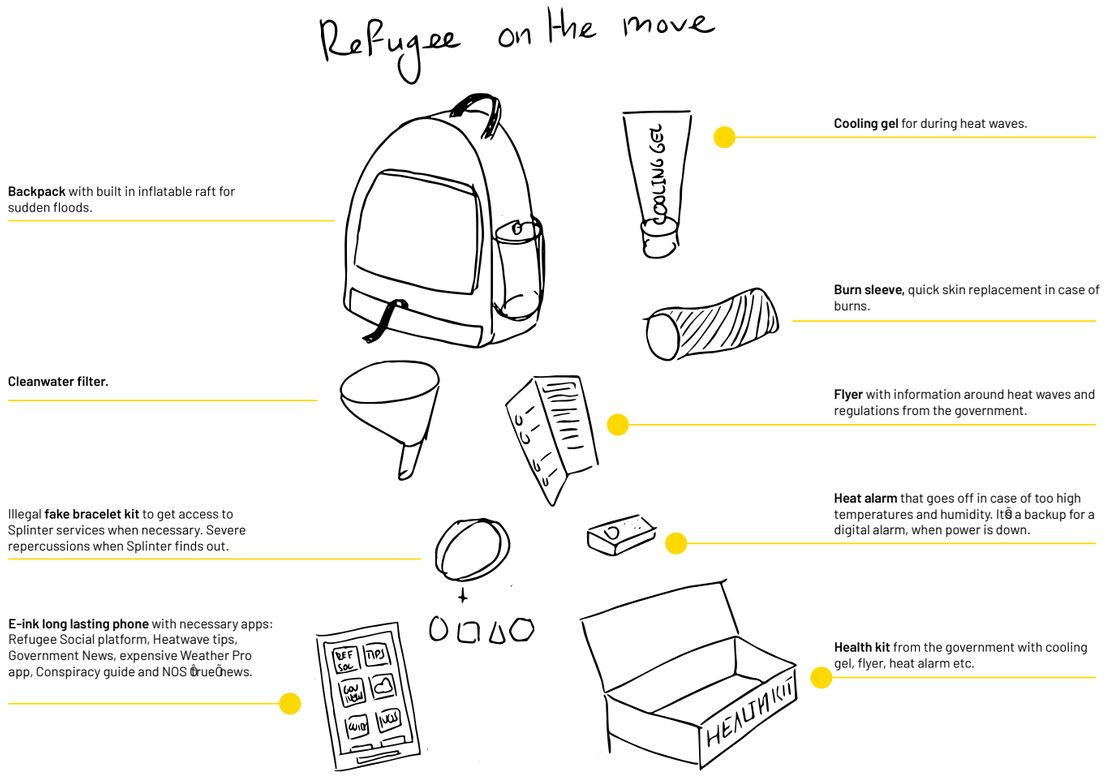


Figure 37. Objects a refugee on the move might use

I name the character Roel, without any particular reason for this name.

Then I needed something that enabled speculation based on the leverage points. Something that can hold the different themes from the system map but can still be unfinished. An e-ink phone seemed like a good product, it can hold a lot of information and is flexible. However, a phone is an elaborate product and needs a lot of details. How does the product look? How does the UI look? Which apps are on there? Does it still have a phone function? All these aspects are not relevant to the story I want to tell.

A low-fi product with less details such as a newspaper is a better solution. It gives the ability to add different articles from different perspectives. To make it more speculative and open for interpretation, I decided to fill the newspaper with unfinished articles containing titles and a small description only. These unfinished articles are based on the leverage points as identified in the system map, most of them are related to the government, so the newspaper has to come from the mainstream.

Placing a mainstream newspaper, government kit and a splinter package is an interesting combination to show both 'ourfo' and 'theirfo' from the perspective of the splinter follower. This makes it a good set of objects for the viewer to understand the story. However, it is also a difficult set to bring together, as a splinter follower probably doesn't have a mainstream newspaper in their home. It is also still a bit unclear what the splinter package is about. To solve these issues, I chose a moment in Roel's life where he made the transition from doubting to distrusting, from following the mainstream to following the splinter. This makes it possible that Roel was first subscribed to the mainstream newspaper, but after doubting and then distrusting the mainstream information, started following a splinter. This splinter sends a Welcome package to him consisting of a flyer with information about the splinter.

The next question is: what are the contents, other than the flyer, of the packages? First of all, two contradicting health objects, one for the health kit, one for the welcome package. This makes ourfo and theirfo even more clear. Also, it links to the health issue at hand: the extreme heatwave.

One of the main aspects of the health kit flyer is the overview of steps to take when the heat is going to be too dangerous to stay at home. When the moment is there, the HeatAlarm will go off, this is the second object in the health kit.

Finally, I want to show how the splinters created their own society with schools, healthcare and media. A bracelet that gives you access to these services is then a good object that also shows the 'togetherness' of the splinter followers.

Evaluation

I created initial prototypes of the objects for testing and improvement. I conducted the evaluation with one colleague at the Ministry of Health, Welfare and Sports, without any knowledge of the project or expertise in disinformation and two fellow IDE students with knowledge of the project, having read the scenario, without expertise in disinformation.

The participants gave overall positive feedback on the objects. "The props were very clear, I didn't have big questions, they were really helpful and made the future tangible"; "This could really happen"; "The tone of the message seems like something from the government"; and "I love these artefacts". Furthermore, comments like "ah this is the cooling gel" showed that the objects are linked to each other. To improve clarity and plausibility, I also gained insights for concrete improvements, either directly from the participants or through observation.

During the exercise, the participants mentioned reflections and ideas that show relevance, persuasiveness and revealingness: "Urgency goes way up with this depressing future scenario". However, there were opportunities for improvement. See Appendix 11 for the full research setup and results.

Future prototypes

In Figure 40, the final future prototypes are shown, improved after the evaluation. In the next pages I will elaborate on the details of the future prototypes.

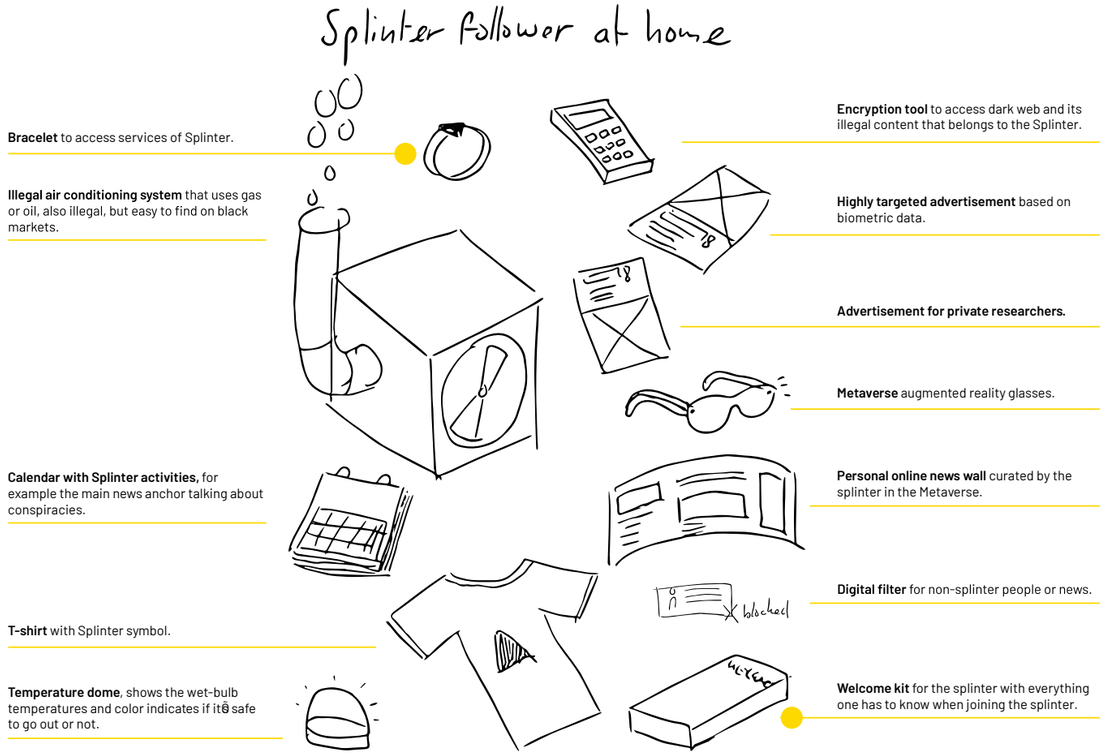


Figure 38. Objects a splinter follower might have at home

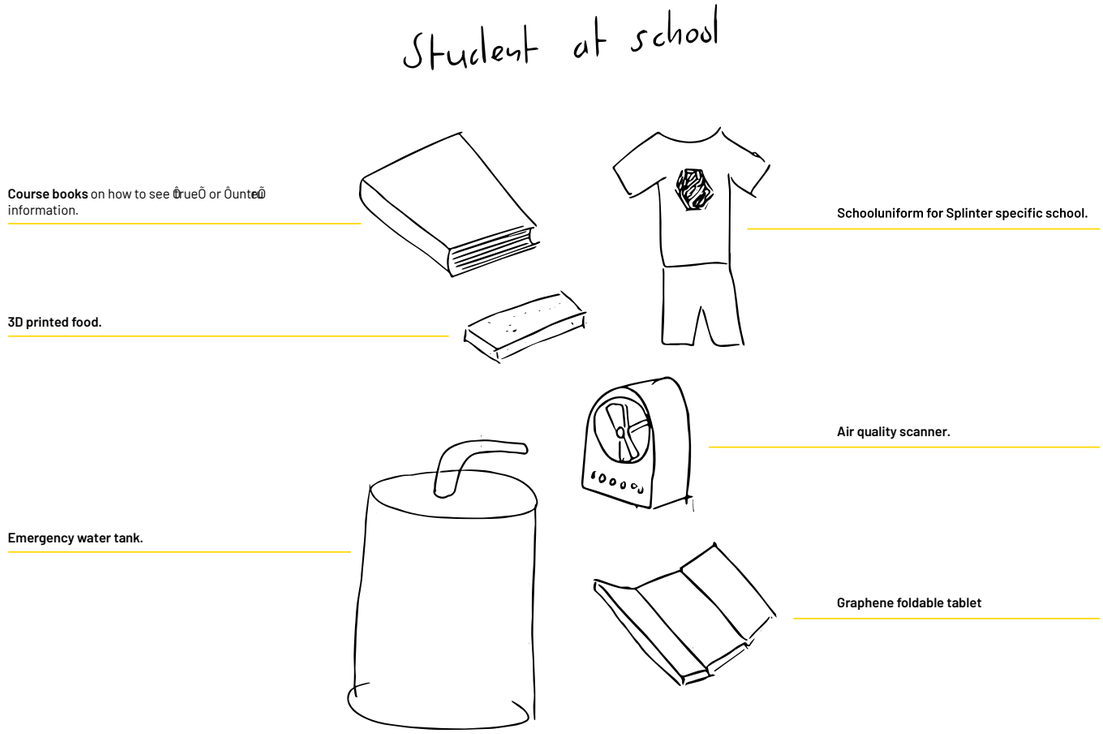


Figure 39. Objects a student at school might have or encounter

Gezondheids Kit

Flyer met alle ourfo die je nodig hebt tijdens deze hittegolf

HeatAlarm met 30 dagen batterij, werkt zelfs bij een stroomuitval

Cooling Gel om koel te blijven bij extreme hitte

Maak hier open

Cooling gel

A Derma Product

Gebruik in het geval van extreme hitte en luchtvochtigheid.

Verkoelt het lichaam effectief in 5 minuten.

NLVRIJ

Welkom bij de NLVRIJ splinter.

Maak snel open!

Algemene tips

Beperkingen om

Cooling Pills

NLVRIJ

De Toekomstkrant

Donderdag 25 Augustus 2033
Toekomstkrant.nl

Nieuw protocol crisiscommunicatie bij de overheid

Dit protocol moet ervoor zorgen dat de communicatie snel, transparant, boeiend en via vertrouwde meuzen in de omgeving van burgers wordt verspreid.

Valse claims rond *cooling gel*

In reactie op valse beweringen dat *cooling gel* misschien niet werkt, heeft het ministerie van Volksgezondheid, Welzijn en Sport

Figure 40. Final future prototypes (in Dutch)

Welcome package Splinter NLFREE - Flyer page 1

In my scenario I talk about 40% that is spread across 10-15 splinters. It is important to show that the sizes of the splinters are large. This also came back in the pilot. To convey this, I made a rough calculation on the size of an average splinter. In 2033 an estimated 18.700.000 citizens will inhabit the Netherlands (Centraal Bureau voor de Statistiek, 2022). A tenth of 40% is 748.000 citizens per splinter, with children also part of them. A smaller part (200.000) is a paying member, the larger part (600.000 rounded up) identifies with the splinter, but isn't paying yet.

Emphasizing the motive and driver of freedom.

Introducing the idea that it is not only information that the splinters challange the mainstream, but also with services.

Using self-made expertise to add validity to the splinters' position.

Using the conspiracy tactic to legitimise ourfo in an easy to understand framework. This adds logic, validity and ease to hook on new (fake) ourfo to the story. It plays into the 'search for understanding' driver.

Again gaining validity with the 'expertise' from the 'doctor'. This also creates a link between the cooling pills package and the flyer.

Bright red border to be more agressive. Also a clear contrast between the soft blue of the government.

NLFREE

Welcome Roel!

– You are now part of a growing splinter of 200.000 people –

We are glad that you purchased a membership to become an active part of the NLFREE splinter. We care about the freedom that everyone deserves. We act against the ridiculous *their_fo* that says climate change is true. We give you better healthcare than the mainstream provides. We try to gain back the Netherlands for our own people and close our country down for so-called 'climate migrants', who are just here to steal our jobs.
We base our beliefs on scientific evidence, created by our own NLFREE scientists! We give you the TRUE knowledge that the government doesn't provide us. New facts that we found show that the dermatological companies who now earn millions and millions of dollars are the cause of the heatwave. They geoengineered our atmosphere so that they can sell their toxic cooling gel. Instead, we provide cooling pills that are 100% safe and effective as prescribed by our head doctor F. Faber.

If you have any questions, just reach out to @leadership on AstroSocial!

Based on the liberalism driver, I wanted to make sure freedom as a value is recognised and this splinter acts 'in the name of freedom'. It is plausible this kind of splinter will attract a lot of citizens. Next to this, I wanted to place NL in the name as a reference to the nationalistic and populistic tendencies of this particular kind of splinter. 'The Netherlands for the dutch only' type of ideas. We see this now in the media outlet 'Ongehoord Nederland'.
Other splinters, that I haven't chosen are the following. 'ClimateAction', a splinter who thinks actions by the government are not going far enough. 'SolidAirity', focussed on using advanced, but not all validated, technologies to improve air quality. They want the rich to pay for this. 'AntiMig', mainly focussed against migration

Showing the capitalistic ideas that still drive society.

Establishing the position of the splinter and importantly placing theirfo into the story. The splinter discredits the mainstream and other splinters as a tactic to gain followers.

Further clarifying the position of the splinter. The splinter uses an 'enemy' to further splinter society. They use emotion, fear of losing your job, to pull citizens towards 'the fight for freedom'. This helps the goal of the splinter to gain power and money. In the prototypes it has the role of adding another polarising factor, next to climate change. This makes the story richer and more persuasive.

Introducing the cooling pills that are also in the welcom package. Cooling pills act as the concretisation of ourfo against the discredited cooling gel that stands for theirfo. Sometimes the story is a bit thick in these contradictions (belief in climate change yes vs no, cooling pills vs gel, our scientists vs their scientists). This is on purpose, to show the main idea of ourfo vs theirfo in the short amount of time the user is reading the pamphlet.

Leadership is the group that makes sure the organisation can keep running. In the prototypes, it answers the question of who arranges the splinter. This can help the user to fill in gaps she might have. From reality, we see that there are figureheads in alternative groups that make opinions. From the scenario we know that leadership uses deepfakes and advertisements to target potential members. This is ofcourse not made clear in this type of flyer, but we see it back in the government flyer.

Introducing the social media of the splinter, adding some suspense to read further.

Welcome package Splinter NLFREE - Flyer page 2

Introducing the NLFREE bracelet, that is included in the package, further strengthening the interconnections between flyer and objects. It is based on the driver of our search for identity. Clothing and accessories are important to show your identity.

Introducing the idea of services. The splinter does not only provide information (ourfo), but also services that are in line with the ideas of the splinter. This comes from the polarisation trend.

Translating a big idea of the scenario, where important and forming services from society, like schools and healthcare, also become splintered. We see the same tactics as on the first page, of discrediting and providing a sense of understanding and safety in the complex world and hectic crisis of the heatwave.

NLFREE

With the NLFREE bracelet you now have access to the following services

Schools
Let your children go to schools where the education is true and not false in the *their fo* schools of the mainstream.

Healthcare
We offer healthcare that is proven and safe.

News
Ignore the mainstream media! Read, watch and listen to *our fo*.

Heat protection
Next to our cooling pills we provide Air-Conditioning that is hard to detect for the corrupt government. Never go to the AC-halls, as they put mind controlling toxics in the air!

And much more
Look in the NLFREE app for more information

Seeing the splintering in action: actively ignoring everything from outside the bubble. In this scenario, this takes on a more hostile approach then we see currently.

Creating another connection to improve clarity and cohesion between the splinter flyer and the government flyer. Home Air-Conditioning is prohibited and AC-halls are a solution for this in the flyer of the government.

Welcome package Splinter NLFREE - Flyer page 3

Looking for an interface on which we can see interactive content. This could be anything futuristic like the metaverse or holograms, but this was less integrated into the story. I decided on an energy efficient e-ink phone. This is a connection to the idea of energy shortages and power failures, to which the physical HeatAlarm is also a connection.

This page focusses more on information flow and how members of a splinter are closed of from theirfo. News, social media and even health information are based on ourfo from the splinter.

NLFREE

Change the apps on your energy efficient e-ink phone, if you haven't don so already!

Download:

NLVRIJ — NLFREE app, with all the news you need to know

ASTRO SOCIAL — AstroSocial, our very own social media to talk with like-minded individuals

VrijZorg — FreeCare, trustworthy ourfo about the heatwave and other health threats caused by governments and big pharma

Remove:

NOS — Remove all mainstream theirfo media like the NOS. Also stop with subscriptions to printed newspapers.

IG — Remove Instagram, TikTok and WhatsApp.

HA — Delete HeatAlarm, this app from the government is only there to follow you!

Members are even asked to explicitely remove any of the ourfo. I'm trying to make it bullet proof that the user understands the scenario

Welcome package Splinter NLFREE - Flyer page 4

Protests are still done in 2033 to gain more followers.

Link between the flyer of the splinter and the flyer of the government.

Harsher protests from the scenario

NLFREE

On the agenda

7 Sept 2033
Den Haag
Protest on the Mellieveld against the outrageous restricitons on meatconsumption, car usage and flying.

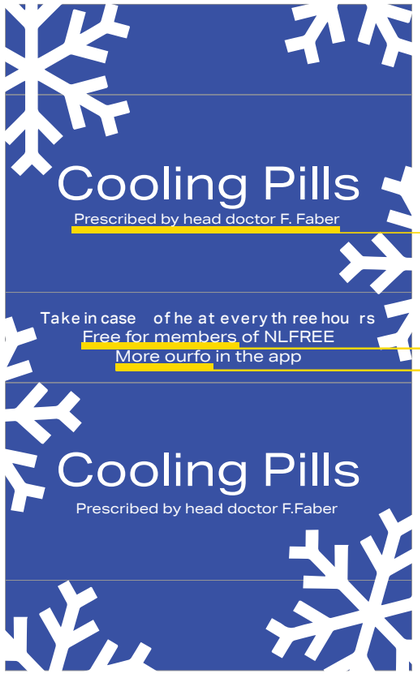
24 Sept 2033
Amsterdam
Seminar in the official NLFREE school.

13 Oct 2033
Utrecht
Occupation of the RIVM building

2 Nov 2033
Rotterdam
Anti-Climate-Change march

Welcome package Splinter NLFREE - Cooling Pills

See Figure 40 on page 74for the FREENL bracelet that is part of the package



Linking to the flyer

Pushing the cooling pills by making it free. Adding to the perks of being a paid member of the splinter.

Linking to the flyer

Health package of the government - Flyer page 1

It is the combination between high temperatures and high humidity that makes this heatwave so dangerous.

There are restrictions on our behaviour to cope with the crisis. This is an important part of a crisis and creates a breedingground for dissatisfaction in society, pushing people to splinters.

Wet-bulb temperatures are measured by a thermometer wrapped in wetted towels. With this measurement method, humidity is also taken into account. Dangerous wet-bulb temperatures are above 36 degrees Celcius. At this point sweat cannot evaporate which is needed to cool humans down. This measurement will become more important in this 2033 scenario.

Link to the cooling pills of the splinter. The advice to use cooling pills is theirfo (thus false) from the governments perspective.

Use of deepfakes is introduced, a technology that could impact information and truth greatly in 2033 as we've seen in our trend and driver analysis. The goal of mentioning this in the prototypes is also to let the user think about the impacts of technology in general.

Adding the HeatAlarm as a counterpart of the splinter FreeCare app. It is plausible to assume these types of apps will be used in the future. The splinter flyer shows how polarisation can influence the response.

Restrictions on Air Conditioning are the setup for the AC-halls. Furthermore, these restrictions are refered to in the splinter flyer, which creates a story link.

Rijksoverheid

General tips

This heatwave sees temperatures rising above 45 degrees celsius with dangerous humidity. We need to protect ourselves. Follow these guidelines to keep cool and hydrated.

- Drink the full amount of water that is allowed to drink. We have to distribute the water because of the shortage.
- Stay inside when critical wet-bulb temperatures are reached.
- Stay in the shadows when it is absolutely necessary to go outside.
- Don't use cooling pills. These dangerous pills don't work and have bad side effects.
- Only go to the hospital when dangerously overheated.
- Be careful of Splinter *theirfo* advertisements and their use of deepfakes.
- Download the HeatAlarm app to be updated regularly.

Restrictions to counter climate change

We need to work together to slow and reverse the effects of climate change. The following is prohibited:

- Meat
- Car usage
- Flying
- Air-Conditioning

Health package of the government - Flyer page 2

See Figure 40 on page 74 for the cooling gel and HeatAlarm that is part of the Health package.

Rijksoverheid

Go to nearest AC-hall in case of heat alarm

When temperatures and humidity is too high, the heat alarm will go on your phone through the HeatAlarm app and on the included alarm in this Health Kit. Go as fast as possible to an AC-hall.

Link to the contents of the health kit.

1. Drink at least 1 litre of water before going, within the maximum allowed usage.

Reiterating on the water shortage, adding to the urgency for the mainstream to restrict certain things.

2. Wear white and light clothing.

3. Put on the cooling gel included in this health kit according to the instructions.

Link to the contents of the health kit.

4. Go to the nearest AC-hall. Find your nearest AC-hall at rijksoverheid.nl/ac-hall.

Tied to the restriction of the use of Air-Conditioning and linked to the splinter flyer.

5. Take care of your family members younger than 10 or older than 60. Taking wet towels can help them make the crossing.

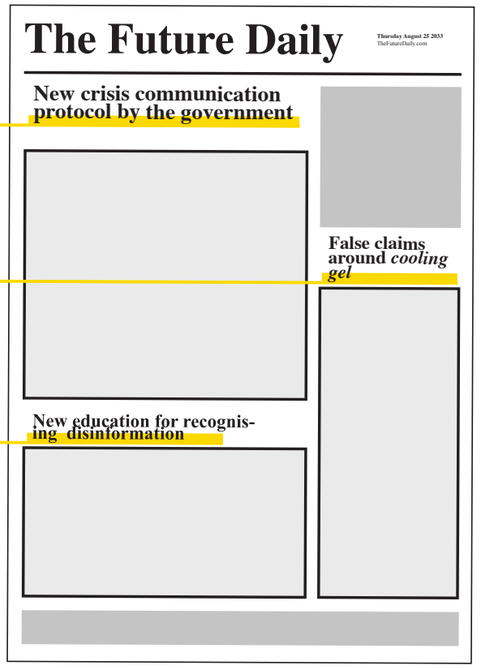
Showing the connectedness of the mainstream, they are also part of a tighter group, because of splintering.

Simplified pages of the Future Daily

Information from government

Debunking

Prebunking


The Future Daily

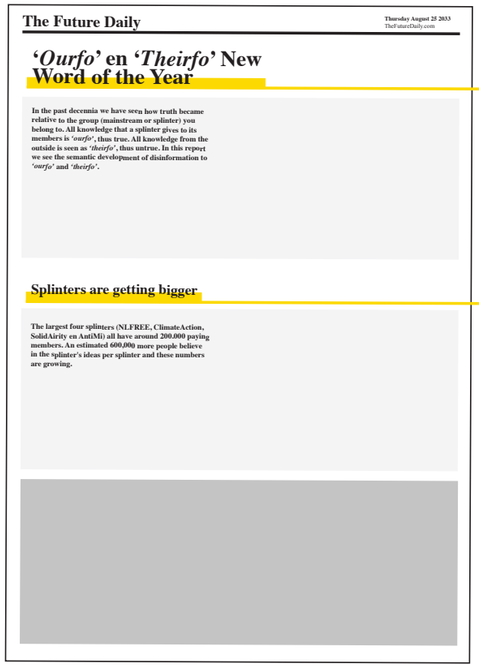
Thursday August 25 2033
TheFutureDaily.com

New crisis communication protocol by the government

False claims around *cooling gel*

New education for recognising disinformation

Adding some extra background information to ourfo and theirfo


The Future Daily

Thursday August 25 2033
TheFutureDaily.com

‘*Ourfo*’ en ‘*Theirfo*’ New Word of the Year

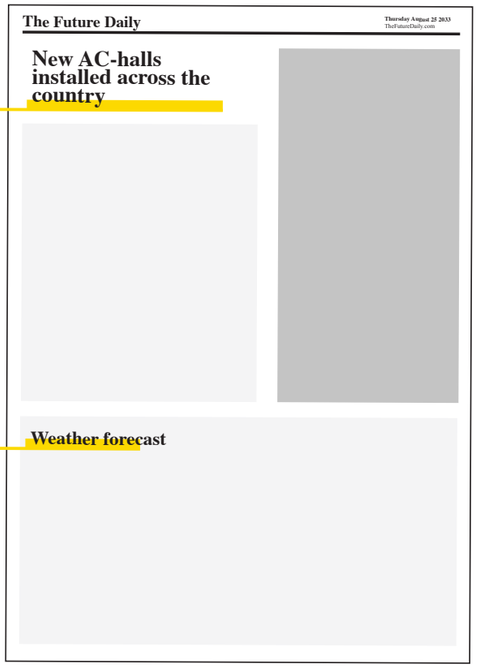
In the past decennia we have seen how truth became relative to the group (mainstream or splinter) you belong to. All knowledge that a splinter gives to its members is ‘*ourfo*’, thus true. All knowledge from the outside is seen as ‘*theirfo*’, thus untrue. In this repect we see the semantic development of disinformation to ‘*ourfo*’ and ‘*theirfo*’.

Splinters are getting bigger

The largest four splinters (NLFREE, ClimateAction, SolidAirity en AntiMi) all have around 200.000 paying members. An estimated 600.000 more people believe in the splinter’s ideas per splinter and these numbers are growing.

Link to the splinter flyer and some extra background information on the size of splinters

Creating a link with the government flyer


The Future Daily

Thursday August 25 2033
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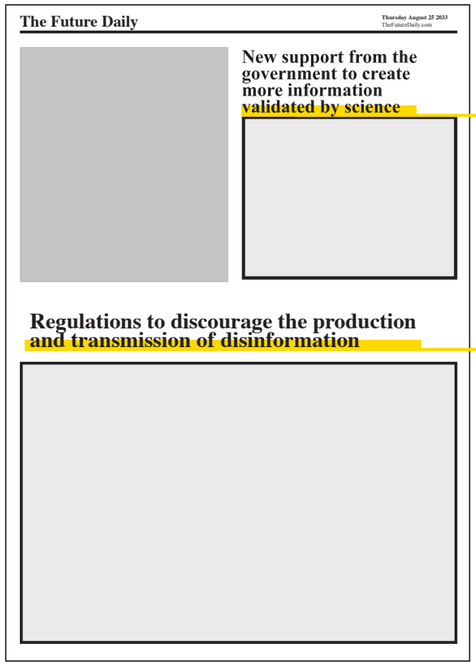
New AC-halls installed across the country

Weather forecast

Weather forecast to improve the ‘newspaper’ feel and to clarify wet-bulb temperatures more if the user is interested.


The Future Daily

Thursday August 25 2033
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New support from the government to create more information validated by science

Regulations to discourage the production and transmission of disinformation

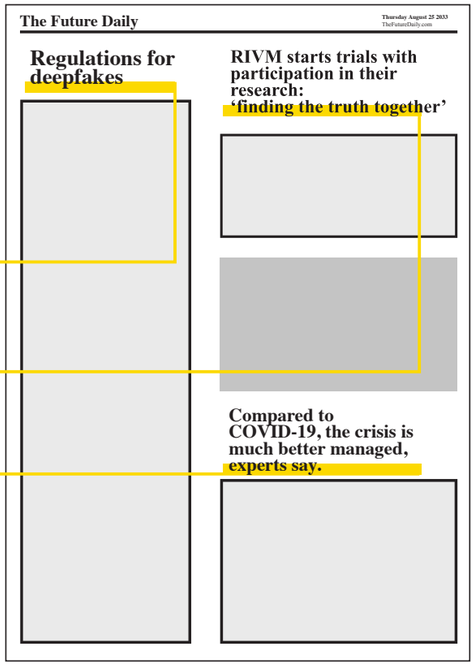
Regulation to support the production of true information

Regulation to discourage the production and transmission of disinformation

Regulation of production technologies

Participation in truth finding

Crisis management


The Future Daily

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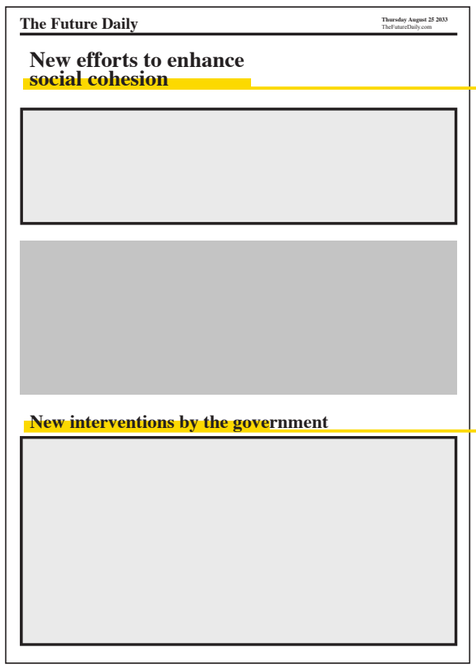
Regulations for deepfakes

RIVM starts trials with participation in their research: ‘finding the truth together’

Compared to COVID-19, the crisis is much better managed, experts say.


The Future Daily

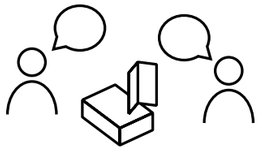
Thursday August 25 2033
TheFutureDaily.com

New efforts to enhance social cohesion

New interventions by the government

Social cohesion to reduce polarisation

Open space for users to fill in the artefact



Chapter 9 - Simulation

The next step, as described in this Chapter 9, is the simulation. The setup is shared, but the discussion is presented in Chapter 10. See Figure 41 for an impression of the simulation.

Setup

The simulation has three goals:

1. Trigger a reframing of disinformation
2. Identify intervention ideas that anticipate a plausible future
3. Align different stakeholders on the systemic and anticipatory problem frame and starting points

In the simulation, participants interact with the future prototypes and talk about their responses, reflections and ideas. First, the two main themes (splintering and heatwave) of the scenario are introduced in a concise and clear manner, to set the stage. Then, the participants are asked to immerse themselves with the government health kit and Splinter welcome package and talk out loud. Deepening questions are asked. Third, the newspaper with unfinished articles is shared for the participant to reflect on and ideate concrete interventions. I might ask the participant to look at certain leverage points if that seems useful for the research. In the final section, a short feedback session is done with the participant. The interviewer explains the use of the insights and thanks the participant. After the simulation, an online survey is sent to the participant to evaluate the simulation. See Appendix 12 for the full research setup.

Evaluation

The simulation was evaluated with the same participants as the future prototype evaluation. It was received well and minor improvements were made. see Appendix 13 for the setup and results of the evaluation

Participants

I used two profiles as participants (Table 4), with the main overlap being they all work for the government. The first group I'm looking for are people who work on disinformation policy or have dealt with disinformation in their work. Their perspectives and experiences will help to ideate relevant interventions and policies. These are participants two, four, five, six and seven. The second group consists of people who have a perspective that I want to use in the simulation to create a wider range of intervention and policy ideas. These participants are one and three.

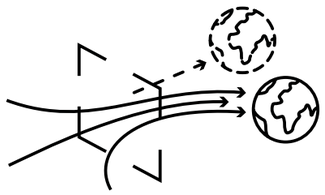
Results

For the results, see Appendix 15.

Participant code	Role	Code in expert interview
1	Technological ethics expert and policy maker disinformation at Ministry of Health, Welfare and Sport	
2	Policy coordinator disinformation at Ministry of Health, Welfare and Sport	G
3	Behavioural expert	
4	Communication advisor disinformation at Health, Welfare and Sport	A
5	Expert disinformation, with 5 years of experience	
6	Member of juridical team of Ministry of Health, Welfare and Sport, who worked on the lawsuits by Willem Engel	
7	Expert on disinformation regarding vaccination during COVID-19	

Table 4. Participants for the simulation, who all filled in the consent form and asked for their name not to be used in the thesis. See Appendix 14for the consent form. Some participants were interviewed in the expert interview research in Chapter 3. These codes are mentioned in the table as well.

Figure 41. Participant reading 'The Future Daily' during the simulation



Chapter 10 - Alignment

The goal of the engagement phase was to align key stakeholders on the new systemic and anticipatory problem frame and starting points as proposed in Chapter 6. In this chapter, the results from the simulation are interpreted. First, the alignment on the anticipatory problem frame is evaluated, after which the alignment on the starting points is evaluated.

Chapter 10.1 Aligned anticipatory problem frame

Information vacuum

The participants all shared the idea, probed through the future prototypes, that a lack of information, a vacuum, creates the opportunity for false and manipulated information to gain traction. Participant 3 says: "We don't know everything about everything. That is also why alternative truths are attractive, because they provide answers to questions to which there is no concrete answer." Often, an information vacuum is created by a crisis. Participant 5 says: "It is above all the crisis and the uncertainty that make people doubt."

"A crisis is a crisis", says participant 2, an idea that is heavily underlying the systemic and anticipatory problem frame. This insight is clear to most of the other participants too. The implication is: each Ministry has to prepare for an information vacuum regarding their area of responsibility. The solution that is proposed by participants is to share the lessons learned and create urgency at other ministries. Participant 5: "It is really wider than the VWS. No way, everyone in the central government should do something about this."

Although this shows an alignment on the fact that each Ministry should anticipate a crisis, this is an alignment between stakeholders that have experienced a crisis relevant to their Ministry. It would be interesting to create new future prototypes, tailored to other Ministries, to create an urgency in their organisations.

Splintering is extreme, but recognisable

Participants made an up and down journey reflecting on the idea society might become as heavily splintered with large groups believing in different truths as in the future prototypes. At first, the participants understood the idea, for example with participant 1 saying: "You don't automatically receive any other information anymore." However, they were doubting the idea too: "I don't think such a massive splintering is on the horizon right now", explained by Participant 2. After the initial agreement and the doubt that followed, the participants mostly recognised parts of the splintering in the present, for example participant 4 commenting: "Yes this [splintering] is already partly in this world, except this is big."

It was interesting to see how the future prototypes triggered such an internal struggle between believing the scenario and recognising it in the present already. It seems that maybe the participants did not *want* to believe it. This is seen in a comment from participant 3: "I find it shocking. But I think it is not that far away. [...] I find that scary." Participant 5 shows her expectation too: "I think the scenario is extreme but imaginable. No, but honestly, I think this is what could happen if you don't do something."

Freedom and the dangers of freedom

The driver "a renegotiation of freedom and control between citizens and government" came back as a second internal struggle during the simulation. This struggle was expressed from a governmental perspective: between freedom and the dangers of that freedom.

Freedom of speech and freedom of choice were considered to be highly important in society. It was the starting point for many reflections on the future prototypes. Participant 1 agreed, "Freedom of speech is of course a super, super important thing."

Participants strongly believe citizens will do the right thing with that freedom, when well informed. Participant 2: "You shouldn't feel obliged to take the vaccine, but make sure you know all facets of what is going on."

While participants explicitly mentioned that they don't want to restrict any freedoms, they saw the dangers of freedom of speech and choice too. Participant 3 explains this clearly: "You don't want to limit the freedom of speech, but if it has substantial consequences for people, I think as a government you have to take the step to protect people against certain information." Participant 1 comments on the freedom of choice for health: "If there is chlorine in [those cooling pills] and then everyone comes to the hospital. Yes, then there will be [actions] and I think that at least at the moment there is also a legal basis to tackle that. Because you're putting people's lives in danger."

So, there is a balancing act between freedom and limiting the dangers of freedom. Often the law is used as a limit, but it seemed like an 'easy' way out, not solving the deeper issues involved in this balancing act.

A lack of mutual trust between citizens and government

Because the struggle between freedom and the dangers of that freedom did go deeper and was often *implicit* in respondent's reflections: the struggle between trusting or not trusting citizens. Participants reflected on citizens distrusting the government too, reiterating an important part of the anticipatory problem frame: a lack of mutual trust between citizens and the government.

There was a strong belief in the power of citizens to deal with the dangers of freedom. Participant 4 says the following about this: "[...] we believe in the good of people [to make the right decision]."

Having said that, a distrust towards citizens was apparent too. The first I noticed this was through the comments about living in an egocentric society, for example by participant 2: "A lot of people just don't think it [following corona measures] is important enough. We do have quite an egocentric society at times. Do it for someone else. Yes, bye, I'm not going to possibly risk my well-being for other people." In other examples it was an implicit and underlying distrust, like participant 7 commenting: "That's the whole discussion about drugs: should it be banned? That's the same as with small children. Telling small children not to take candy will only make it more attractive to do so." Participant 2 added: "[...] if people are a little more resilient and don't immediately run around when something is on fire and look up questioningly when they are rescued."

On the other hand, participants reflected on the distrust towards the government too. Participant 2 mentions "that frame: 'we are trying to suppress people, to keep people stupid, we have a hidden agenda, well, so on.'" Participant 6 adds to this: "He who pays the piper [scientific research] calls the tune, is of course the saying. So yeah, of course that's just 'bribing the scientists to get your way' [distrustful citizens say]."

I don't think this distrust is on purpose or a belief participants hold explicitly, but throughout the interviews this underlying feeling became apparent. Together with the clear recognition of the distrust towards government, a mutual distrust is identified. This seems to form the basis for several problems in the anticipatory problem frame, like a plausible splintered world happening and the struggle between freedom and the dangers of freedom.

Conclusion alignment new frame

In conclusion, did I achieve the subgoal of aligning on the systemic anticipatory problem frame? Partially, is the answer.

First, the majority of the participants were already familiar and knowledgeable in the disinformation domain. This meant it was hard to create a new understanding of the topic. However, the participants did say, mostly in the evaluation form, how the simulation helped to find a new perspective or insight. Participant 2 said: "It [the simulation] has helped me to look at a possible future differently, adding more facets to the approach to disinfo." For participant 7, "[the simulation] has further reinforced my view that polarisation contributes to the spread of disinformation and I really think we need to work on that in the future." This shows a reframing towards the systemic anticipatory problem frame I wanted participants to take in.

Second, the question is now how long these impressions last. Were they only situational within the simulation or are the insights, the new problem frame, to be used in future decisions about disinformation? First reflections about this can be read in Chapter 12.

Chapter 10.2

A shared vision for an empowering government.

Finding a shared vision

The original goal of this thesis was to find starting points to respond to the systemic and anticipatory problem frame. Not only did this happen, but a shared vision was created for an empowering government based on mutual trust.

The scenario acted as a warning for participants, a scenario they didn't want to happen. In response to that, the participants started reflecting how they would *like* the future to unfold, creating an implicit vision in the process (Chapter 2). Also, the newspaper with unfinished articles containing starting points helped to identify how this future should look like and which concrete actions are necessary. Participants picked out some of the articles more than others, and reacted to them honestly. Interpreting the reactions to the future prototypes resulted in an overarching future vision with concrete starting points.

The vision: an empowering government based on mutual trust

One of the key moments in many of the interviews was the participants seeing the term 'ourfo' on government material. They "can't imagine this would be used on such a folder at the moment", according to participant 1. The use of ourfo and theirfo "is already pushing someone away, which I find very bad", says participant 4. It seemed a clicking moment where participants wanted to do something to prevent this future.

Instead of a highly splintered country, where groups might live in parallel societies distrusting of the government, the participants wanted a world where citizens and government came towards each other and citizens are empowered to deal with possible dangers of freedom like disinformation and polarisation.

Some participants mentioned becoming an 'open' government to respond to the systemic and anticipatory problem frame. For example participant 2 saying: "[An open government] is the goal." An open government is a government that is transparent in decision making. However, the participants seemed to want more, and through my knowledge and vision on disinformation, made the translation to an **empowering government**. A government that goes out of its way to empower citizens to make the best decisions for themselves respectively, by themselves, with all the freedom the Netherlands is proud to have.

To achieve this vision, overcoming mutual distrust is vital. An empowering government is a way of looking at citizens, not from the 'Haagsche Toren' (analogy for an elitist government looking down on citizens), but from a mutually respective standpoint. Next to each other, expecting things from each other. "Really looking for more connection with citizens. Also getting off the high horse, where you, as a government, think you just know better," says participant 1. A government that doesn't restrict, but enables citizens to live how they want to live while dealing with possible dangers a free society can bring.

This mindset of empathy sometimes shined through during the simulation. Participant 5: "The government itself makes enough mistakes. I understand that if you have been a victim of the child benefit affair and your child has been removed from home because you were in debt, that you think that the government does not have good intentions with you." Participant 6: "People have their own legitimate concerns, so you have to pay attention to them." Embracing these thoughts and building mutual trust from there onwards is of great importance to become an empowering government.

Starting point levels

Within the vision of an empowering government, starting points for dealing with disinformation were chosen and iterated during the simulation. The starting points are effective on four levels. (Figure 42)

The first level is the **society** level, building a resilience in society towards disinformation, no matter the crisis. In a broader sense, it builds resilience against threats to democracy like polarisation. This level requires a long breath and results are not clear right away, but can bring large systemic change towards the vision.

The second level is that of **themes**, for example a crisis like the COVID-19 crisis or the migration crisis. Action perspectives lie in building trust between government and citizens on the topic at hand. This means that disinformation doesn't have a chance to fill up an information vacuum and build distrust. Efforts on this level are shorter term and more directly linked to a specific theme.

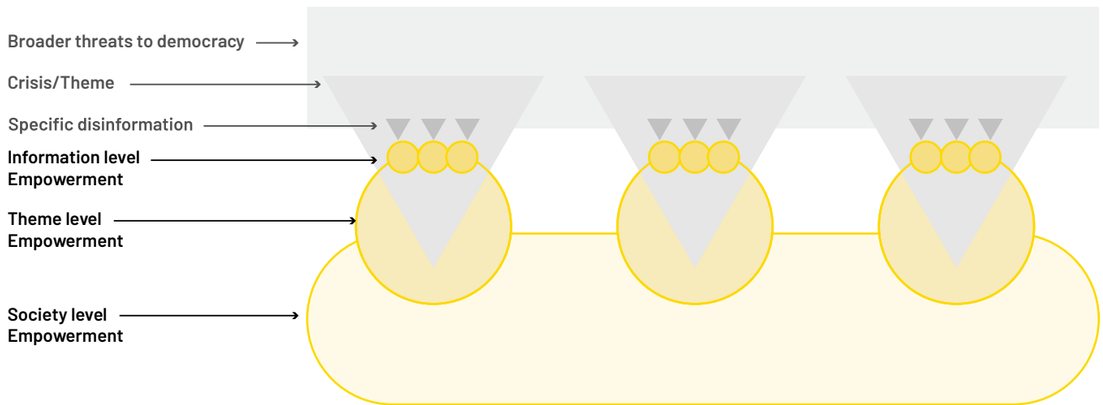


Figure 42. The different intervention levels and levels of threats.

The third level is about specific pieces of (dis)**information**, for example a news show where effects of the vaccins are doubted. In these cases actions are tricky and often not possible. However, in my experience, this is the level where executives want action the most. In the integration phase, it is important to create a reframing here too.

The effects of efforts on different levels influence each other positively. Interventions on the societal level will make sure citizens are empowered on a crisis level, and interventions on the crisis level will make sure citizens are also empowered to deal with specific disinformation. Vice versa, interventions on the information level will help on the theme level and efforts on the theme level will build resilience and trust on a societal level.

A fourth level, the internal **organisation** level, is identified for interventions that make sure urgency and knowledge about disinformation is shared throughout the government.

Society level

On the society level, participants saw an opportunity for **education** to build resilience against disinformation. "[Education] is something why the disinformation frame could lose its foothold," says participant 2. Participant 7 mentions what that education should be about: "Because you want people to learn, especially children, but also just people in general, that you should not base your opinion on what one person shouts, but hear different things and then make your own assessment of what you believe and what you think is reliable."

What is clear in the (dis)information system is that the smallest group of distrusting people is the loudest and creates doubt and more distrust in society. This group will always exist, but it could be an opportunity to **empower the middle and moderate group to speak up**. Participant 5 hopes "[disinformation] is responded to with: 'this is just not okay'. That the middle group will speak out more."

A final direction in the society level is to research how the government might **deal with future information vacuums**. Could the information space be resilient against vacuums? How can society be resilient for lack of information, for insecurities, for disinformation trying to get in. To become comfortable with not knowing.

Theme level

Next, on the theme level, **transparency** was one of the starting points for interventions. Participant 3 explained how "we have to take people by the hand, by being transparent. [...] People want to understand why we have to take serious measures, what is happening and how decisions are made". The government can achieve this through transparent communication. Participant 4 says the government should communicate "much more honestly." Participant 1 made clear "there is also a difference in being actively transparent." The Ministry should not only put information out there, but "you have to make sure you match their information needs, because otherwise you will actually be depriving them of their information without the people knowing", says Participant 2.

Transparency can be taken even further through **participation** in truth finding and decision making. By opening up government and epistemological institutions the mutual understanding can be established even more. Government officials can build empathy for citizens and create better policy. Citizens can create an understanding of how decisions are made and "how research works" according to participant 2. All participants supported the idea of participation. They thought it was important "to go find some kind of common ground" (participant 4) and "use different perspectives" (participant 3) to deal with difficult situations and decisions. But it should not be "the 'just to do it' participation" (participant 1), no, "it should be clear in advance what will be done with the findings. This should be adhered to by the government, so it must be based on trust".

Lastly, an empowering government means to be a constructive government, to **offer solutions instead of restrictions**. "[...] We are much better in: 'we close things or allow 10 people to enter', than roll out something that improves ventilation. [...] We have very little In the supportive atmosphere," says participant 6.

Information level

As explained in Chapter 4, dealing with specific disinformation is tricky. **Debunking** is the most well known intervention, but this involves reiterating over the piece of disinformation, which can enlarge its influence. The only intervention currently actively done is debunking. However, it is not mentioned by any of the participants, not even the communication advisor executing those debunking efforts. This could indicate that the future prototypes succeeded in enabling participants to stretch the space for solutions. And, it could indicate that debunking is not the best way forward dealing with disinformation.

The other action government or private organisations could try is **taking down disinformation** through social media platform guidelines, law enforcement or inspections. Participant 5 comments: "Where is the limit? Disinformation as a phenomenon is within the law, it is legal, but there are certain forms of disinformation that we can all say is just not acceptable." There are different examples. First, the Inspection for Healthcare and Youth (IGJ), can reprimand doctors for sharing false or misleading information contradicting the norms and guidelines of their profession (Ministerie van Volksgezondheid, Welzijn en Sport, 2022). A second example could be social media taking down a user that shares information that goes against their policies. These options are the last government should take, as it hurts the mutual trust that it is trying to build towards the empowering government.

Organisation level

Internally, it is key to **create, secure and share knowledge in the whole government**. This way, each Ministry can be prepared for efforts needed on the societal level, but also when information vacuums occur on crises relevant to each Ministry.

Participant 2: "I think the important thing is that you also have to look at: 'What have you learned from this? What things come out that you have to keep and secure?' You have to take action with that."

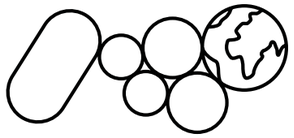
Conclusion alignment starting points

The second subgoal in this phase was to align on starting points. Not only is there an alignment on the starting points, but there is a vision that connects these efforts and gives direction.

Although this is the case, there are three problems. First, the starting points are less concrete then I hoped, but this is logical, because of the high abstraction level often present in the conversations. Besides this, non-designers seem to have a harder time ideating 'on the spot': "It is pretty difficult to think of an idea right away," says participant 4. Second, the participants thought of this vision apart from each other. On the one hand, this makes it strong as each participant individually thinks in the same direction, on the other hand, they couldn't discuss it and make it stronger together. This is the third difficulty, because I improved the separate implicit visions of the participant into one overarching vision, not having taken the participants along with this process (yet).

Having said this, I'm mostly happily surprised that a strong vision came out of the sessions, as I actively made the decision to not focus on creating a vision, as this is a hard task, but simplifying it by aiming for starting points. However, now the 'empowering government based on mutual trust' is clear, this vision can lead the way in the integration and ensemble phase.

Section 3 - Integration & Ensemble



Chapter 11 -

Starting a movement

Setting the stage

In the final phase, the insights from the foresight and engagement efforts are integrated into the organisation, answering the final research question: how can the problem frame and starting points be integrated in the organisation for further development? This phase was initially outside of the scope of the project. However, I set myself the goal to create a way to secure the broader and anticipatory problem statement and starting points in the organisation. To at least create a stepping stone for future efforts on disinformation within the Ministry of HWS.

For this integration, a team dedicated to working on disinformation, was initiated. At the start of 2021, advice was given by two designers from the team, based on a short 4 week low intensity design process, where the problem was explored. The advice was given to start a disinformation taskforce that can focus on creating interventions to deal with disinformation. Not long after, one of these designers left the organisation and one moved on to other projects. Nothing was done with this advice, but it was exactly the backing that was needed to integrate insights in the Ministry and make sure efforts would continue after this thesis.

For achieving continuation, such an advice document is good, but more importantly, the ideas should live on within the organisation. Making change in government is about starting a movement.

To start this movement, I teamed up with a policy maker working in the data (participant 1) and design team and my supervisor Sebastiaan van Lunteren. Adding onto the advice, I used knowledge from my thesis to build a solid argumentation. We had a meeting with the director of the department PDCIC, who gave us a 'go' on the plan. This mandate legitimised our efforts and, crucially, made it possible for the policy maker to work 2,5 days on the team. Together, albeit with limited capacity for me personally, we formed the initial disinformation program team.

The next step in the movement is meeting with other civil servants in the Ministry working on disinformation. This is an important aspect of getting things done in the organisation, as ultimately, it is a big group of people interacting and deciding together what happens. We gained feedback and started connections. A kick off meeting was held, meant as a starting point for more intensive collaboration on disinformation. But, if this will happen is the question.

The initial project

With the movement started, the disinformation program team began an initial project to crystallise a prioritised short-list of twelve intervention ideas to work towards the empowering government vision. I will continue with this project after the graduation is finished to ensure continuity.

The overall goal of the disinformation team has been identified together with the team as: *Becoming a government that empowers citizens to make conscious and informed choices about their health, based on a mutual trust.*

Furthermore, within the vision, certain starting points are chosen to ideate concrete interventions for the short-list. A starting point is chosen together with the team, when the starting point fits in the goals of the broader organisation and seems to have high chances of getting a mandate for further development. The following starting points are chosen to discover:

- Education (society level)
- Transparency & participation (theme level)
- Debunking (information level)
- Spreading awareness and knowledge (organisation level)

With these starting points, we will create the short-list. Currently, the team and colleagues ideate interventions through several ways, one of which is a brainstorming session with designers from the team. Good initial ideas came up like open-source policy making with transparency on the argumentation, a Q&A tent at demonstrations or the 'policy-festival' where citizens and policymakers come together.

In several rounds of detailing and choosing, the team will come up with a short-list. This list is ordered based on priority. Interventions are worked out with a drawing, description, experiment plan and an estimation of time/ budget. With the short-list, the team will go back to the director of PDCIC and advise on which intervention(s) should be made first. The director will decide which of the interventions will be created, after which the next step will be taken.

Next step: an iterative innovation process

The next step is an iterative innovation process of designing and testing the intervention, so that eventually the government can become an empowering government. In this ongoing process, an ensemble (chapter 2) is needed, creating a harmony of foresight, engagement and integration efforts within the organisation that leads to action towards the shared vision. One example is a lunch lecture I will give at the end of the year about disinformation for the PDCIC department. This movement started during this project, but needs to be amplified after my project for successful interventions dealing with the systemic and anticipatory problem frame.

Conclusions

Reflections and recommendations on the process

The combination
In this project I used systemic design (Meadows, 2008) and experiential futures (Candy, 2010), combined in a framework of anticipatory governance (Guston, 2014). Looking back, this has been the right choice. Stretching the problem frame in two directions enabled me to understand the problem in great depth, but also see more possibilities for interventions dealing with disinformation.

Some warnings of using this combination should include that firstly, it can be a highly analytical method in the foresight phase, which has to suit the designer. I'm curious if more intuitive design methods would have yielded the same results. Secondly, it can be quite overwhelming to zoom out all the way, in two directions. Thirdly, there is a steep learning curve to get into the methods and a good base of design theory is necessary.

Having said this, after embracing the size of the endeavour, the combination gives great power. The system map enables one to easily understand new knowledge or respond to questions from experts as well as people new to disinformation. The driver/trend analysis makes sure you know what is actually happening to the elements in the system and helps one to see plausible outcomes of actions in the present.

I would always recommend using both systems thinking and futuring. Without systems thinking, you won't know if you are researching relevant signals/trends/drivers. Without futuring, a systemic design can be outdated when it comes into the real world. The 'systemic anticipatory problem frame' is a way of not only looking at the problem, but also at the development of that problem. A concrete deliverable of the marriage between the two methods. I'm curious how I, and perhaps even others, can use this deliverable in future projects.

Future scenario
Because of using a system map to base one's futuring efforts, there are less worlds 'plausible'. So, when considering the future cones, the cone will be somewhere between plausible and probable. In this project, only one plausible future was the outcome. I'm still reflecting on this. It is a good thing to be more sure about what the future might look like because of the system map and it can speed up the futuring efforts. On the other hand, I'm worried that the system obstructs the view of more plausible worlds that the Ministry should prepare for. I would like to test this out with another project tackling a similar problem with two designers using future scenarios with and without systemic design to see how different the plausible worlds are.

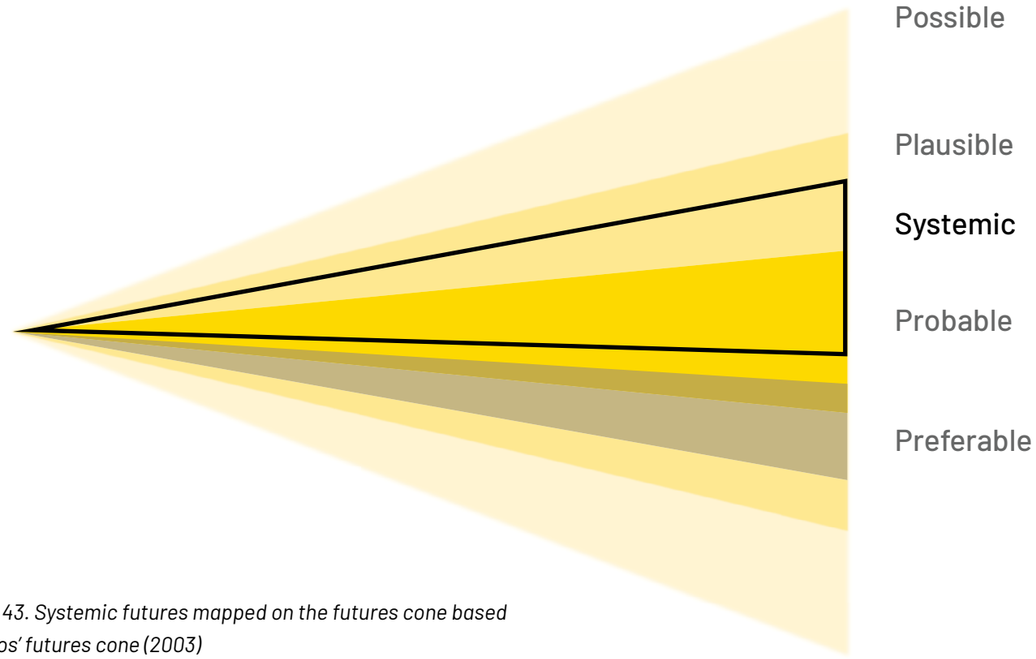


Figure 43. Systemic futures mapped on the futures cone based on Voros' futures cone (2003)

Next to this, during the driver and trend analysis I became quite pessimistic about the plausible future, which shows in the scenario. Fixation, when a designer sees only one direction, is a danger in the process of systemic design / futuring too.

A final reflection on creating the scenario, especially on the driver/trend analysis, is the 'presumed trends' pitfall. A term that desperately needs better wording, but nevertheless an important insight. It is the pitfall of thinking a phenomenon is growing, but what is actually happening is you gaining knowledge of that phenomenon. It is not that more is happening, you just see more happening. I tried to overcome this pitfall by robust research and validating trends, but I will keep this pitfall on my mind for my next futuring project.

Future prototypes

In contrast to the more analytical foresight phase, creating the future scenario and prototypes is a welcoming intuitive process, where the first interpretations of the systemic and anticipatory problem frame happen. I do recommend using this frame as a base to write the story, but in the ideation for the prototypes, full creativity is needed to tell the story in an engaging way. Creating the objects is an iterative process, going back and forth between the research and the objects to create strong links and making sure the right story is told.

In the evaluation of the simulation, it was clear that the prototypes helped participants to think and talk about the future.

> Participant 1: "It is very motivating to think about a subject from a future simulation. It stimulates creativity and drive. I would definitely do it again."
>
> Participant 3 said: "I actually find it difficult to step out of the current context altogether. These kinds of products help by being able to visualise what a future image might look like right there. Giving handles and you help me to go along with it. But in your reflection you often shoot at what you know and have experienced."
>
> Participant 4: "Because it is very concrete and it does something to you."
>
> Participant 5: "Well, I think it made me realise again, because we're really thinking about that anti-Institutionalism right now, what that might look like if it gets really bad and we would let it get to that point."
>
> Participant 7: "It is much more realistic, despite being a simulation, than just asking about situations."

Alignment

To align participants, I chose to do individual simulation sessions. This was done out of practical reasons as policy makers are very busy and it's hard to get them in one room at the same time. However, in hindsight, I do think it would have been valuable to do the simulation with all of them in the same room so that they could reflect together. In future projects where alignment is a goal, I will do group sessions.

Concerning the responses to the future scenario, I was aiming to gather interventions that would respond to that future scenario, *in* that future scenario. Instead, interventions were thought of that would *prevent* the scenario from happening. The vision that is created is in that way another plausible future scenario, but a desired one. For this project, the latter is a good outcome, maybe even more usable. In a study where ideas for interventions *in* that scenario are needed, a different approach is needed.

Integration

The simulation has reframed participants' problem frames during and shortly after the simulation (see Chapter 10). The question that I asked myself then was: how long will this reframing last? Is the new frame used in future decisions about disinformation? Luckily, I talked to and worked together with a couple of the participants in the integration phase. It seems that the reframing hasn't lasted long. Forced by the reality of the organisation, which wants quick results, focus quickly shifted on short-term wins and safe interventions.

One concrete example of this is one participant who was writing a letter to parliament with the new direction for disinformation government wide. A great opportunity to use the broader and anticipatory frame for a big impact. Because I made contact with her during the simulation, I could give feedback to the letter. This in itself was a great win, but while reading the letter, it was hard to distinguish aspects of the scenario there. I especially hoped to see traces of polarisation, but this was not the case. I did give thorough feedback based on the results of this thesis, and some went through. However, it would have been great to see a change in her thinking instead of me pushing those ideas again. It would be worthwhile to ask her and the other participants what the longer-term impact of the simulation is to them and to test solutions to create this longer-term reframing and anticipatory mindset.

I do realise that reframing is hard, and adopting a vision too. It's a struggle because current ideas have to be stretched or changed. This is not achieved in just one session. I would advise designers planning to make a reframing stick within the participants, to do more sessions and bring people along a curated journey to create a long-lasting change.

The most important aspect for success of a design project in a large organisation like this is creating a buzz. A movement where you as a designer personally create connections and make sure that things are actually happening with the insights of the project. My recommendation is to make connecting part of your project plan and allocate time to it. By doing this, you will create a movement that will last past the project.

Lastly, in the integration and ensemble phases, it is necessary to consult citizens in the process of creating plausible futures and visions where to steer towards. This will make the futuring process more democratic and fair as citizens are the ones affected by the visions created for the government.

Conclusion

Disinformation can be a danger to health, which the Ministry of Health, Welfare and Sport experienced intensely during the COVID-19 pandemic. The Ministry wants to take action, but there are several hurdles to effectively deal with disinformation. In this thesis, the goal was to *catalyse a broader and anticipatory problem frame of disinformation, find concrete starting points for interventions dealing with disinformation and align key stakeholders on the new problem frame and starting points.*

In the *foresight* phase, the first puzzle pieces were created. A systemic and anticipatory problem frame captured a broad and deep understanding of disinformation and opened new worlds for interventions to effectively deal with disinformation.

In the *engagement* phase, future prototypes enabled key stakeholders in the organisation to experience the systemic and anticipatory problem frame. This triggered alignment on the systemic and anticipatory problem frame. Even moreso, a new vision was formed to bring balance in the (dis) information system. Within this vision, several starting points for interventions are identified. An alignment on the problem frame and the vision has been reached, which means I achieved my goal. This alignment has to be nurtured in the future.

This is done in the *integration* phase. First steps are taken to integrate the problem frame and vision in the organisation. A stepping stone for further development is created in the form of a disinformation program team. An initial project is ongoing to create possible interventions aligned with the vision. Next, an iterative innovation process is started to design and test these interventions. Furthermore, development of the systemic and anticipatory problem frame and vision is needed through research and especially thorough discussions in the organisation.

Simultaneously, an *ensemble* of these efforts has to be created. A harmony of actions, all towards the same goal. It seems like the time is right for this. There is an energy in the government on the topic of disinformation. This graduation project, the disinformation program team, new connections formed within and outside the Ministry, a new letter to parliament and attention for the topic. The momentum is now to act and to empower a society that is resilient to disinformation in open society.

My supervisor Sebastiaan van Lunteren said the following about my integration and ensemble efforts: "You can't change the entire government as a graduation intern, but what you can do is get things going and if that's succeeded, that's already such a good result. A report often ends up in a drawer. If you really want to have an impact, you really have to do more than produce a report. You even have to do more than produce a really good report. It's what is put in motion that counts [...] The fact that much more is happening now, is of course a super nice result."

So, in this project, impact within the government is created through a series of phases for anticipatory governance. Hopefully, the process can have an impact in the (systemic) design and futuring field too. In this process, a new combination is made between systemic design, anticipatory governance and experiential futures. A new way of working, giving the designer power to design for complex themes like disinformation. Enabling the designer to look *broader* and *farther* ahead. Opening up new possibilities to bring back balance in unbalanced systems. New use of this systemic, experiential and anticipatory approach is encouraged, to improve and adopt the process for future challenges.

Afterword

In the week before finishing this thesis, I went to the Dutch Design Week, fifteen years after my parents first took me there. Fifteen years ago my love for design started, which powered me through my life. I'm grateful for the opportunity to go from making little model products, designing interfaces, creating service journeys to my dream of attempting systemic change on a societal level.

This project has been a milestone in my journey towards design for policy. I strongly believe that designers bring a crucial human centred and holistic perspective to government. Designers can create policies through an iterative process, making sure these policies fit the needs of citizens and society. Designers can open up the solution space from only policies to websites, products, services, experiences, systems. Designers can spark energy and connect people.

This is a journey on a road paved by great designers and especially non-designers embracing design as a new way of working. I was lucky enough to find myself in a great team of people, kicking against the governmental system, creating space for design. One of the greatest joys in my time in this team was the chance to give feedback on a letter to parliament about the new disinformation strategy.

Thank you for making it all the way here. I hope this thesis has been somewhat inspirational to use design within government and gives tangible ways of doing this. Let's see what the future holds for design for policy. I'm excited.

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Ties Schotel