

Drawing the line



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Dansk omslagsbrev

Gennem en undersøgelse af en borgerinddragelsesproces angående et kystbeskyttelsesprojekt i Dragør kommune svarer dette speciale på hvordan bekymringer og argumenter bliver frembragt i og omkring borgerinddragelsen, hvilke roller forskellige former for viden spiller samt hvordan indsigter fra Dragørs borgerinddragelsesprojekt kan hjælpe med at forbedre fremtidige borgerinddragelsesprojekter. Ved at udføre et teknoantropologisk feltstudie, der omfattede både observationer, interviews samt undersøgelser af tekniske rapporter besvarer dette speciale hvordan forskellige former for viden og ordningen af disse har indflydelse på borgerinvolveringen gennem et perspektiv baseret på STS. Ved at kontrastere Callon et al.'s tanker om det *hybride forum* med Jasanoffs formsprog om *co-production* informeret af Marres' arbejde angående *issues*, finder dette speciale at vidensmøder mellem ekspert-, lokal-, samt proceduralviden kan generere skepsis, men også skabe fundamentet for en robust vidensproduktion. Resultatet afhænger af hvordan udformningen af formatet hvori man involverer borgerne, og hvorvidt de har indflydelse på hvilke rammer man opstiller for projektet. Transparens i forbindelse med borgerinddragelse bliver diskuteret og et behov for mere arbejde i at forstå transparens *in-the-making* bliver afdækket for at hjælpe fremtidige borgerinddragelsesprojekter.

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1 Introduction

Climate change poses great challenges for the world at large. While some areas will be affected by drought or increasingly extreme weather conditions, other places prepare for a future with rising sea levels.

Following a period of devastating floods throughout Europe, the EU Floods Directive was adopted in 2007 to increase work with controlling and preventing flooding. The EU initiative enrolled the Danish Coastal Authority to focus even more of their work on climate change assessment and designation of areas with substantial risk (Kystdirektoratet 2020a). Denmark is a low-lying country that has 7.300 km of coastline, and when combined with a population mostly living by the shore, they face a range of issues regarding storm surges and rising water levels (Realdania 2020). The coastal protection law in Denmark imposes the responsibility for protecting the coast, with few exceptions, on citizens and municipalities, both regarding planning, construction and maintenance (Kystdirektoratet 2020b). The increased risk for flooding and the imposed responsibility for managing this delegate a set of difficult issues to the Danish municipalities for solving. However, as coastal protection projects around the country take form and begin to leave the drawing board to be realised a wide range of issues arise and impede the processes. As actors involved in coastal protection look to these issues, they investigate new procedures for initiating and executing such projects. Dragør is one such municipality with its coastal protection project "Robust Kystkommune".

Dragør stretches along the 13 km long southern coast of island Amager, but in terms of population, it remains a small city with only 14.000 citizens. The city is also exceptional in many other ways. It is both culturally and historically noteworthy as a relic of an old seafaring town, and today it contains large recreative areas, nature reserves, old farms and newer neighbourhoods along the coastal stretch of Dragør. During recent years, Dragør has worked with projects for protecting its coast, and while some have concluded with the construction of minor dikes at parts of its coastline, they have developed no collective solution. Instead of maintaining a divide between experts and citizens who clash in public hearings within the typical framework of local democracy, Dragør now seeks to create solutions bottom-up through extensive citizen involvement. In 2018 the municipality completed such an involvement process to legitimate a principal decision. This became the precursor for the Robust Kystkommune project starting in 2020, which has the main goal of producing three conceptual design proposals for coastal protection. This time citizens are invited to create knowledge with both politicians and designers to develop different solutions and anchor the project locally.

1.1 Academic stances in Science, Technology and Society Studies

Science, Technology and Society (STS) scholars agree that science is not a practice detached from society at large. Often the products of science that are developed by experts in highly specialised environments reorder society, its citizens, and their conversations. Other times society intrudes the laboratories and formulates the practices of science. Thus, the study of the relationship and interactions between science and society has a long tradition, many researching encounters between scientists and laypeople, and what ramifications and ripples they have. These encounters often revolve around controversies, as they are hotspots for understanding the interplays between science and society.

Some advance the idea of hybrid forums, places for laypeople and experts to meet and collectively approach and construct solutions to problems of both science and society. There are mainly two intentions behind making an apparatus for such encounters; 1) the representation of the people in politics improves through the direct involvement of the people, and 2) the monopoly of science is challenged through introducing citizens into the production of scientific knowledge. The hybrid forum that facilitates the cooperation between experts and citizens is suggested to democratise democracy (Callon et al. 2009, 36-37).

Many scholars agree that increased cooperation between experts and laypeople indeed appear promising. However, some question the basis and methodology of the hybrid forums. One of the problems that arise revolve around the facilitation of the hybrid forum; *how* is one exactly supposed to create cooperation between citizen and expert (Jasanoff 2012). Furthermore, it is critiqued for lacking to describe the inner workings of the hybrid forum; what makes it productive and effective in formulating and addressing issues (Whatmore and Landström 2011; Marres 2007). Thus, there is an ongoing debate regarding the practical applicability of a hybrid forum.

1.2 Our contribution to the field

In this work, we show that negotiations in a Hybrid Forum affect and reconfigure the Hybrid Forum itself. Therefore the facilitation of it will inevitably be a negotiation of both content and its form. To support the facilitation, we suggest a new definition of transparency where the negotiations about solutions are both social and material. Acknowledging that people make sense from both social and material configurations imply that technical knowledge production in a social framing cannot happen without mutual influence.

Paying attention to issues that arise about both can lead to fruitful new ways of public involvement accustomed to the local context. On the contrary, rigid framing of form or content both blur the “how” of addressing of issues.

More work must be done to understand how hybrid forums are made in practice to develop models of citizen involvement further, that are grounded in involvement-in-the-making. By understanding issues on the citizens’ terms, through their arguments and concerns, we see a new way to understand citizen involvement - not as a tool for decisionmakers, but as a democratizing guide that can produce robust solutions.

Through our work, we investigate the citizen involvement processes in the coastal protection project in Dragør. We focus on knowledge encounters that unfold as citizens meet experts in arenas we could describe as hybrid forums. We do this to inform the debate about the application of involvement processes that focus on cooperation in knowledge production and solution development.

With the case at hand, we are privileged by having access to a rather large group of citizens actively participating, engaging and involving themselves with the coastal protection project. Furthermore, there are several local officials, aided by a few consultants, who are actively working toward creating the best possible environment for cooperation between citizens and experts. Lastly, several local politicians and decision-makers have decided to commence these citizen involvement processes. Although they are not actively participating in the process, they are supportive of the initiative.

Thus, we answer what happens when highly engaged citizens participate in an extensive involvement process intended to solve a contested technical and social issue. We do so by answering the questions:

What concerns and arguments are brought forward in and around the citizen involvement in Dragør Municipality?

What role do different types of knowledge play?

How can our understanding of the coastal protection project in Dragør municipality inform future involvement of citizens in similar projects?

1.3 Our standpoints and ambitions

Both as researchers and private individuals, we all hold ideals about how involvement and participation can strengthen democracy. However, we do not believe that anyone can seamlessly implement procedures to attain this, neither that it is certain to contribute to solutions for the common good.

We believe that describing a world as it appears always have value in communicating ideas and findings. While we do not underestimate our impact on such findings, we nevertheless strive towards allowing the reader to form their own judgements about our story. Thus, we hold no immediate urge to make normative statements. In the following, we present our work, reflections and ideas, for others to draw upon and learn. While we do make suggestions, we do so through elaborating on the relationship between processes and outcomes, instead of stating that one solution or the other always will hold merit. Because we believe that no matter the problem, the solution must always be locally adapted, thus our recommendations will be just that and based on learnings, rather than normative ideals.

Lastly, we assign no priority between theoretical academic contributions and practical, real-world implications. Thus we strive to have our findings inform both.

2 State of the dike

Throughout this section, we introduce the story of Dragør. We focus on its coastal protection history and earlier citizen involvement initiative, together with the technical aspects and expert knowledge regarding the problem of rising sea levels, the coast and the possible solutions. With this, we share the background information necessary for understanding details and themes touched upon through the remaining work.

2.1 Introduction to the issue – Storm surge protection

Protection against storm surges is of great public interest for Dragør because it affects the citizens quality of life, their everyday landscape, their economy, and unfortunately sometimes their health. Dragør is one of the smallest municipalities in Denmark, with its 14270 citizens (Danmarks statistik 2020). Its low topology in the landscape and the 13 kilometres of coastline makes big parts of the municipality vulnerable to flooding. See Figure 2-1 for a picture of Dragør. Sea level rise caused by climate change is a global



Figure 2-1 Dragør's coastline with an indicative alignment and six subsections (Dragør Kommune 2019)

problem that strikes locally with differing intensity. According to the Danish Meteorological Institute (DMI), the past 30 years have been the warmest in 1400 years in the northern hemisphere (DMI 2018). Following the rise of temperature is extreme weather events such as storms, heavy rain, and floods that all contribute to the threat. After a series of floods in Central Europe between 1998 and 2002, that caused the death of more than 700 people and damages of at least 25 billion Euro, the EU floods directive was created. As a part of the EU floods directive, the Danish Ministry of Environment identified Dragør as a part of the risk area Køge Bugt in 2011 (Miljøministeriet et al. 2011), see Figure 2-2. The directive requires member states to plan for flood risk and act upon those.

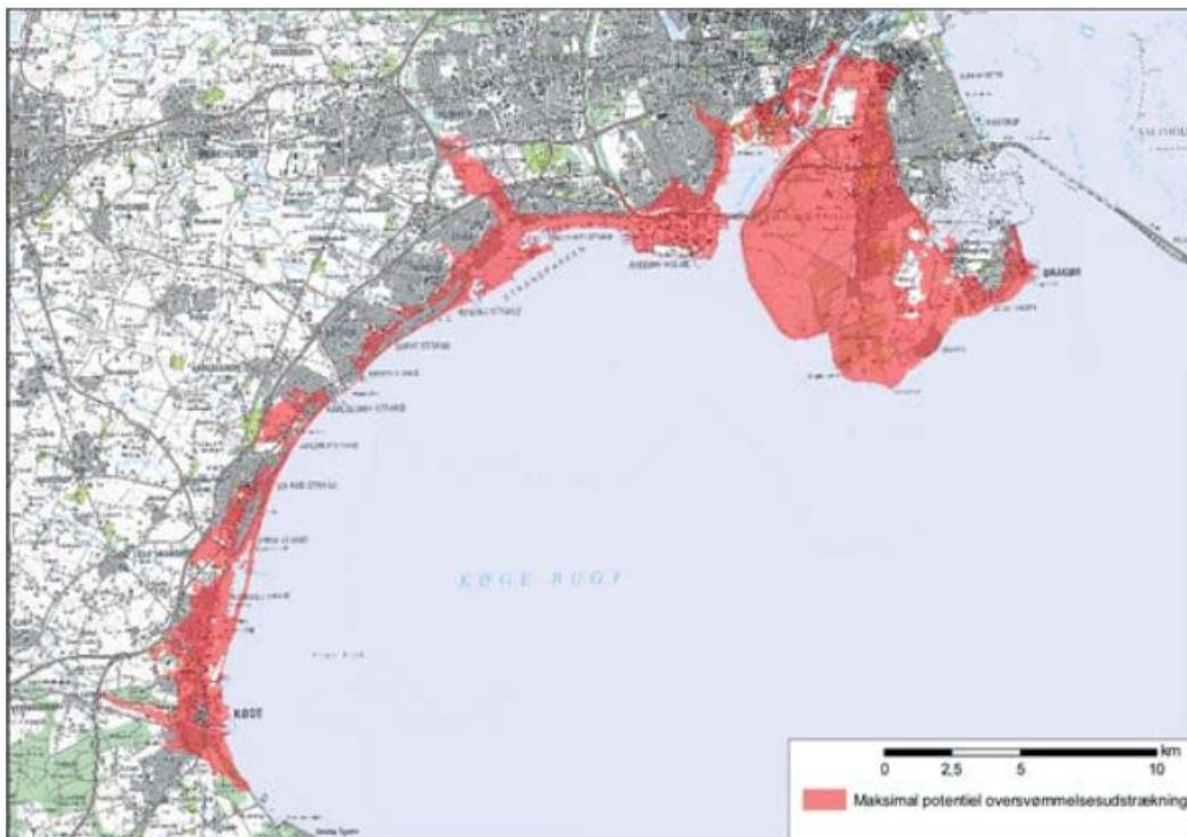


Figure 2-2 Risk area Køge Bugt (Miljøministeriet et al. 2011)

In Denmark, the responsibility for coastal protection lies within the municipalities which effectively makes 14.270 people in Dragør responsible for the construction of 13 km coastal protection, including financing the solution, to some extent. As a result, the construction of new coastal protection involves the citizens regarding funding, protection, and aesthetics.

After failed attempts to rethink coastal protection and effectuate the EU directive, Dragør municipality developed a new strategy with citizens involvement. The first citizen involvement process was launched in 2018 to help the politicians make principal decisions about alignment and overall protection level for dikes

along the coast. The idea was for it to form the basis of a concrete project that after an obligatory public hearing and tendering would be constructed, see Figure 2-3.



Figure 2-3 Illustration of the stages in the 2018 project plan

However, many citizens voiced their dissatisfaction with the dikes, which led the municipality to adjust the purpose of the project's second phase. It was supposed to be an ordinary infrastructure project, mainly developed by engineering firms. As the second phase launched in 2020, it was with the purpose: " ... to unfold what the best suggestions can be for solutions to develop Dragør as climate-robust municipality" (Dragør Kommune 2020c, 6). It entailed another rather extensive citizen involvement, which is the object of our analysis.

In the following, we examine the process leading up to the second phase, where we entered the field. In 2.2, we first outline the trajectory of the project through the failed attempts to upgrade the coastal, for more than a decade. Secondly, in 2.3, we unfold how the first phase of public engagement was orchestrated and executed. Finally, in 2.4, we highlight the events between the citizen involvement in 2018 and the current involvement process in 2020.

2.2 From designing protection to designing involvement

Dragør's first awareness of climate change emerged in 2007 together with the municipal reform, and they have since then worked extensively with coastal protection. The reform included a transfer of tasks from the former Copenhagen County and the Capitol Development Council to the municipality of Dragør, which included planning of the open land. Dragør's plan strategy from 2007 includes a section on climate change and addresses strengthening the coastal protection:

"As the water level in the sea rises and the frequency and intensity of storms increase, the dikes will probably no longer be sufficient. Future planning should identify which values the dikes protect and the need to increase the height of the dikes." (Dragør Kommune, N. 2007, 11)

Following the strategy came a booklet called the "Green Blue Plan" in 2008. In 2009 came the climate strategy, and in May 2010 their plan was approved. Dragør was awarded the "City plan Prize" in 2010 for taking up the challenges regarding its open land and the climate changes (Dansk Byplan , 2020). As the prize indicates, their work was innovative. It included three different protection levels:

1. High protection where the water is kept out - the urban landscapes
2. Medium protection where floods are allowed more often - forest and open land
3. The sea-affected dynamic coastal landscape

In the following years, the municipality's planning became more concrete. As the Danish Ministry of Environment started the implementation of the EU flood directive, they appointed Dragør to be a risk area in 2011. With their already ongoing initiatives in progress, it did not change much.

However, their initiatives during the 2010s were met with resistance, as they developed propositions and initiated dialogue with the locally involved stakeholders. The initial propositions received criticism from several. The local golf club opposed a dike cutting through their golf field. Landowners living outside of a suggested land dike were dissatisfied with a lower protection level and hence the occasional flooding of their property. The conservative party supported the opponents at the municipal election in 2013 and added that Dragør should be protected only by a coastal dike to their election program. This entailed preventing the occasional flooding of forest and open land, mentioned in bullet two above (Gøtterup and Walløe 2017).

In 2014 the municipality published a new climate adaptation plan, presenting four dike scenarios. The first three included a land dike, with ideas similar to the "Green Blue Plan" that protect urban landscapes, and let forest and open land flood once in a while. The fourth was a dike surrounding the coast, ensuring all areas the same protection level. Because dikes already existed along the remaining coastline, it was treated in more general terms. According to the plan, they would need to be heightened with 20-30 cm in order to withstand 100-year flooding. In flooding terminology, this means a storm surge that statistically would occur every 100 years. We draw forth especially the dike surrounding the coast, and the planned heightening of the existing dikes because these are topics still widely discussed in the current 2020 citizen involvement.

The plan was made in cooperation with the other municipalities on Amager because they shared a common interest to protect the island against flooding. Particular the sensitive infrastructure such as the airport, the metro, and a local highway were of concern. The cooperation led stakeholders from the municipalities to order a report in 2015 that should assess the necessary dike heights in two cases (NIRAS 2015).

1. Complete protection against 10.000-year flooding.
2. Protection of neighbouring city Tårnby and Dragør against 100-year flooding, and protection of critical infrastructure against 10.000-year flooding.

The cases would help the stakeholders identify synergy-effects from collaborating with coastal protection.

The first case showed that a dike through the local nature reserve would have a height above 5 meters and that existing dikes in urban areas should be increased by between 3,5 and 5 meters. With houses located close to the sea, permanent protection against a 10.000-year storm was considered neither technically possible nor aesthetically attractive.

The second case showed that the urban dikes should be raised about 1 meter to withstand 100-year flooding and that it was plausible to protect Amager against 10.000-year flooding by combining dikes and emergency services, although these were resource-demanding.

The report further visualised that even a small height increase of dikes would take away the sea view from citizens living along the coast. All of the above aspects; the collaboration, the heights, the sea view, the emergency services, are all topics central to the current debate.

As the cases showed the municipality that the consequences differed greatly, both economically and aesthetically, they decided to involve the citizens. The purpose was to help the municipality decide on an in principal alignment and the overall protection level. Central to their strategy was to engage more citizens earlier than in usual civil engineering projects. First of all, to ensure a common understanding of the complex issue, but also to create legitimacy for a project, that might not satisfy all people.

2.3 Creating foundations for citizen involvement

During autumn 2017, the idea of involving citizen early in the coastal protection was developed. Through coincidence, several individuals worked with the idea simultaneously. One sought inspiration from a citizen involvement project executed in the municipality of Aalborg by Aalborg University researchers. Here Facebook had been used to engage citizens in expressing and envision the future elementary school

(Madsen and Munk 2015). Another had worked the previous years with the dike solutions, and due to the citizens' resistance, they were researching ways of involving them hence securing support. This all led Dragør to hire Backscatter that had close ties with the researchers at Aalborg University, in an attempt to create a similar project to the one in Aalborg municipality.

Central to the project was to engage citizens to participate. Instead of beginning the project on a clean canvas, the municipality decided to communicate the technical aspects of coastal protection, as presented in the engineering reports. Based on the casework from 2015, which we presented above, they again hired engineering consultancy company NIRAS, to further detail the proposals. This time the objective was to investigate the technical, economical, and environmental impacts of dikes with two different protection levels; 100-year and 500-year flooding (NIRAS 2017). They published the resulting report and created a Facebook-page to host the debate. To make the physical impact of the two proposed dikes visible, they also installed 12 storm surge posts. In our case, these objects, the report and the poles are the main contribution from technical experts to the public debate. Therefore, we here present the main points of the report that have provided the foundation for the current debate.

The technical suggestions include a detailed alignment of the dikes and calculations of 43 sections along the entire coast. Alignment is the suggested placement of a dike, often represented by a line on a map.

The detailed alignment makes visible concrete locations and surfaces potential issues. The 43 calculations make the height of the dikes visible pr. 200-500 m of the alignment, see Figure 2-4. This was used to design the 12 storm surge poles. Finally, the principle sections showed dike widths above 20 meters, see Figure 2-5.

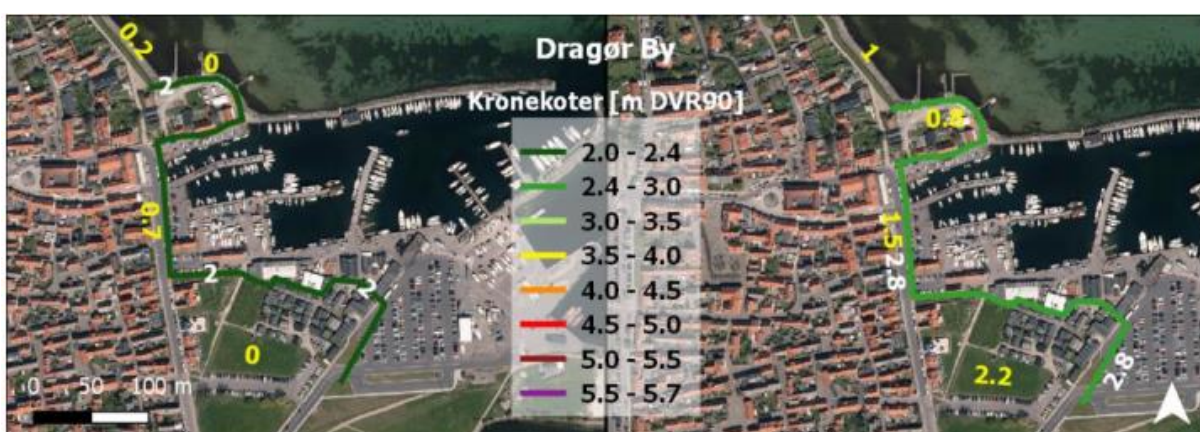


Figure 2-4 White numbers show recommended crown levels for the dike (slope protection and high tide wall) Dragør City for protection against high tide with respectively 100 (to the left) and 500 (to the right) year return period in 2050. Yellow numbers show the height of the new dike over existing terrain (the difference between the recommended crown levels and the current top levels in the terrain). Background map: Orthofoto 2016, Danish Geodata Agency, WMS-service.

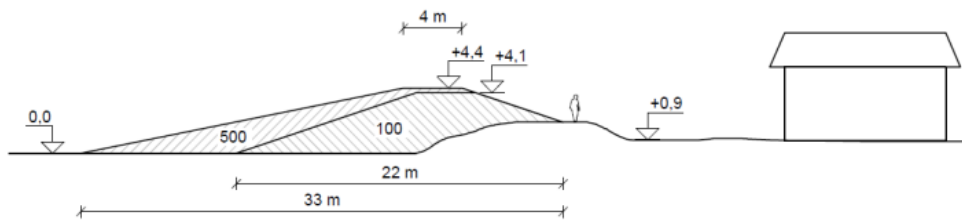


Figure 2-5 Principle sketch of dikes at Søvang (with front slope protection) for protection against a high tide with respectively 100- and 500-year return period.

The environmental section of the report describes how the alignment and the dike design relates to nature and environmental screening. It highlights the Natura 2000; a product of an EU directive on birds and habitat conservation, the Danish Nature Protection Act, the Species Conservation Order, preserved prehistoric monuments, beach protection and dune conservation, and similar considerations. The section showcase a significant relationship between the environment and a design which is difficult to circumvent.

The economic estimate presents a summary with a price per cadaster. It shows relatively low prices compared to the real estate prices in Dragør and damage expenses from storm flooding. A cadaster pay approximately doubled if the protection is against a 500-year flood compared to a 100-year flood. It further shows that a higher protection level increases the number of citizens that would contribute to the financing.

The citizen involvement process in 2018 had many participants, and following their input, the municipality decided to protect against a 100-year storm surge. They also settled the principal alignment of the coastal protection. However, from the citizen involvement, it also became clear that many generally opposed the idea of dikes as the best protective solution.

2.4 A need for readjustment arises

Following the involvement process in 2018, Dragør municipality adjusted their plan (see Figure 2-3 above in section 2.1) by changing the second phase in from: *"concrete proposals for the preparation of dikes"* to: *"Architectural competition: development and decision on coastal protection"*. On Figure 2-6 the new plan with adjustments is shown.

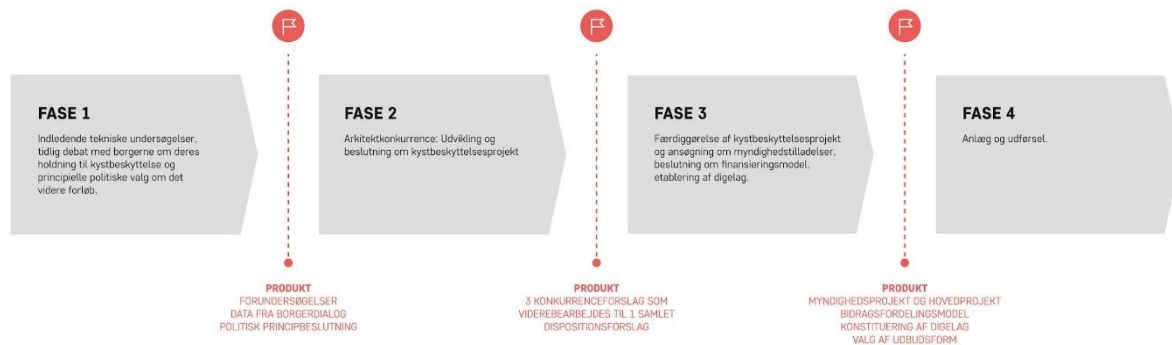


Figure 2-6 Illustration of the stages in the 2020 project plan

The architecture competition is a tender form called a parallel competition where different companies all develop a concept design. In the process, the teams present and learn in workshops with stakeholders, such as citizens and professional advisors. The citizen involvement process is thus an element in this parallel competition.

Parallel to Dragør's citizen involvement, another Danish municipality, Kerteminde, abandoned their coastal protection project due to heavy citizen criticism. It had received 14,5 million DKK in funding by the philanthropic association Realdania which focus on improving quality of life through urban solutions. They granted the fund because it could inspire other cities with similar challenges (Realdania 2016). It was initiated in 2009 and matured through a series of developments, but the local resistance had also built over the years until it finally closed it in 2019. As a result, and at Kerteminde municipality's request, Realdania withdrew the grant (Carlberg/Christensen 2019).

Officials working at Dragør municipality themselves had followed the Kerteminde process closely. Furthermore, this renowned unsuccessful project also drew attention to Dragør's new approach because it seemed that citizen involvement was essential. Hence when Dragør sent an application to Realdania for funds in 2019, their plans of involving citizens in project was appreciated, and they were granted 1,5 million DKK to develop the parallel competition (Realdania 2019).

To facilitate the citizen involvement in 2020, Dragør hired the consultancy company Backscatter again. In this second phase of the project, the focus is on the parallel architectural competition. The municipality again aims for high citizen involvement, hoping to ensure a common understanding amongst people and to create legitimacy of the project. However, this time they further their ambitions. Earlier, they hoped to condense and represent the citizens' opinions to inform a political decision. This time they also focus on providing the designers and competing teams with the knowledge and opinions of the citizens.

3 Theoretical resources

Through this work, we investigate the concerns and arguments brought forward in the citizen involvement and the role that different types of knowledge play to inform future citizen involvements. We draw on academic resources in answering the two first questions, while the conclusions of them together form our future suggestions. Furthermore, in the discussion of our findings, we nuance parts of these academic resources.

In this section, we present and discuss the theoretical ideas and debates underwriting our analytical work. We first discuss controversy studies, which inform our general approach. They are relevant because they concern knowledge disputes and encounters between society and the public. We use lenses from controversy studies to unfold the case of Dragør by exploring concerns and arguments brought forward. In presenting these resources, we outline the historical evolvement while elaborating on ways of studying these types of cases.

Following, we present the notion of a Hybrid Forum, as presented by Callon, Lascoumes, and Barthe. This revolves around an arena to facilitate collaboration between citizens and experts. We use this notion to form our view on the format for citizen involvement in Dragør. The authors argue that through the cooperation democracy becomes democratised; however, they receive critique for not focusing on the practical and pragmatic aspects of their forums. In the two following subsection, we present and reflect on two branches of criticism.

One is by Jasanoff, who argues that the authors rely on ideas of rational agents in their approach. Moving from that, we unfold her idiom co-production. Here we present to strains, which each inform approaches to investigating knowledge's role in the demarcation between a social and natural world. We draw on her idiom to nuance the view of actors in the forum as apolitical and rational.

The other is by Marres, whom both criticise their approach and their idea of a common good. She presents ideas about how issue articulation is an integral part of democracy. Hence, she argues that this particular aspect is not sufficiently covered in their account. Drawing on her ideas, we learn to focus not only on the solutions in citizen involvement but also on the debates on what should be solved.

Lastly, we present three empirical controversy cases. Each concern an encounter between science and society; however, they do so in vastly different ways. From these, we draw on examples of which roles different types of knowledge can play in evolving controversies. Together they create a body of references about different boundaries we can draw between experts and laypeople.

3.1 Moving from controversy studies to the age of engagement

Contemporary STS scholars argue that controversy spans outside the closed communities within science and reaches out to society, and teaches us something about both. As we study controversies, we not only learn about science or society; instead, an arena where they interact unfolds before us and teaches us about their relations. As the concluding remark of the 2006 EASTS Conference' *Science, Controversy and Democracy*' Trevor Pinch and Christine Leuenberger said:

"The study of controversies in modern technoscience -- with its porous boundaries between science, technology, politics, the media and the citizenry -- also calls for the analyst to broaden the array of analytical tools employed." (Pinch and Leuenberger 2006, 8)

They argue for a broadened scope in how to approach the study of controversies. The study of the controversy itself will, according to them, easily prove insightful:

"By studying a scientific controversy, one learns something about the underlying dynamics of science and technology and their relations with wider society." (Pinch and Leuenberger 2006, 2)

Pinch and Leuenberger argue that we today should investigate the relations between science and the public through the study of controversies. However, one of the first people to approach the notions of controversies within the sociology of science, Robert K. Merton, focus entirely on the controversies, or disputes, within science itself.

Merton introduces the notion of priority disputes, a type of scientific controversy, in his paper' *Priorities in Scientific Discovery: A Chapter in the Sociology of Science*'. Here he argues that the controversies had become "... *an integral part of the social relations between scientists*" (Merton 1957, 636f). He focusses on the controversies surrounding which scientist is attributed to which discoveries. Through his work, we learn about values and norms within science and its '*institutional ethos*'. While he focuses mostly on what we can learn about science from these controversies, we understand that there is generally much to learn from studying controversies (Pinch 2015).

STS has since then moved from the study of controversies as being mostly within science and between scientists, to embrace more broadly. Dorothy Nelkin, among others, explore science and technology's consequences and ramifications and presents several different types of impacts; political, economic and ethical (Pinch and Leuenberger 2006). In the *International Encyclopedia of the Social and Behavioral Sciences*, Pinch presents the state of the art of controversy studies. He lays out the history of controversy

studies and presents very different approaches and types of cases, with the priority disputes as being just one. Besides the study of controversies within science, others focus on science and new technological development's impact on society at large, while others yet again focus on how scientific knowledge is socially shaped (Pinch 2015). On today's approach, Pinch says:

"The earlier distinction between controversies in science and those over the social impact of science of technology has largely been dissolved in contemporary STS. ... the sites of contestation chosen for analysis have become more heterogeneous. Part of the reason for this heterogeneity is that increasingly the boundaries around expertise have become much harder to delineate (Collins and Evans, 2007). There is no longer assumed to be a one-to-one mapping between expert authority and expert credentials, and this means that lay people and activists can themselves acquire sufficient expertise to engage scientists on their own terms (Wynne, 1989)." (Pinch 2015, 284)

This shows that while controversies earlier have been investigated as being within a scientific arena or spilling over into society, today, the lines between science and society seems blurred. In STS most do not give actors in controversies predefined labels based on their history, but rather investigate what role they perform as the controversy unfolds. One of the more prominent approaches using this particular methodology is the cartography of controversy. Being inspired and influenced by Actor-Network Theory (ANT) this particular approach employ digital tools, and a 'just observe' mindset (Venturini 2010, 259; Pinch 2015, 284f). Tommaso Venturini presents the approach and explains his definition of a controversy:

"...the definition of controversy is pretty straightforward: controversies are situations where actors disagree (or better, agree on their disagreement). The notion of disagreement is to be taken in the widest sense: controversies begin when actors discover that they cannot ignore each other and controversies end when actors manage to work out a solid compromise to live together. Anything between these two extremes can be called a controversy." (Venturini 2010, 261)

Specifically, controversies between science and the public have been of interest with regards to policymaking and the role of science. As the industrialisation made society more technical, policymakers became dependant on legitimising their decision. Traditionally science has been used to provide facts to support it. Before the 1980's it was common to attribute science the authority of facts independent of its context. If the public subjected the facts to critique or responded with resistance against it, the explanation was ascribed to misinformation and cognitive incapacity: *"Laypeople are assumed to be essentially defensive, risk- and uncertainty-averse, and unreflexive. Science, on the other hand, is assumed to be the epitome of reflexive self-criticism"* (Wynne 1993, 321). STS scholars exposed the questionable credibility of some scientific and governmental authorities. With that followed a breakdown of the dichotomy between

experts and laypeople where science was recognised as a social activity. Citizens' knowledge was no longer viewed as incomplete or in deficit but rather as a resource that contributed to the negotiation of social identities. The integration, however, has turned out not to be straightforward. Scientific knowledge must be given some authority to allow for expertise without ignoring non-expert's knowledge of the context. The currents caused a search for modes of public engagement that is ongoing to this day.

Acting in an uncertain world

STS scholars have also delved into the area of public engagement in technical and political decisions. We use these different views upon public engagement as a foundation for our exploration of the public involvement in Dragør.

In the book *"Acting in an uncertain world"* Michel Callon, Pierre Lascoumes and Yannick Barthe discuss the engagement of science and society that has become increasingly complicated due to the technical progress. They examine how scientific and technological development has not brought greater certainty (Callon, Lascoumes, and Barthe 2009). On the contrary, uncertainty plays a still more prominent role in modern societies. The term risk is carefully distinguished from uncertainty by defining risk as a danger that can be identified and associated with describable events. The awareness of not knowing defines uncertainty:

"We know that we do not know, but that is almost all that we know: there is no better definition of uncertainty." (Callon, Lascoumes, and Barthe 2009, 21)

Callon et al. suggest collaborative exploration and learning between laypeople and specialists as a way to handle uncertainty. They introduce two types of experts to overcome the boundary between ordinary people and scientists. Citizens are equally important *"researchers in the wild"* (ibid, 10) as the orthodox scientists that work with *"secluded research"* (ibid). To facilitate cooperation, they suggest participation in what they call hybrid forums. The hybrid forums are procedural formats where collective experimentation and learning take place in dialogical spaces. The hybridity of the collective refers to all groups affected by an issue, including citizens, engineers, politicians, officials, and others. The exploration and learning between them is collaborative research through participation, where consensus is not the goal. Instead, the hybrid forums offer a framework where agonism in debates are elaborated and explored to develop a common world gradually.

With it follows more robust knowledge where actors accept the outcome even if they disagree with it because they feel accounted for. Furthermore, the hybrid forum allows new social identities and collectives to emerge, thereby contributing *"to the more general, never-completed enterprise of the democratisation of democracy"* (Callon, Lascoumes, and Barthe 2009, 11).

We draw upon the ideas of Callon et al. of mainly two reasons. The first reason concerns the fact that ideas about hybrid forums have already resonated within Dragør Municipality. Part of the 2018 citizen involvement was Ronja Lofstad, a part-time employee at Backscatter and thesis student at Aalborg University. She contributed to both planning and execution of the process, and here she drew upon Callon et al. in designing the involvement elements. Thus, we knew that the general ideals grounding the hybrid forum were present and adopted by the municipality. This suggested that a practical version of the hybrid forum was present. Secondly, the authors put forth a complete procedure to how expert and citizens together can solve complex issues, which in itself made them highly relevant. The notions of how such a forum can and should work, provides a substantial foundation for the investigation of our case.

Callon et al.'s ideas have received criticism from different angles. A critique of their work comes from STS scholar Sheila Jasanoff. Although she finds the concept of dialogic democracy welcome, she criticises "*the conception of the public mainly as a rational and epistemic agent, asking and answering questions using logic and reason*" (Jasanoff 2012, 205). She argues that people do not make sense from research alone but form their understanding of the world through both epistemic and normative questioning. Nortje Marres criticises it for providing procedures for participation without paying attention to the effect these have on the science it produces, which contrast paradoxically from the authors' study of science in the making. The classical angle of science and technology studies, where the format is recognised as formative itself in the knowledge production, is left unaccounted for: "*They do not criticise the widespread preoccupation with the 'method' of democracy: participatory procedure, but outline such procedures themselves.*" (Marres 2007, 764).

States of knowledge

In the book 'States of Knowledge' by Sheila Jasanoff, she presents her idiom co-production. The aim with her work is:

"is to explore how knowledge-making is incorporated into practices of state-making, or of governance more broadly, and, in reverse how practices of governance influence the making and use of knowledge." (Jasanoff 2004b, 3)

Fundamental for her idiom is that the two things being produced; nature and society, is both being ordered, and while nature is ordered through science and knowledge, society is ordered through power and culture. However, the relationship between the two is seen as both constituting each other, thus in her view neither have priority nor is explanans, they co-produce each other. She describes co-production's two strands; the constitutive and the interactional. Both these can be used in the study of controversies.

The investigation of how socio-technical arrangements and devices emerge and maintained is called constitutive co-production. Thus, allowing us to understand the ontology of things through a constitution of science and society otherwise hidden. Ontological examination through controversy mapping shows how power is not evenly distributed in an actor-network but rather distributed in centres of calculations such as maps, reports, statistics, web pages and other “inscription devices”. In this form, they serve as portable representations of knowledge that can be mobilised to enforce or contest perceptions of the world (Jasanoff 2004a, 23).

Co-production also has an interactional strain to complement the constitutive analysis. Where the constitutive analysis primarily “*seeks to understand how particular states of knowledge are arrived at and held in place or abandoned*” (Jasanoff 2004a, 19), the interactional analysis deals with knowledge conflicts within existing order and demarcation (ibid). An existing demarcation between science and society has become salient for practical purposes, and the interaction or momentary collapses are central in the interactional strain. Analysis of how networks exercise power give insights to the instrumentalisation of the social but tend to display little about how subjectivity take part in sustaining representations. An interactional analysis probe how humans organise and reorganise ideas of reality. Elements as memories, beliefs and ideology affect the representation of nature and the social world, and gets affected in turn through continuous knowledge encounters. In an interactional analysis, subjects of political concern are highlighted through questions about institutions, ideas, identity, and preferences, and their influence on discourses and representations in the public debate is brought to attention (ibid, 23).

By paying attention to the constitutive and interactional strain of controversy analysis, we can describe how subjects and objects emerge from knowledge encounters as a product of a co-produced world. Thus, where we have chosen to draw upon Callon et al. to inform the hybrid forum of Dragør, Jasanoff’s idiom provides us the ability to understand the role of knowledge therein. Furthermore, co-production allows us better to understand mechanisms from a perspective of social and natural, a view on demarcations that Callon et al. do not offer.

The issue deserves more credit

In the study of controversy, a branch focuses on the aspect of public involvement where Noortje Marres has done notable work. She sees the controversy as an empirical occasion to investigate how science and society are interlinked. However, she criticises others' efforts for being detached and too idealistic to democratise policymaking. In a pragmatic turn to conceptualise public involvement, she argues in favour of paying more attention to issues. In her work, she posits that issues give rise to public involvement in politics and that the practices with issues are central in a pragmatic study of public involvement.

As the basis for the definition of public practices with issues, she draws on the debate between American pragmatist John Dewey and Walter Lippman surrounding democracy in increasingly complex societies, where they agreed that:

"...to articulate a public affair is to demonstrate for a given issue that, first, existing institutions are not sufficiently equipped to deal with it, and, second, that it requires the involvement of political outsiders for adequately defining and addressing it." (Marres 2007, 772)

Practices of "issue formation" and "issue articulation" require involvement by political outsiders which is the public. Therefore, identifying practices that articulate matters of public concern become crucial, and she suggests to give issues 'socio-ontological' status that is constituted by institutional, physical, monetary and legal ties, among others (Marres 2007, 771).

Understanding formation of issues by observing the boundaries that arise from knowledge encounters is an immediate entrance to public involvement but expecting them to be expressions of subjects' deliberate values would be to overlook the agency of objects involved. Instead, Marres suggest that the analysis include the objects in democratic politics because they take part in the formation as well.

"In the complicated environment opened up by the technological society, the question of the object of politics can no longer be bracketed, as happens when it is said that democracy is all about subjects" (Marres 2005, 2)

With regards to addressing the issues, she moves away from Dewey, who assumed it to be done by the state. Instead, she brings forward the merit of a public's involvement in an issue because it may identify the appropriate addressee for an issue. We chose to apply the ideas of Marres because of the possibilities for understanding issue articulation and publics. Even after only brief encounters with the field, it was obvious that there were many diverse issues and publics.

3.2 Cases surrounding knowledge encounters

As a follow up on the more general theory, we here dive into specific cases of knowledge encounters between the public and science. Through three cases, we see exemplified what different roles knowledge can play in encounters between public and science. Furthermore, we see which boundaries we might draw between laypeople and experts.

From the first case, we draw that different types of knowledge can play different roles. Scientific knowledge can advise authorities and scientists, while local knowledge can direct scepticism and scrutiny.

Furthermore, we see a rigid set boundary between laypeople and scientists. While the citizens are affected by the scientists' practices, they are not involved at all.

From the second case, we are inspired by notions of uncertainty. Here we learn of a case where knowledge plays the role of creating uncertainty and complexity. In this particular account, scientific knowledge is heavily politicised and used as a mean in the government of an emergency. Hence, we here see a boundary between politics, science, and publics.

Lastly, we put forth a case where knowledge is produced in collaboration between different groups. Here we learn how it can play the role of deciding which publics involve themselves, rather than a given. In this case, the boundaries between public, science and policy become blurred, due to the cooperation.

As laypeople encounter scientific experts through local issues

In the paper '*Misunderstood misunderstanding: social identity and public uptake of science*' author Brian Wynne introduces us to a group of Cumbrian sheep farmers and tell the story of their experiences in the years following the Chernobyl accident (Wynne 1992). Wynne focuses both on the construction and uptake of knowledge in the encounters between scientific experts, local laypeople and governmental institutions. Following the accident, the Lake District in Northern England, home to both the sheep farmers and the Sellafield nuclear plant, was affected by radioactive fall-out rained out in variable deposits. In the years following, the authorities imposed restrictions which changed a few times due to the scientific experts' assessments of the area. With their daily life and livelihood on stake, the local farmers began to grow sceptical with the science behind the restrictions and assessments. This is increased by them witnessing the practices of science at their farms, where they experience the uncertainty influencing science in the making.

Through the account, Wynne argues that credibility is not a given, but rather constructed continually through relationships and identities. While dependent on social aspects, he further argues that it also influences the uptake of scientific or expert knowledge (Wynne 1992, 282). With this, he critiques what he calls the cognitivist approach, and argues:

"...the public understanding of science problem, and of the closely associated risk perception issue, starts from the observation that public experiences of risks, risk communications or any other scientific information is never, and can never be, a purely intellectual process, about reception of knowledge per se." (Wynne 1992, 281)

With his account, he thus argues that uptake of scientific knowledge is dependent on the credibility, and therefore also social relations and identities. Wynne further argues that the uptake of knowledge among laypeople or in the general public may be improved if scientists show more reflexivity. With the case of the Cumbrian sheep farmers, we are inspired first and foremost not to approach our questions regarding knowledge as purely intellectual processes, although an insight that could be learned from most approaches in STS. In this particular case, we expand a little, as scientific knowledge plays the role of advising the authorities and directing the scientists' practices. The local knowledge comes to play the role of interrogating the scientific processes and exploring their credibility. Thus, we can draw inspiration as to how different types of knowledge can play different types of roles. Further, we note how Wynne argues that social relations and identities are essential analytical objects in understanding the role of knowledge in controversies.

In the case, we also note a rather rough drawn boundary between laypeople and scientists. The farmers are passively observing the science being produced while experiencing its effects on their own lives. Thus, in this case, the science is untouched by the citizens; however, it still informs the authorities to the degree of it influencing them. Their local knowledge is not recognised to be valuable, and thus, while they may be 'researchers in the wild', they are not included in any research.

In the following subsection, we present another case with a disastrous theme. In that particular case, we come closer to the uncertainties in science, and how the public reacts to scientific objects in emergency management.

As publics encounters uncertainty through scientists

Alice Benessia and Bruna De Marchi introduce us to a particular take on controversies in their account of what happens when science is used in political means surrounding the events leading up to, and following the earthquake in L'Aquila, Italy. In their paper "*When the earth shakes... and science with it. The management and communication of uncertainty in the L'Aquila earthquake*", Benessia and De Marchi examines the multidimensional nature of uncertainty and investigates the encounters between policy, the public and expert advice (Benessia and De Marchi 2017).

Following months of heightened seismic activity, an earthquake hit the L'Aquila in April 2009, taking the lives of 309 and causing devastating destruction, with estimated provisional damages for over 10 billion euros (Benessia and De Marchi 2017, 35). In the time leading up to the earthquake, a scientific and political dispute unfolded. A scientist publicly argued that the heightened seismic activity suggested an imminent earthquake. While the scientific theory that laid the foundation for his claims is unproven, it caused the

citizens to worry. In an attempt to soothe the public, local politicians created a communication campaign. Here they involved other scientists and applied scientific representations, i.e. topographical maps, to convince the citizens that there was no reason to worry. While the politicians themselves had only minor trustworthiness with the public, the scientific aspects convinced them. Unfortunately, this meant that the public refrained from taking the precautions they usually would during times with a risk of earthquakes, which in the end caused many to lose their lives. Following the earthquake, the controversy continued as scientists were taken to court, however, in this work we will not go into more details with the specifics of the rest of the case, as it entails far too many details to for it is portrayed appropriately here.

Uncertainty plays, as mentioned, the central role in their account. We are walked through how uncertainty is treated and communicated, verbally and visually. The authors outline different types of uncertainties; scientific, societal, institutional, proprietary, legal and moral through which they derive the '*situational uncertainty*' (Benessia and De Marchi 2017, 39f). While the authors connect the situational uncertainty to communication strategies and policies, we are here a little more interested in how they treat uncertainty as an analytical object. They argue that in emergencies or developing issues, uncertainties are multidimensional and interlinked with other issues and their uncertainties, such that the overall uncertainty seems to grow in complex cases:

"In other words, not only uncertainty is multifaceted, but also every component keeps evolving differently over time in response to both chance and intention. Moreover, the dynamics of every component inevitably influences every other. In more general terms, we are in the presence of what has been defined as 'emergent complexity'." (Benessia and De Marchi 2017, 41)

If we connect this to our understanding of knowledge, we see similarities to classic controversies which emerge and expand. While the authors present uncertainty as the knowledge of what we do not know, we begin to see it play a particular role. As knowledge teaches involved people what they do not know, the controversy or issue expands, and the world becomes bigger. Thus it may play the role of creating complexity, and in that case, potentially also creating issues and problems, rather than solving them. This is not to say that knowledge always does that; however, we note how it can play that particular role in this case.

While Benessia and De Marchi do not underplay the role of the authorities in their uptake and management of expert advice, they, just as Wynne, also highlights the responsibility of scientists to reflect upon their knowledge. While Wynne is mainly focusing on the public's uptake of scientific knowledge, Benessia and De Marchi are more concerned with emergency management, thus how officials portray and handle knowledge and its uncertainties. We can say that in the L'Aquila case, science encounters policy,

government, and officials in a public arena while in the Cumbrian case, science meets the public laypersons in an arena overseen by local authorities. In that regard, we also see another boundary between public and science, where again the public is affected. Furthermore, here science is almost weaponised as a political mean, and the scientific representations become powerful with their persuasive communication. Thus the boundary separates politics from science from publics, effectively drawing out three groups rather than two. These distinctions we take inspiration from in our own case.

In the following subsection, we present a case from Pickering, England, where scientists and laypeople together engage in flooding-science in the making and all its uncertainties. Here they "slow down" reasoning in their collective interrogation of knowledge production.

As citizens encounter engineers through co-creation

In the account about flooding prevention solutions by Sarah J. Whatmore and Catharina Landström, they present intervention of research itself (Whatmore and Landström 2011). The authors share the story of how they together with flooding experts and volunteer locals collectively develop a new type of device to help prevent flooding throughout a two-year process. They present their experiences and insights in the article '*Flood apprentices: an exercise in making things public*'.

Here we learn about the English town Pickering in North Yorkshire, which has a long history of flooding. After a particularly devastating flood, funding was given to several cities in the area to build flood defences. However, due to different circumstances Pickering did not secure funding like their neighbouring towns and was thus left to flood again and again (Whatmore and Landström 2011, 588). As the authors started their research project, the controversy was thus dormant, although not closed. Inspired by Isabelle Stenger's experimental constructivism, the authors involve themselves directly in the local dispute, taking an active part in the controversy rather than observing it unfold (Whatmore and Landström 2011, 604f). Concretely, they created a group consisting of flood experts or modellers, a few other scientists and people from the local community. The group often met where they revisited flooding models, proposals for flood defences, and developed their models through collaborative efforts. The purpose was to '*slow down reasoning*' and redistribute expertise, that is, reflect upon how knowledge was produced and do so collectively. They comment on how other cases concerning controversies and the interactions between science and the public and argue:

"...there can be an elliptical tendency in these accounts when it comes to the question of how knowledge controversies generate new forms of public and practices of public-formation (publicity). The energetic business of 'arousing', 'triggering', 'sparking' connections between knowledge

controversies and emergent publics is sometimes glossed over by their being treated as always already implicated." (Whatmore and Landström 2011, 584)

With this, they seek to approach all types of knowledge with reflection and consider them through their consequences. They further argue that this is particularly important in cases of flooding because these controversies:

"...often centre on discrepancies between the firsthand experience of flood events, the vernacular knowledge accumulated in affected localities, and the flood science that informs 'evidence-based' flood-risk management." (Whatmore and Landström 2011, 585)

Thus, in their case, they argue that knowledge is not a prior bound to certain publics, but that the connection happens during a knowledge controversy. We notice how they point to local knowledge and expert knowledge not always correspond, which they argue is even more reason to investigate issues regarding flooding. Thus, in their case, they focus on the combination of knowledge(s) and producing knowledge collaboratively. The role of knowledge thus becomes the principal designer in constructing a common solution, which encompasses and accommodates more aspects than with a technical designer. By placing knowledge central, and incorporating the number of different groups the boundaries between science, public and policy become blurred and less distinct than with Wynne or Benessia and De Marchi.

4 Methodology

In this section, we discuss the methodology underpinning this work and the methods applied. We structure the section mainly chronologically, introducing choices and reflections as they occurred. With the wisdom of hindsight, we present rationale and context for our methodological decisions. Thus, the purpose is first and foremost to account for the choices made and to discuss them.

The section begins in November 2019 with the access tale of how we found Dragør complemented by a short text situating ourselves within this project.

The next subsection covers the months leading up to late January 2020. Here we developed the general approach to the field and our problem formulation. As a few experiences greatly influenced the decisions made here, we also share empirical stories providing context to the development of our research design.

From this follows a description of the data collection in late January and early February, where citizen gatherings were held. This covers the methods used in our participant observations, where we focus on different ways of documenting our experiences.

Following is a subsection about methods applied in February, where we held citizen interviews.

The second to last subsection covers mid-March and onward, where we present and discuss the changes the CORVID-19 outbreak caused in our field. Furthermore, we discuss stakeholder interviews and virtual observations.

4.1 November 2019 – Discovering disputes in Dragør

In November 2019, the consultancy company Backscatter invited us to participate in a citizen gathering in Dragør. We had spent the fall as interns at Backscatter, working with digital methods in the consultancy business. Backscatter mainly works with digitally facilitating citizen involvement and meetings between decision-makers and those affected by decisions. The conversations they enable enticed us. However, while we, the authors, agreed to collaborate on our thesis, we each doubted whether to work with digital methods and Backscatter. We speculated what we could learn by shifting from Backscatter's computer programs back to conventional means, such as classic ethnography. We decided to attend the citizen meeting to investigate if it that could be the case.

The gathering was in a school close to Dragør's midst; a children's event delayed the gathering because it occupied the room with collective Christmas decoration making. However, as it began, we immediately felt like participants in a classic renowned controversy.

A PowerPoint slide showed a map of Dragør, marked with the House Owner Associations (from now on HOAs) and coloured by whether they were in flood risk and sparked a heady debate. However, it abruptly ended quickly due to uninvited guests. Dragør municipality had decided not to have an open gathering and had invited chairmen only; most attendees were HOA representatives. They were intended to become ambassadors in the citizen involvement process. We say that most were representatives because few decided to attend uninvited to proclaim their discontent with this "*secret gathering*", which they had learned about through small-town gossip. However, the non-representatives quickly abandoned the meeting, and the discussion returned to that map. We recall people discussed what it showed: "*Maybe it was the HOAs? Who would be flooded? Was it really true, it couldn't be! Why the blue colour? It is a bad map; it makes no sense. The dike is not supposed to go through the city! And the state should sponsor it! We don't want a dike at all, the emergency management is enough! Oh, shut up!*"

It continued for 30 minutes before a local official suspended the debate, that set the mood. The subsequent topics discussed were with equally many concerns, side remarks and scepticisms. We found ourselves amid something that felt like a controversy. We did not comprehend what was at stake, but clearly, something was. Thus, we did not consider long before deciding on investigating the coastal protection project and its citizen involvement.

Backscatter consulted and played a large role in the 2019 citizen involvement in Dragør. Between ourselves and Backscatter, we discussed how to coordinate their work from our work. They offered us to participate in their digital method work and the subsequent analysis and report writing. We decided to investigate alongside Backscatter instead of together with them, because we wanted to focus less on digital methods and approach the citizen involvement process and the coastal protection holistically. We wanted to go broader as research on specifically digital methods in citizen involvement projects, both in Dragør and in other municipalities in Denmark, had already been thoroughly done (Lofstad 2019; Madsen and Munk 2019; Madsen and Munk 2015). Furthermore, we wished to be able to investigate their role, we discuss this further in subsection Participating at Backscatter.

This is the empirical story of how we chose Dragør as the case for our thesis. As evident in our access tale, we use ourselves in our account. We elaborate on this in the following, before we present how we turned the case into a case study.

Forming the interdisciplinarity

Within research, particularly the social sciences, the author(s) inevitably influence and affect their work. From formulating a research question to conducting fieldwork and describing the world, the author's worldview shines through (Pedersen 2005, 26). We do not expect to be any different. However, we acknowledge that we must use ourselves and treat our individual imprints consciously. We, therefore, elaborate on this. We have studied Techno-Anthropology for almost two years, but if one compared us by our training, we would differ significantly.

In the book '*The structure of Interdisciplinarity*' Rolf Hvidtfeldt describes the study and exploit of interdisciplinarity. He presents a methodology that evaluates epistemic aspects in interdisciplinary works (Hvidtfeldt 2018, 2). Because we are not analysing interdisciplinary work, we have not applied his framework as intended. We do not claim to be truly interdisciplinary in combining methods, models and elements known to us from our previous studies and as argued above, we subscribe to the tradition of STS. We have used his framework to reflect on what elements and fragments we combine. Besides the conscious consideration of combining elements from our previous studies, it is a rather ordinary methodological reflection. However, it was the framework that gave us a language to plan out our methodology, simply because it cemented together our individual qualifications and the academic tradition that we subscribe to. Hvidtfeldt argues:

"... it might also be illuminating to consider the function of the combined fragments in the parent approaches..." (Hvidtfeldt 2018, 54)

Thus, when incorporating fragments from our respective approaches, we outlined the reason and outcome of such choices. In the following, we account for and reflect upon our methodology. Now that we present our approach to interdisciplinarity, we call attention the relevant combined fragments when we present the methods throughout this section, see Appendix A for an overview of our methods.

4.2 November until January – Transforming a case into our case study

Following the ambassador meeting in November, we spent the next two months outlining and designing our approach to the field, together with negotiating field access and roles with Dragør Municipality and Backscatter. In this subsection, we present our methodology as it was designed and outlined during those

months, and reflect upon the choices made. We also describe a data collection that informed our decisions. Below we limit ourselves to discuss choices and events happening between the ambassador meeting on 28th November 2019 and late January, where the citizen involvement process was launched. We also touch upon stakeholder conversations we had within this timeframe.

Forming the perspective

We knew our investigation would centre Dragør and its citizen involvement, however, neither focus nor problem was articulated during January. Here we elaborate on developing the problem formulation. Let us remind the question we answer through our work:

What concerns and arguments are brought forward in and around the citizen involvement in Dragør Municipality? What role do different types of knowledge play? How can our understanding of the coastal protection project in Dragør municipality inform future involvement of citizens in similar projects?

We quickly limited ourselves to Dragør, but had to pinpoint our interest. We partially focused our research question following informal talks with municipal officials and Backscatter about their experiences with the 2018 citizen involvement. The citizens had shown resistance towards dikes and appreciation of the involvement process itself. The municipality was so pleased with the involvement process that they not only copied it but included it as a central part of the 2020 architectural competition. This indicated that citizens and officials were positive about the involvement itself. However, the historically problematic relationship with dikes combined with our experiences at the ambassador meeting suggested that the 2018 involvement had not settled all issues. We experienced that the meeting intended to mobilise ambassadors to engage their fellow citizens in the project, but they were more interested in debating legislation and rising water levels. Our first pointer was to investigate if certain aspects in the debate settled or exacerbated issues. We later evolved this part into focusing on the role of knowledge.

In the 2018 involvement process, Backscatter aided the municipality in the process. Ronja Lofstad, at the time a techno-anthropology student and now employee at Backscatter, were part of this process. She wrote her thesis about public participation in democratic processes in Dragør, seen from a planners point of view (Lofstad 2019). Here she argues that a lack of public participation in democratic processes is frustrating for planners and the public, and further that participation can be increased by combining novel mediums for participation, such as Facebook, with well-known formats like citizen gatherings. However, she focuses on the planner perspective, and while this was masterly covered, we wondered what the outcome would be if a perspective focused equally on all actors. Together with theoretical arguments (see

section 3), it was decisive to our perspective. Our approach should not give preference to officials, citizens, non-human actors or politicians.

We experienced plenty of participation at the gathering. However, it also became an opportunity for citizens to discuss other contested topics. Some were met in ways that indicated that the topics were unfit for the arena. The officials answered each unrelated question faithfully, but it complicated the meeting.

Before the ambassador gathering, Backscatter introduced their task as an issue of raising support for a dike amongst the citizens; it was necessary that they felt ownership and that they backed the project. A person more cynical than us could argue that the involvement process was designed to be persuasive. Through both interviews and our experiences, we argue that the intention seems equally to concern democratic ideals and hearing those affected by the project. The import of seemingly unrelated issues into the conversation by the citizens, the mix of interests and intentions, the substantial engagement and technical difficulties hinted a complex process ahead; it still looked like a controversy. This compelled us to ask the first question of controversy mapping: what are they talking about; evolving into which concerns and arguments are raised.

Our perspective became not to give preference, map concerns and arguments, and look to aspects that settled or exacerbated issues.

Forming the outcome

In the book *"Collecting Qualitative Data: A Field Manual for Applied Research"* Greg Guest, Emily E. Namey and Marilyn L. Mitchell present several suggestions and considerations in designing a qualitative study. They introduce approaches to data collection and usage of qualitative data with a focus on *applied research* about which they write:

"Applied research can, and often does, generate new knowledge and contribute to theory, but its primary focus is on collecting and generating data to further our understanding of real-world problems" (Guest, Namey, and Mitchell 2017d, 2)

We chose to subscribe to the applied research perspective due to the focus on furthering understanding of real-world problems. The involvement of citizens in coastal protection projects that influence their daily lives, their economy, and potentially their health by protecting against floods, is a practical problem that deserves attention. Thus, the outcome should answer to this aim.

Guest et al. roughly distinguishes four not mutually exclusive types of research objectives; 1) identifying and exploring 2) describing, 3) explaining and 4) evaluating and assessing (Guest, Namey, and Mitchell

2017d, 23-26). As evident in our problem statement, we seek to inform future citizen involvement projects. In order to inform future projects successfully, one must include some degree of identifying, exploring and explaining aspects in our case. Furthermore, without some degree of evaluating the citizen involvement project in Dragør, any attempt at transferring learnings to other contexts or projects would seem meaningless. Thus the objective of our outcome should balance between explaining, exploring and identifying to evaluate and inform.

We have argued for an applied research approach and pointed to the objectives and aims of our research. This leaves us the question of how our research design can deliver insights that produce such an outcome.

In the article "*Five Misunderstandings About Case-Study Research*" Bent Flyvbjerg counterargues the usual criticism about case studies. He provides corrections for misconceptions that surround a case study's validity, theory and reliability "*in other words, the very status of the case study as a scientific method*" (Flyvbjerg 2010, 4). Furthermore, he introduces several types of case studies which can be identified based on their sampling method and the type of conclusion one can make from them (Flyvbjerg 2010, 8ff). He argues that randomisation or representation, otherwise great criteria, is often not the best indicators for a good case:

"... the typical or average case is often not the richest in information. Atypical or extreme cases often reveal more information because they activate more actors and more basic mechanisms in the situation studied... it is often more important to clarify the deeper causes behind a given problem and its consequences" (Flyvbjerg 2010, 10)

He supports his argument with emphasis on the in-depth contextual knowledge one gains from doing a case study, which provides a better basis for understanding. Strategically chosen case studies increase the ability of generalisation, due to being selected on informed grounds. This enlightens the studied problem in a more targeted and profound way. He coins these types of cases information-oriented and organises them into four types:

- Extreme or deviant cases
- Maximum variation cases
- Critical cases
- Paradigmatic cases.

Here we focus on two that are of concern to our case; the extreme or deviant case and the critical case. We initially believed our case to be critical, but later we shifted to see it as an extreme case.

Flyvbjerg defines critical cases as having strategic importance relating to their general problem (Flyvbjerg 2010, 10). They afford the research an opportunity of selecting a case such that through tailor-made examination, one can generate knowledge about a general problem. This way, a bespoke case can be grounded in an informed idea that in a particular circumstance, something is either *least likely* or *most likely* to happen. (Flyvbjerg 2010, 11). Therefore, critical cases often generate conclusions that test hypotheses – since if the hypothesis does not hold where it would be most likely, it is clearly falsified. Furthermore, when it holds in the *least likely* cases, the study strongly validates the hypothesis (Flyvbjerg 2010, 12)

We first believed our case study of Dragør be what Flyvbjerg designates a critical case. Due to Dragør's exemplary citizen involvement history, their relatively small population, the resources put into the involvement and the high participation, we thought of it as a most likely scenario. If Dragør could not make citizens and experts collaborate in making a robust solution, it would be difficult to achieve elsewhere.

The extreme or deviant cases are unusual and are especially good at showing the authors' point while handily dramatising it. Extreme cases revolve around circumstances where the studied problem is a state, that is distinctly different from equivalent cases. These cases are apt at generating information about particularly good or problematic elements of the studied (Flyvbjerg 2010, 11). Often conclusions to these cases are neither validating or falsifying. Instead, the cases produce conclusions that revolve around the specifics to the case. Thus they enlighten the mechanisms between actors, which is shown best under extreme circumstances (Flyvbjerg 2010,12).

In the process of our fieldwork, we gravitated towards our case being an extreme case. As events unfolded, the aspects we first thought to deem it a most likely scenario, were, in reality, making it extreme. Instead of validating whether co-production was possible, it became a case for showing how actors acted under particular circumstances. Thus, we produce knowledge about what happens when highly engaged citizens participate in an extensive involvement process intended to solve a complicated technical issue.

Empirical contextualisation

In developing our research design, we conducted some more empirical outlining. In the following paragraphs, we describe our approaches.

Passive ethnography

We draw inspiration from ethnography, where one immerses and involves themselves with the individuals and communities they study, and focuses on acquiring an insider's perspective. The argument is that

"Observing individual and group behavior in its natural context and participating in that context can generate insights that other forms of research cannot" (Guest et al. 2017d, 11). Our experience with social science greatly influenced the choice of using this approach.

In the book *"An introduction to the philosophy of methodology"* by Kerry E. Howell, he designates a chapter to the methodologies of ethnography. He argues the ethnographic *"researcher is not based in a constructed setting or experiment but part of the everyday natural situation within which those under investigation (or those involved with research project) exist."* (Howell 2015, 118). One way we involved ourselves and became knowledgeable about the everyday life of Dragør was through passive observations in several local Facebook groups about Dragør. The groups were *"Dragør Nyheder"*¹, *"Dragør News"*², *"For alle os der holder af Dragør"*³, and *"Søvang"*⁴. As we were using Facebook, we saw news stories, local inquiries, pictures and jokes between the locals. Thus, in a way incorporating parts of their every day into our everyday. We, for instance, learned of several ways the locals joked about the coastal protection project, as seen in Figure 4-1 below.



Figure 4-1 Facebook Post 1: The picture text: 'I don't care about who made the drain system. But I have to know who made the fence'. The uploading citizen comments 'While we wait for dikes in Dragør!!' (No reference, see GDPR in appendix C)

¹ Translates to Dragør News and has 12.000 members; <https://www.facebook.com/groups/dragernyheder>

² The Dragør News group has 2.000 members; <https://www.facebook.com/groups/266639100598126>

³ Translates to Us who care for Dragør, has 5.000 members; <https://www.facebook.com/groups/247703288733833>

⁴ Is the group for one of the neighborhoods with 1.500 members; <https://www.facebook.com/groups/792102320804144>

Document research

We conducted a thorough data collection regarding engineering reports, consultancy reports and official documents. These were subject to document analysis, a secondary data analysis to strengthen the foundation of our primary data collection, which we present from section 4.3 to section 4.5. The purpose was two-fold, both to acquire background information on the technical aspects of the coastal protection, and to understand the role the documents performed in the project. Especially the technical aspect was an element of the interdisciplinary approach. We did so using the *content-driven document analyses* as presented by Guest et al. (Guest et al. 2017a, 32); as the reading progressed, we outlined themes emerging from the documents, building an overview. From this we learned what types of documents the municipality mobilised in informing themselves, and in informing the citizens. Furthermore, it showed how internal political decisions were retained and debated. Lastly, we learned of practices regarding the coast and town, such as ways of engaging with the local cultural heritage.

Dragør municipality's website sourced most documents; All engineering reports that were the basis for the technical knowledge, documents regarding political strategies, reports concerning both coastal protection and cultural heritage, and minutes of municipal council meetings. Here we learned of decisions describing the project, or prominent political issues. To complement the documents published by the municipality, we also searched for other engineering reports and investigated local newspapers and organisations involved with local issues.

Participating at Backscatter

Throughout the months, we have observed the municipality and Backscatter's planning meetings where they develop the process. As mentioned above, we refrained from participating in their analytical work. We did so due to issues of integrity because, at the time, we naturally did not know what our conclusion would entail. We wanted to ensure that our interests could not be doubted, should we find their work to be promising or troubling. During the work on our thesis, we had access to all Backscatters internal documents together with all data they collected during the project. We used the documents as objects of analysis, together with their final report. The data they have collected from the citizens is only used to understand their work; it has not fed into our analysis.

4.3 Late January – Involving ourselves in gatherings

In this section, we account for the methods applied ultimo January 2020, where we participated in several citizen gatherings. We attribute each subsection to particular elements in this part of our fieldwork.

Participant observations

We participated in six citizens gatherings. One was the aforementioned gathering in November 2019 with HOA representatives. The rest was during the timeframe 27th January until 5th February. They were open for all citizens but located at different stretches along the coast of Dragør, each focusing on that area. As argued by Guest et al. one reason for choosing observations is that: "*Participant observation puts you in direct contact with the phenomena of interest in a way unrivaled by other data collection techniques*" (Guest et al. 2017c, 7) . As our focus is citizen involvement, participating in the gatherings was obvious.

Because they were early in our process, we had not studied our theoretical literature to an ideal degree beforehand. To accommodate this, we broadened the scope of our observations and made extensive notes; we would rather have too detailed material rather than missing it later. In our observation guide, see Appendix J, we drew on learnings from the ambassador gathering and Backscatter's experiences, combined with our theoretical catalogue. Because we audio-recorded all gatherings, we could focus our notes on visual aspects. They revolved around interactions, use of physical objects and the room's mood and atmosphere. Furthermore, we noted what happened during breaks, if people formed groups before, during or after the gathering. Lastly, we noted down people who seemed exceptionally engaged or passionate, to consider them for interviews. We focused on people who portrayed different ways of engaging in the discussions and were concerned with different issues. From this, we found all interview persons, either directly or indirectly through referral.

During the gatherings, one of us was mapping the room and taking extensive notes on the series of speeches. Another would be observing and noting the general atmosphere, taking pictures and focusing on particular persons in the room. After each gathering, those attending made a dairy summing up the evening's events, the mood, general observations and comparisons to other gatherings, see Appendix P and Q.

Handling data

We audio-recorded and transcribed all five open citizen gatherings. For an extensive account of legal considerations regarding GDPR and our general data processing, see appendix C.

An official presented us as part of the introduction at all gatherings. Here we were presented as students conducting fieldwork for their master thesis, that focused on coastal protection of Dragør and its citizen involvement. All citizens were asked if they were comfortable with this, after being explained the recording's usage. At all gatherings, all citizens agreed to this. This approach was approved by Danish authority Datatilsynet beforehand.

All recordings were transcribed and pseudonymised. Thus, if a citizen provided their name during the recording, it would not appear in the transcriptions, we elaborate on this further below. We shared the workload of transcribing with student Toini Floris from Copenhagen Business School, who is doing her master's thesis on Dragør. She transcribed half of the Dragør City gathering, while we transcribed the rest. The transcriptions were shared under the rules for sharing data within GDPR and following general guidelines for scientific conduct, see appendix D.

Mapping and pseudonymization

At the January gatherings, we applied an extensive room mapping method, see appendix E.

Before citizens arrival, we drew a map of the room, on which we later noted their seating with a letter, i.e. a person in a corner would be *A*, the next one *B* etc. Further, we noted observations in the format of "*A arrived together with B, they seem related*".

Our recording device has a button that put a time stamp on the recording file, which was pushed each time a citizen spoke. By combining this with a number system on the map, we could track who was speaking, by counting the number of timestamps and simultaneously noting down who spoke with this number. After a gathering, our map showed who was seating where, and the order of which people spoke. Furthermore, if a proclamation generated a response from the room, the reaction was noted down together with the timestamp.

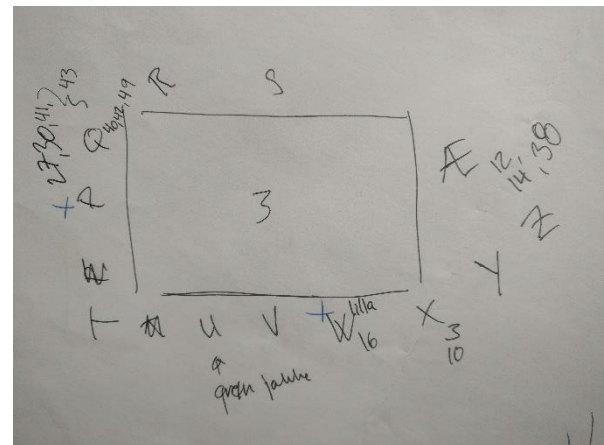


Figure 4-2 Part of a map from a gathering. This shows a table with 11 people. Person "Æ" have spoken three times, while Person "T" have not verbally participated.

This method meant that after the gatherings, we had a vast amount of information spread over several mediums. For instance; a recording with 32 marks, a map with 72 people, and numbers ranging from 1 to

32 next to 24 people. This translates into that citizens had expressed themselves 32 times, and 72 had attended, but only 24 of them verbally participated.

We could gain quantitative insights from this like how much did the average person engage. However, we used it to gain a more holistic understanding of the individual citizen attending. By not reducing them to 'citizen' in our transcription, but rather be able to understand all the issues each person involved themselves in, we came closer to them.

In the transcription, we assigned everybody a new name applying pseudonymisation rather than anonymisation. In the latter, one would have statements at gatherings. In the former, we have people, some expressing several statements others only engaging once or twice. However, they are not identifiable from our transcriptions nor analysis.

Thus, we know if a citizen have spoken several times in a meeting which gives us a more personal way of understanding people. We can see some topics and issues being either presented several times by the same person or being shared between several people. This detailed mapping was not shared with anyone.

Coding

We coded the transcriptions with a data-driven approach using the computer program ATLAS.ti⁵. The approach is also known as open coding and through it *"one should try to pull out from the data what is happening and not impose an interpretation based on pre-existing theory."* (Gibbs 2018, 9). The codes were partly categorical and descriptive, as the primary purpose were to build a collection of themes and topics from the gatherings. A few codes were analytical, these mostly revolved around the way citizens and officials conversed. We developed a work of reference containing all codes and a short description, see appendix F. This streamlined the process of three people coding collectively.

⁵ <https://atlasti.com/>

4.4 Through February – Adding depth through interviews

Here we outline our interview methods applied throughout February.

Semi-structured Interviews

We interviewed eight citizens from Dragør, all citizens with a strong connection to Dragør, where most had lived all their life. We discovered that they all were active in local life and activities; some being chairmen of HOAs, others being politically active, and others again working in local businesses or responsible for local leisure activities. One of the interviews changed in the last minute from a single person interview to a focus group interview, as our interviewee had decided to invite a few others over for coffee and cake.

The purposes of the interviews were manifold. We used them to learn about local issues, general thoughts and conversations about the coast and the citizen involvement, and the citizens' own perceptions. We reflected with them about their experiences regarding the coast and the involvement thus "*aspects that can be captured only by a human being, someone who can tell you what that experience means.*" (Guest et al. 2017b, 5).

All interviews were semi-structured interviews. Our interview guide had questions within four topics; the citizen and their relationship to Dragør, their experiences at the gatherings, the coastal protection project, and general ideas about citizen involvement. The questions were mainly experience or example questions. Here we either asked the "*informants for any experiences they have had in some particular setting*" or "*some single act or event identified by the informant*". (Spradley 1979, 51). We did so to learn how citizens experienced actual events and interactions. As the group interview was initially planned as being a single-person interview, we conducted it like the others, without any adjustments.

The interviewees lived in neighbourhoods of Dragør, which we familiarized ourselves with before meeting. All interviewees invited us to visit their home for the interviews. A few times they concluded with a walk in the immediate landscape, where the interviewee would share where a dike could be and how they used the land.

One interviewee is in an easily recognisable situation, which makes them impossible to pseudonymise fully, should an acquaintance of theirs read this work. They were informed about this and accepted that circumstance. All interviewees complied to our usage of the data regarding them, see appendix C.

4.5 March and onward – Adapting to an uncertain world

In this subsection, we share how the CORVID-19 outbreak imposed changes in our field and how we adapted to that.

Pandemic and pragmatic approaches

Following restrictions placed upon the public beginning in March 2020, our fieldwork and research changed. We had several observations cancelled, and the coastal protection project was postponed. As in many other cases, we, the officials, Backscatter, the citizens and the teams were all forced to think pragmatical. Our fieldnotes in Appendix R describe events surrounding that timeframe. A workshop planned for 12th March transitioned into an official showing a few architects and engineers the coast. A workshop facilitating collaboration between ambassadors and experts first changed into a virtual event planned for 9th May, before being postponed. Furthermore, a range of public engagement events in Dragør was cancelled. We thus rescoped our focus. We had hoped to trace citizens concerns and arguments further into the project, investigating if they materialised in proposals and ideas presented at the workshops. Instead, we focused on the gatherings themselves, and the general forum in which debates occurred. Because of this, our findings reoriented toward how the involvement unfolds, rather than its outcome.

Stakeholder interviews

We held two skype interviews in April. One is a project manager employed in the administration of technology and environment in Dragør municipality. Further, we interviewed a partner at Backscatter, who is part of the advisory board in the project. These interviews focused on understanding the framework set up around the involvement, thus learning as specific details and original intentions. We adapted the interview guide to both, see appendix H and I, but otherwise, treated them as our citizen interviews.

Virtual witnessing

Due to the extensive changes in the project, the municipality and Backscatter produced several videos and documents during March and onward. They were compensation for the cancelled meetings and workshops, thus effectively changing the process from interactions to one-way communication. An example was a guided bus trip along the coast for all engineers that was replaced with a video intended to share the same

knowledge. We were virtual witnesses in these online interactions. This somewhat thin data also informed our reorientation toward the gatherings and the acting of involvement.

5 Analysis

We here introduce our analysis. We do so by first outlining our analysis strategy before presenting the main sections.

In the perspective we bring forward, we draw on theories that acknowledge both human and non-human agency. In approaching the analysis we outlined knowledge encounters, drawing on inspiration from controversy studies. Here we focused on interactions where knowledge clashed, that is in situations where it came to play a prominent role in producing mutual understandings, escalating conflicts or settling issues. Furthermore, we mapped out concerns and arguments put forth in these encounters. We found the encounters by drawing inspiration on the boundaries between science, public and society, as outlined and exemplified in our cases.

We draw on Marres' ideas in understanding issue articulation. We use them in focusing on how groups organise around issues, and how citizens' associations and attachments to objects bind involvement to the controversy.

We draw on Jasanoff's idiom of co-production in understanding the role of knowledge. We use it in focusing on the demarcation between the social and the natural, together with understanding the emergence of new knowledge and the unfolding of knowledge conflicts.

We draw on Callon et al.'s concept in understanding the forum as a conceptual entity. We use it in focusing on how laypeople and specialists can meet, and through mutual reconfigurations of their forum can arrive at a common world.

Our analysis is first and foremost, an empirical account. Thus, we do not draw in the authors to use them as an authority in our explanations and unfoldings. They have focused our view in selecting empirical material, which have helped us understand the events as they happened, and they have guided our account here.

We discuss their particular ideas in section 3.1 following the analysis.

The analysis consists of three chapters.

First, we investigate scientific and political representations; objects that have become actors in the citizen involvement process. From that, we learn how knowledge of the proposed dike solution is represented in the local communities and to what effect.

Second, we unfold the involvement process itself, how its configuration and facilitation influence the debates that happen therein. From that, we learn how the format affects the involvement itself.

Third, we investigate the themes and topics most prominent in the involvement; the particular solutions and problems of coastal protection in Dragør. From that, we learn how these designs unearth the limits of involvement.

5.1 Poles and lines suggest changes that call for action

In this section, we investigate and unfold encounters between citizens and different representations used to convey information in the coastal protection project. These representations are material products of political and scientific processes and are constructed as an integral part of the project. We touch upon two such representations, one is a line on a map, showing a suggested placement of the protective structure, the other is a set of poles placed along the coast, showing the expected height of the water levels during a storm surge. The interactions between citizens and representations differ, and we see that through the presence of the representation, new issues are brought into the debate. By talking to certain concerns of the citizens, they apply different arguments in their encounters with the knowledge that the representations portray. Thus, after this section, we can conclude that the citizens interact differently with the representations depending on their concerns, which again ties to which arguments they present. Throughout this section, we travel to different locations in Dragør, touching upon how the different groups of locals engage with the representations differently. Thus, the section below is, besides a part of our analysis, also a guided tour through Dragør.

Encountering the poles

As part of the 2018 citizen involvement project in Dragør, the municipality created initiatives to inform and engage the citizens in coastal protection. One was the installation of 12 storm surge poles illustrating the expected water levels and dike heights at a 100-year event and a 500-year event (Dragør Kommune 2020a, 46-47). While the citizen involvement evolved into a political process, the poles remained along the coast of Dragør and continued their interactions with the citizens. However, as the height of the poles change, scepticism arises, and knowledge encounters unfold.

In this section, we explore what happens when knowledge produced by engineers, condensed into reports becomes poles in the landscape of Dragør. The produce specific concerns and arguments by the citizens through creating ways of being citizens. As the poles begin to change heights, the citizens raise two questions; how can they change and what are the consequences thereof. Here we investigate the process in which citizens debate this. We unfold the encounters by visiting two very different places; Søndergården and Nordstranden. One is an allotment garden, the other a wealthy residential community.



HAVEFORENING

Hartkornstvej

Fasanvænget

Møllevvej

Krudttårnsvej

Engvej

IDRÆTSA

CAFÉ SYLTEN

Søndre Strandvej

MPINGPLADS

HVIDTJØRNSAREALET

HAVEFORENING

HUNDELEGEPLADS

SØVANGSBUGTEN



Vejledende linjeføring

DRAGØR TIL SØVANG



Søndergården

We embark on our trip through Dragør and start at a part of the coast known as Sydstranden, where we find the allotment garden Søndergården and Karl, Johanna, Pippilotta, and Birgitte. They describe the place as a tightly knitted community, where people enjoy winter bathing, kayaking along the coast, and spending time together in Dragør's nature. Through this subsection, we use them in arguing that material objects embedded with scientific knowledge create concerns with citizens. These objects are poles that create different ways of being citizens, ordered through their concerns. When this combines with a disconnect between scientific representation and local knowledge, scepticism grows, and arguments become grounded in the divide. Even though the poles' heights change, and thus changes statements, they do not engage in a conversation with the citizens, whose concerns and arguments are left to be addressed between themselves. In seeking to resolve the poles suggested worlds with their own, the citizens explore several explanations and test arguments. Here knowledge plays the roles of creating concerns and thus ways of being citizens, and orders the arguments that can resolve a clash between two types of knowledge. We begin as the locals ponder why the poles' heights differ along the coast:



Figure 5-1 Left: The storm surge poles at Sydstranden, close to the allotment garden. Right: The storm surge poles at Søvang. Both pictures have Author Rasmus for scale.

Karl: *"They put up poles of how big it is going to be. Funny enough, out in Søvang, there they only put one that's going to be 1½ meter tall. Here they started out putting one that should be 5 meters tall. And then we can't understand, or I can't understand, what is the difference? I mean, their dike is not taller than ours, and if the water levels increase, that must be the same as here. Why does ours have to be so tall compared to down there ... I think that you don't get any proper explanation on that."* (Appendix T)

The presence of the poles raise questions and separate the coast by creating different outcomes for Dragør citizens. They impose concerns for Søndergården allotment. Søvang is a neighbourhood located 20 minutes walk away, and Karl needs to have the differences between the poles addressed. The poles are not simply communicating their scientific knowledge; they also compel citizens into experiencing and acting the world in certain ways. They become a material actor that causes concerns as it becomes a local manifestation of what is at stake, being at Søndergården. However, it also creates uncertainty because while the actual height of the pole is visually

comprehensible, the differences between the poles' heights prove more complicated; a troubling disconnect between what Karl sees in his daily landscape.

While the poles become a spokesperson for an expert located far away, they do not speak enough for themselves to convince Karl to abandon his local understanding. Thus, an encounter of local knowledge and scientific knowledge unfold here. Where the municipality installed the pole as an object that should involve people, a substitute for experts, it rather initiates issues and uncertainties at Søndergården. Furthermore, because the pole is mute to some degree, it is unable to answer their questions. The locals take upon themselves to manage this discrepancy as they search for explanations. Pippilotta chips in about the calculation of the heights, how these change and relate to local characteristics:



Figure 5-2 Storm flood post at Nordstranden. Author Rasmus for scale.

Pippilotta: *"But we were informed at the meeting that they had calculated, right, was it one and a half meter?"*

Johanna: *"Yeah, well, first it was five, then it became four, and now it is three and a half, so next time we talk with them we'll be down to three (laughs)."*

Birgitte: *"Perhaps we should take the dike down there as the last, if it shrinks a half or one every time. I think the most strange is that Nordstranden, all the expensive 10-12 million dkk villas, their dike is not going to be taller than this (gesticulates one meter), and it has been flooded so many times down there, but there have been so many problems, they do not want a dike in front of all those [ed. the expensive houses]."*
(Appendix T)

With that, they draw in new ideas; changes in the pole's height, another neighbourhood and their tiny pole, the relationship between the poles' height and the prices of nearby villas. The poles are mute to the degree where their statement cannot be rephrased. However, each time the statement changes, it forces the locals to reorder their understanding. Above, we see the locals' experience with the poles' changing heights tell them that with time their pole will shrink again.

Although they are laughing, and jokingly plotting to wait long enough, it starts a talk about the collusion with Nordstranden. A move from discussing solely geographical differences in terms of the distance

between poles, to the more demographical differences in terms of socioeconomics and local preferences. Again the pole creates a new way of being a citizen in Dragør, because of what it portrays to people at Søndergården; citizens who live by Nordstranden will have a low dike and an unidentified “they” protect people living there from a higher dike. Thus, the concerns of Søndergården do not apply to Nordstranden; they seem shielded and are different according to the poles. Hence, the uncertainty connected to unexplained changes in the poles’ heights draw out new types of arguments, more socially and locally grounded. We learn that in the encounter between local and scientific knowledge where the two seem incoherent, the arguments find ground in other aspects. Together, all these aspects seem to lay the ground for an increasing scepticism. The conversation continues, and they discuss how often parts of Dragør have flooded:



Figure 5-3 A satellite picture of the coastal line of Dragør municipality, with Søvang in the bottom of the picture. The different stretches of coast are colored in relation to how the municipality divided the coastline in the coastal protection project.

Karl: *"It is not something new."*

Author Rasmus: *"And what do you think about that?"*

Karl: *"We think..."*

Pippilotta: *"There's something about..."*

Karl: *"It's a little exaggerated this thing, right? (everybody agrees)"* (Appendix T)

Thus, it all comes together. The arguments about the poles’ heights evolve into whether they are meaningless. Local evidence points to the fact that the situation might not be as dire as their pole indicates. Even the pole contradicts its own prophecy with its apparent changing heights. Now, a reader might read this story as a tale about suspecting locals searching for reasons to believe neither their municipality nor science. It is not. It is the story about the consequences that a disconnect between local knowledge and expert knowledge might cause. As the poles change, both along the coast and in height, they each time force their knowledge upon the citizens creating concerns. As citizens attempt to incorporate the meaning of the poles in their worldview, the citizens are forced to manage the disconnect between their local knowledge and the expert knowledge presented. This creates sceptical arguments drawing

on different types of insights and ideas because that is the only way to address the concerns. Thus, this story is not about locals opposing science. It concerns how knowledge creates ways of being a citizen, and citizens attempting to recreate order when knowledge changes or misaligns.



Kystvejen

Nyd Strandvej

Nordre Landvej

Strandsten

GRUSHULLERNE

DRAGØR BAGFYR

Stationen

TETSHUS

KIRKE

SKOLE

Toldergade

DRAGØR HAVN

Vejledende linjeføring

DRAGØR NORD



Nordstranden

Now we travel to Nordstranden, a place we learned about from the locals at Søndergården above. This community is also faced with changing heights of the storm surge poles, however here they spark a debate of whether to trust the calculations and embedded knowledge. While at Søndergården, the poles created ways of being citizens they here create organisation of citizens. From imposing concerns on the locals, they react by counterarguing the pole's knowledge, and its consequences. Instead of the pole clearly communicating what is at stake, it ends up producing uncertainty surrounding the calculations of the engineers. We learn about this in documents and minutes tracing the debate, following the announcement of the height change.

The Nordstranden neighbourhood grew northward out of the old city district of Dragør. Especially near the coast, it consists of rather expensive properties and people living there engage themselves with both the coast and the protection thereof. They currently have an earth dike (see Figure 5-4) which was built in 1993 and financed partly by local homeowners. At a citizen gathering in January, an official, Eva explains how the situation at Nordstranden changes due to new scientific knowledge:

"When we did this preliminary investigation in 2018, we made these storm surge poles out there, which we promise to change because they are not true anymore. When we made them, it was about 20 cm, that had to be put on top of the dike. What has happened is that the prognoses for seawater in storm surge events have changed... what it means is that right now, it looks like the dike has to be over 2,6 m above sea-level up at Nordstranden. That means 90 cm higher than today. In addition, it is also based on the fact, that we had some engineers out and measure the seabed to see how the waves can build up." (Appendix O)



Figure 5-4 A view of the earth dike at Nordstranden with villas in the background.

This new information imposes changes. As Eva explains about the new calculations, the locals react because their world changes together with the poles. In the months following the gathering, a great deal of scepticism surfaced, and the citizens at Nordstranden started a petition. In a letter sent to the municipality, they presented their

concerns and arguments as a collective. The change of the pole had compelled them to band together and react. Through the clash between the new knowledge and arising concerns, the poles create a new public, a new way of being a citizen in Nordstranden. Within this new role, they interrogate the science embedded in the poles, and from that the coastal protection itself. The petition challenges the municipality because it effectively circumvents the involvement processes they are organising. This forces them to arrange a meeting where they can meet and discuss, an approach more in line with how they do citizen involvement. In the minutes we learn about Nordstrandens arguments and concerns:

"We all trusted the established poles with markings and the message that the dike at Nordstranden should be elevated by 20 cm. for a 100 year event. But then we were told at a gathering, that the dike was to be elevated by 90 cm. This took many by surprise and got emotions going. And there is a very large amount of scepticism towards the last number." (Appendix W)

Just as we learned in Søndergården, especially the change causes scepticism. However, while the issues at Søndergården were not whether the numbers were scientifically correct, that becomes the issue here. Thus, at both places, the poles compel the citizen to act questioningly. Their arguments revolve around the reasons for the differences, but also the consequences of new information. At Nordstranden knowledge plays the role of ordering the debate, by designating arguments that find ground in other scientific knowledge and alternative solutions. They suggest a dike that mirrors the poles, an '*intelligent dike*'; one that can be adjusted, not only in height but also in shape. Through their petition, the locals engage new knowledge concerning different estimations and emphasises the uncertainties:

"There is no correct result on possible rises in seawater level, and opinions and prognoses are many and with great variations. ... We want an 'intelligent dike'. We know that wave impact has a radical influence on how high a dike should be and that it is the primary reason to suggest a dike elevated by 90 cm. It is possible to introduce measures to lessen the wave impact." (Dragør Kommune 2020b)

We see an *intelligent dike* solution, where wave pressure is managed away from the coastline to keep the dike as low as possible. They underline the manifold aspects in the scientific knowledge and the uncertainty surrounding it in their arguments. Thus, an encounter that started with a pole changing, evolves and now concerns ways to lessen the wave impact, because that can make a dike lower. It becomes an encounter where they mobilise science in arguments against a heightened dike. The knowledge plays the role of ordering the issue; from a change in height to ways of minimising wave impact through talking to citizens concerns.

Thus, in this story, we learn, again, how scientific knowledge embedded in the poles play the role of creating ways of being a citizen, here through organising Nordstranden around the mutual concerns generated by changes in the pole. While the municipality used scientific arguments, so does the community. However, they expand the knowledge to involve the shape of the dike, not only the height. With this, we learn of knowledge playing a role into both ordering publics into organised groups, and by that also ordering the involvement itself. It also plays the role of re-formulating the issues at hand; height or shape.

Encountering the proposed line

A big part of the coastal protection project is the alignment; the suggested placement of a permanent protective structure visualized as a line on a map. During gatherings, the officials spend much time describing it, tracing along and explaining its course through the landscape. It has also been given to the competing teams, as something to work from, just as it has laid the ground for economical calculations in relation to the overall budget for the project.

In this section, we explore how the proposed alignment of the coastal protection solution sparks different issues, arguments and concerns into being. The alignment draws forth a range of different concerns from the citizens, which they act upon through debating the foundation for drawing the alignment that particular way. Common for all groups interacting with the alignment is that they interrogate the reasons and arguments for its design. However, each group mobilise their arguments and concerns in vastly different types of knowledge and values. Some are grounded in historical and cultural values, ways of life and thoughts on conservation laws, while others relate to municipal politics, engineering practices and economic calculations. We learn that the alignment draws in new issues and concerns, seemingly unrelated to actual coastal protection. Furthermore, we learn of a connection between the organization of the groups battling the alignment and their concerns and arguments. We do so by visiting three areas in Dragør; the old port town, the farmland at Aflandshage, and the neighbourhood Søvang.

The old port

We begin our story about the alignment in the old town of Dragør. It is well-known for its district with yellow-houses and the ease of walking directly from the central pedestrian shopping street out unto the harbour. However, the line drawn to indicate a coastal protection structure tears apart the old town and the harbour, sparking issues and concerns with the locals. Through this, arguments arise drawing on Dragør's identity and large institutions. The knowledge embedded in the line plays the role of creating enough concern that locals start campaigning, by enrolling a vast range of actors. An encounter unfolds, and the line becomes so contested that it is simply removed from the map, in hopes that it is also removed from the worlds of citizens.

Many local groups organise themselves around the harbour; groups and associations centred around types of boats, local initiatives about tourism, and organisations working on maintaining and expanding the port facilities. Furthermore, a local group works toward the harbour becoming a World Heritage Center by UNESCO due to its maritime cultural heritage. A campaign that made successful progress when it was placed upon the tentative list (UNESCO World Heritage Centre 2019). The municipal council maintains and initiates many projects regarding the harbour, but most of the life is driven by the very engaged locals.



Figure 5-5: Cover picture that portrays the transition from town to harbor in Dragør, from the Facebook group 'Vi der holder af Dragør' translated 'Us who care for Dragør', which has 5000 members. The picture is originally from the Royal Danish Library's photo collection 'Danmark set fra luften'.

However, a map with a line drawn between the old town and the harbour, suggests carving the area in two halves with a more than one-meter tall dike. This kick-starts a debate, because it raises a very distinct concern, which ties together several arguments. At a gathering held just 300 meters from there, the

citizens promptly react when they see the alignment. Here, Pontus, a somewhat older man heavily involved with both the harbour and the local cultural life, describes his thoughts and reaction to the line.

Pontus: *"I agree 110% percent, when Bengt says: the city and the harbour cannot be separated, and we have seen on a paper a project where you precisely will attempt to make some embankment between city and harbour... don't start by making a model where the harbour floats and becomes a real wet harbour. That's ridiculous⁶."* (Appendix O)

Faced with an impending separation made by technical experts, Pontus draw arguments based a normative idea that the two cannot be separated. We later in the gathering learn that he sees this as an integral part of Dragør's identity. Thus, it not only creates concerns with him - it should create concern with everyone. These ideas are so prominent that the arguments engage with the foundation of the debate; the point of departure for a solution should be an unbroken port town. Another argument is the budget which does not sufficiently cover a reasonable harbour solution. Kerstin, another local, heavily engaged with the harbour argues:

"There have been these estimates of 125 million... if that estimate includes a small line along the shoreline ... it is probably an estimate where the cost of the harbor must be additional to the estimate... It is a completely different project to integrate coastal protection and harbor development" (Appendix O)

Figur 4.4: Højdekort Dragør By, med linieføring af eksisterende diger og højvandsmur mellem by og havn (Den sorte linie indikerer den foreslåede linieføring af højvandsmur og dige). Baggrundskort: Orthofoto 2016, Geodatastyrelsen, WMS-tjeneste.

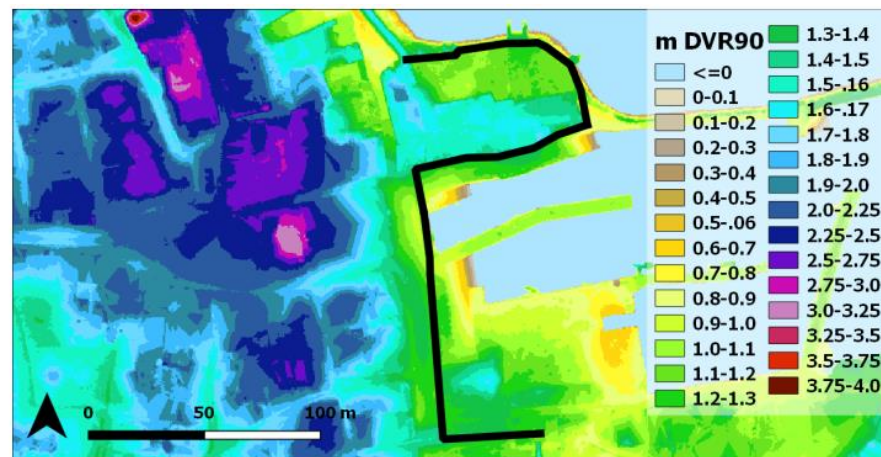


Figure 5-6 Picture used in the 2017 Niras report. It shows a orographic map of Dragør harbor, with the black line indicating a suggested flood wall.

⁶ Ridiculous here is a wordplay. It is translated from the Danish word 'vanvittigt' which sound like 'water witty'.

We see concern about the solution that comes forth by saying that even the design of the project favours a particular solution. Thus the argument revolves around an unfair process, started by the knowledge and values that formed the alignment.

Most arguments suggest an alternative; the alignment should be around the harbour. Many citizens draw in the UNESCO application, which they see threatened by the alignment. They argue that the competing teams should be provided with knowledge of Dragør's cultural heritage and its application to the list. The alignment creates a world, where if realised, it hinders the acceptance unto the list. Along with these arguments, the citizens also draw forth how it will destroy the local identity of being an old port town.

Thus the citizens raise the same concerns regarding the separation the alignment causes, however, they enrol a wide range of different actors and types of arguments in the debate.

As the alignment sparks issues and allow the citizens to perform many roles and arguments, it comes under attack in ways that make it difficult to defend. This fleshes out the implications of drawing a line. Drawing the line is a focal point of co-produced knowledge between climate science, coastal engineering, cultural heritage, local identity, and economy.

The alignment pulls the outcome in a direction that conflict with many concerns. The implication is that the line is destabilised, by linking it to a cost estimate, a hindrance of being accepted into UNESCO, a given technical solution that is based on problematic assumptions for the competition. As a consequence, each of these links are problematised, and thus the challenge of creating a great solution along the line grows to concern anything but coastal protection.

Drawing a line sparks issues into being, by activating types of knowledge that each tie the issues closer together. The discussed part of the line was erased, thus opening up for possible solutions, or closing down the problems. The line creates the space for a distinct role, that argues through a particular idea of Dragør identity and uses large international institutions such as UNESCO in its defence for a different solution. Here, in the old town of Dragør it did so somewhat successfully through the use of the city and its history – and by painting the dike not only as a common good, but also potential harm to the area in terms of other interests but protection from the coast. Thus here, knowledge played the role of both creating issues and removing them.



GOLFBANER

BAL OG TELTPLADS

PIONERGARDEN

FUGL

TAMU

AFLANDSHAGE



Vejledende linjeføring

SØVANG TIL KONGELUNDEN



Aflandshage

As we continue, we move away from the old port town and wander out to the open farmlands of the southern tip of Amager called Aflandshage. As the alignment traces through crop fields and conservation areas, it produces concerns about whether the locals reasons for living there are removed. We see issues arise about being heard and shown consideration. The locals experience that exactly their mode of life excludes them from arguing equally about the alignment. This feeling of not being heard further connects to arguments surrounding the validity of the choices made regarding the alignment.

The proposed alignment does more than threaten a town's chance of becoming a registered site of cultural heritage. It also becomes a threat to the way some people live along the coast. Some are Erik and Greta who own a farm in the sparsely populated Kongelunden. Besides a few farms, the area also homes a wide range of endangered birds and wild nature. They bought their property to live in the countryside with horses, wild animals and view of the open land.

In Greta's experience, the alignment act as a threat to their life at the farm. They fear that it binds them to their piece of land, that they might no longer enjoy, due to the prospect of a tall dike around their property. Greta and Erik bought the old farm, with hopes of restoring it into a modern farmstead in the middle of wild nature. This wild nature becomes one of the main actors in the Aflandshage alignment. According to the municipality, local nature conservation laws force the alignment close to Greta and Erik's home. The scientific knowledge has thus ordered laws, that in turn have drawn the line. But Greta finds it paradoxical to draw it away from the coast, as the solution would not protect nature then. She explains:



Figure 5-7 Greta draws the alignment on a map during out interview. Her map also shows the old fields scratched in blue, that were expropriated from their farm during World War II, and has since been owned by the danish defence. In the bottom of the map we see the Natura 2000 conservation area scratched in red.

"I think it's a half-solution they're making, I don't really think it makes any sense... it's hard to get a permit for building all the way out there, because its protected. But it's going to disappear anyway, so? I mean, the part that's protected will be under water. So, I think, that just because its cumbersome to get a permit is not a good reason to not try." (Appendix S)

Greta argues that the knowledge supposed to be basis for the alignment contradict itself, by not protecting the land. She adds that the conservations will be gone if the municipality's calculations are correct – because the soil along the coast is destroyed for agricultural purposes following a single flood, hence drawing in her local knowledge about the land. Her main argument is the discrepancy, if the solution does not protect the conserved areas, then why do the conservation laws become the reason for a terrible solution for her and Erik. Thus, the scientific knowledge about the protected nature, the local understanding of the consequences of flooding, and the drawn alignment clash. Greta's concern is for her own everyday life, but her arguments are grounded in a matter-of-fact outlook.

The alignment thus sparks concerns about the continuation of life they had dreamt about. Furthermore, they experience that this way of life itself seems to be a hindrance in participating in the debate. Greta shares the process they went through with the municipality. They were invited to a small meeting with the officials, together with a few other locals and farmowners from the same area:

“We were actually invited to a meeting ... I can't really remember much, because I was absolutely chocked that they really sat there and tried to defend that they thought it was a good idea. That the dike should be placed there. And that it was better for the majority and that it was hard democratically, to use more money because of us, since we were so few that would gain something from trying to obtain a permit to build.” (Appendix S)

We see that the alignment activates many other actors here. From a democratic ideal of fairness, to the economic burden of the uncertain choice of pursuing a permit to build the dike further out along the coast, where the area is protected due to conservation laws. However, the municipality's arguments do not resonate with Greta because her concerns for her daily life are not met, and neither are her arguments.

An ambassador element in the citizen involvement intensifies her experience of not being heard. This element revolves around inviting representatives from Dragør's many HOAs to participate in workshops with the competing teams. However, for the farm owners, it never made sense to organise due to their farms being scattered, the old age of many residents and a lack of issues in common. Concerns arise because they are affected by the alignment, but they grow as they are excluded from addressing the suggested line or being heard.

For Greta and Erik, the line simply does not make sense – a frustrating fact, since it has such a weight on their lives. Whether they should continue living in their long-term project of a family home and spend millions of kroner on restoring it or not is postponed until the proposed alignment of the line becomes more than just proposed. And this uncertainty galvanises their work on understanding the line and the

reasons behind its alignment. Their example shows us how the alignment sparks actors and issues into being. The proposed alignment puts their way of life at risk and forces concerns upon them. In order to argue the proposed alignment, local knowledge about the land and the specifics of the area's different livelihoods become grounds for why this proposed alignment does more harm than good. As they experience that their arguments fall for deaf ears, due to the farm owners lack of organisation, the issues change from being only about the alignment also to concern influence and involvement.

BØRNEHAVE OG FRITIDSKLUB

Fælledvej

Søvej

Ivøvej

Søvej


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Lille Ivøvej

TENNISBANER

LEGEPLADS

SØVANGSBUGTEN

 Vejledende linjeføring

SØVANG 

Søvang

We conclude the journey around Dragør in Søvang, the former summer cottage area that turned into permanent residence in the 1970s. Like elsewhere, the alignment generates concerns when the citizens face a line splitting their homes from the coast, for which they care a lot. They take upon themselves the role of the true voices of science, as they argue that the alignment must be a political project. Through interacting with the officials and the reports that create the alignments foundation, their scepticism increase. This leads to an encounter where the citizens attempt to rally power in pushing back on the proposed line, and knowledge plays the role of ordering arguments and intentions.

Today Søvang is organized in one HOA, with almost 680 parcels. They are fond and proud of their neighbourhood, and brand themselves by their 300-meter long bathing jetty and their family-friendly community(Ahrens 2006). Similar to Nordstranden they have a dike, however with the arrival of the alignment they see a future separated even more from the sea. The citizens are very occupied with the coastal protection. The municipality had to plan an extra gathering because the first did not have enough room for all who wanted to participate. They are concerned about the alignment, and whether it will cause them to lose access to the sea and bind them to their houses.

At the gatherings, most discussions centred around this line, questioning why it would raise the existing land dike rather than build something further out into the water; a solution that would resemble Amager Strandpark. After the gathering, the more talkative citizens formed a circle and discussed what had happened.



Figure 5-8 Aerial photo of Amager Strandpark located 15 minutes drive from Søvang. It was built in 2005, and belongs to Copenhagen municipality.

They fairly quickly came to the understanding that they needed to produce their own experts since they disagreed with the expert knowledge presented from the municipality. In our fieldnotes we wrote:

“Some didn’t find the process visionary enough – they ended up agreeing to arrange an evening with invited experts for the residents of Søvang. They believed they could arrange for 100.000 DKK from the HOA and invite a collection of experts in everything related to coastal protection to come and inform them about the possibilities. A kind of pirated process.” (Appendix Q)

The alignment caused scepticism and mistrust because it to the citizens became a manifestation with everything the municipality did wrong. Generally, we experienced no other place in Dragør that had such strong opposition to the municipality as in Søvang. This brought heated arguments forth in the gathering, about incompetency, hidden agendas and distorted facts. Finally, the citizens of Søvang simply opted out of the process – they would challenge the project by finding their own experts and producing their own solutions. Because rather than a well-thought all-encompassing solution to a problem of storm surges; a rational construction made from calculations from engineers, they perceived the process and the alignment as a political project first and foremost.

A prominent citizen in Søvang, Karlson, share the HOA’s role. Due to their size and location, Karlson argued that Søvang should have more influence in the process, even if it meant short-circuiting the plans made by the municipality:

“I think we should have more influence... But we surely have it through the muscle that we also have, we have the economy in the association to get some good help and we really want the coastal protection that is built to be future proof. That’s what people thought when they built the dike down here, that it was future proof.” (Appendix U)

He bases his argument around his local knowledge; the history of dikes. Further, he indirectly argues that the municipality leading the process will not lead to a future proof solution, because they are not completely honest:

Karlson: *“One day there’s no problems with Natura2000 and at other times there are. And there we don’t feel, they don’t score enough points to seem honest, right? There they underperform. And when you underperform, you are not convincing – thats the way it is.”*

Author Ann-Sofie: *“So what is it they lack?”*

Karlson: *“The municipal officials, they sit between two chairs, right? They have the citizens that they would like to make happy and the politicians that they must make happy.” (Appendix U)*

Karlson argues that the citizen will not be considered to the degree they should since it will be in the hands of the politicians – the employers of the officials. This imbalance would inevitably make it hard to appease everyone.

In Søvang, the residents are concerned about the alignment, mainly because it suggests a world where their neighbourhood will be separated from the coast by a tall dike. It seems they may also be concerned simply because the municipality had taken part in producing the line. The concerns they raise are with whether the current alignment is the best possible, but also if the format of the citizen involvement can encapsulate the challenges. Thus the alignment and the municipality becomes the reason for their critique. They base most arguments in mistrust stemming from local knowledge about earlier projects. However, besides arguing, they also engage their own experts, in an attempt to contribute with their own scientifically knowledge-based suggestions. Thus, knowledge plays the role of being both the reason for critique, but also something to acquire in producing better solutions.

Outro

In rounding off this section regarding representations, we draw on the case surrounding the earthquake in L'Aquila, described in section 3.2. We compare them by the themes of uncertainty and the roles of scientists. At both Dragør and L'Aquila a potential disaster threatens, and while it happened in L'Aquila, in Dragør, they can only wait to see if a flood occurs. Hence, we find that uncertainty permeates both cases.

In the L'Aquila case, politicians mainly produce scientists and scientific representations to convince citizens. Through this, they reduce the situation to its scientific uncertainty, as they attempt to clear up an issue.

In Dragør, the municipality, more than the politicians, also produce scientific representations. However, here they let them travel into the landscape and speak for themselves, rather than employ them as persuasive props. The science here plays the role of engaging citizens, in an attempt at engaging them and compelling them to reflect upon their landscape.

In a way, both places have to some degree muted the scientists, in L'Aquila by giving them a script to perform, and in Dragør by reducing them to poles and lines. However, in Dragør, this leads to other types of uncertainty to flourish. Here the expert knowledge becomes mired in the uncertainty the citizens feel towards the municipality. The uncertainty feeds of other types of knowledge than the scientific embedded in the representations. Because of how the knowledge is detached, the uncertainty quickly is about many more aspects than just its scientific component.

Throughout this section, we investigated how knowledge made into things spark citizens into action. We showed how knowledge when it becomes a line or a pole, clashes with the world of citizens by acting upon their concerns.

The knowledge about the height of a potential dike is met with confusion and scepticism. Both Nordstranden and Søndergaarden are examples of the role local knowledge plays in making the scientific knowledge make sense. Through these encounters, publics and ways of being citizens of Dragør are produced; thus, the knowledge comes to order groups drawn in through their concerns. They argue vastly different, while Nordstranden builds their arguments with more detailed scientific knowledge than the municipality, Søndergården draws upon a range of ideas and experiences in their arguments.

In relation to the alignment, we see that it draws in vastly different issues, however, all relating to normative concerns the citizens hold for their daily life. These concerns quickly relate to the citizens' organisation, through the way these either give strength to arguments or overwhelm citizens without support. Those who feel excluded ties this to not being able to represent their arguments through political groups. We see that one group, in particular, engage so many actors in their resistance, that the alignment finally is erased and entrusted the experts. Here the concerns and arguments put forth by the citizens trumped the proposed line and the knowledge it represented. Generally, most citizens draw upon scientific knowledge in their attacks against the alignment and its suggested solution, sometimes even from the same reports that have laid the ground for the line.

Finally the groups challenge the format of the involvement, and whether it is able to encompass the negotiations needed and the new knowledge proposals.

5.2 Shaping citizen involvement into creating a public

In this section, we focus on conversations and aspects revolving around the citizen involvement. The coastal protection project, contains besides the architectural competition itself, a range of different ways to involve citizens, which in the following is the centre of our attention. Thus, we unfold the particular elements in the involvement and how people react, interact and relate to them. We have chosen to bundle together these elements, and separate them from other issues often discussed, i.e. the different solutions, because here knowledge plays a somewhat distinct role to elsewhere. Furthermore, we have found that considering that while the citizen involvement is intended to revolve around the coastal protection project, it often comes to focus on itself. Thus, the citizens and the officials engage a lot with the format of involvement. To understand how citizen are invited to the process, see Appendix X.

The format plays a role in how knowledge encounters unfold. We can say that the format consists of many arenas, where people meet, engage, debate and negotiate. Most of these are designed or facilitated by the municipality or its collaborators. They are created as part of the project and hold specific purposes in engaging citizens, facilitating debate and expressing opinions.

The first element is the citizen gatherings, an event happening five evenings at the beginning of 2020. Then there is the usage of ambassadors, which include appointing representatives of HOAs and defining their role. A third element is the development of an opinion database; a collection of citizens' local knowledge, preferences, wishes, and critiques.

These are all places created by the municipality as ways of involving citizens and places where the citizens chose to involve themselves with the project.

We focus on the arenas where debates unfold, thus the places in which citizens meet and converse. We first share an exemplary tale of how the municipality frames the involvement. From there, we discuss the gatherings themselves, the ambassador roles, and the database. We not only focus on how these forums are designed and facilitated, but we also zoom in on how people relate to it, during meetings, interviews and elsewhere.

We start by turning to an official explaining the involvement elements of the Robust Kystkommune project, at one of the gatherings. Through this, we see how knowledge is divided between citizens and stakeholders and how the difference in involvement produces issues.

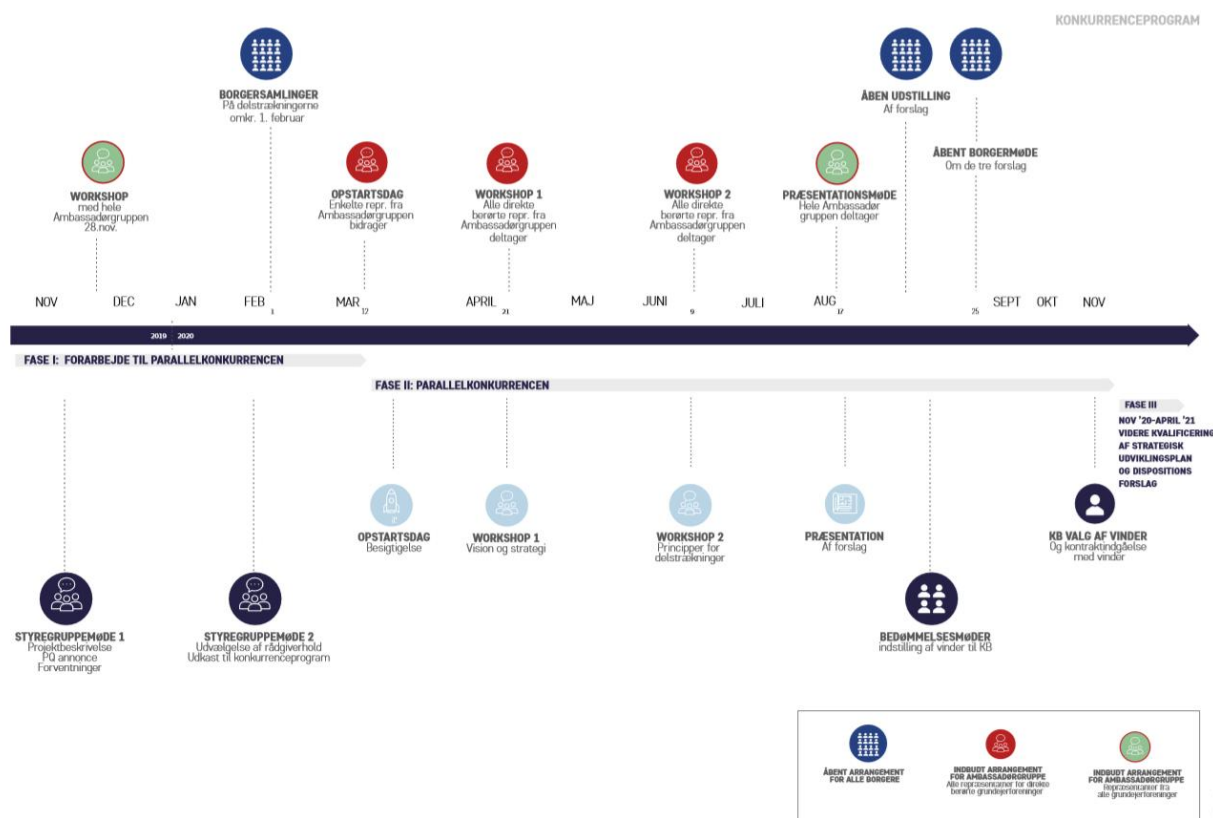


Figure 5-9 A process drawing of the coastal protection project shown via PowerPoint at the citizen gatherings. Milestones are shown on both sides of the blues arrow that indicates time. Above the arrow, milestones are revolving around workshops and meetings that citizens are invited to. Below, the milestones are centered around decisions, meetings and the election of a winner of the competition. These revolve around all other implicated in the process than the citizens.

“This is like a process drawing, to you, it is just some blobs – you can’t quite see it, and then there’s an arrow. And I can then tell that we are here now if you are in doubt. Over here we had the first workshop with the ambassador meetings, with the ambassador group, and then the blue ones here, with many ehm, that’s the open meetings, those we have here on the stretches in this week, totally open meetings, and there will be open meetings again here in April. And then there’s perhaps the most interesting, we do not know yet what the content will be yet, but we do know that in August, there will be an exhibition where these proposals the teams have made will be put on show. And there’ll be an open citizen meeting where all citizens are invited, and there will also be something digital, where you can see and take a position to and write about what you think, or you can come and be told. And then a decision will be made during the fall, at the end of October. The red blobs are then the workshops between the professional teams and these ambassadors.” (Appendix N)

During her explanation, she refers to an overview of the overarching project of securing the coast, see Figure 5-9. Especially the blue arrow in the centre is an interesting example of how the involvement process is structured.

Comparing the blobs above and below the blue arrow, we notice a difference in involvement. Above are the events relevant for citizens, and while the competing teams are invited to some of them, they have their own set of blobs below the line. While some citizens are invited to some of these events, the decisions are made at the blobs below the line. Above the line, the citizens learn what they can participate in: citizen gatherings, ambassador workshops, public exhibitions. Below the line, other stakeholders, such as the steering committee, the competing teams, and the municipal council can see what they are participating in; meetings and their purpose, ambassador workshops—even the choice of a winner and contract signings.

The official presented the process through the picture at every citizen gathering. She said the purpose was to help the citizens understand the project's state. At all the gatherings the presentation included the comment about the readability; it might be difficult to see and understand for the citizens. The graphic explanation was usually downplayed in its importance – it was a quick overview of the project.

In the picture, we see an apparent divide between knowledge relevant for the citizens and for other stakeholders. Even four events where all are invited are shown as eight; four in the '*public sphere*' and four for those who belong below the line.

Now, we do not attach such importance and meaning to this picture to imply that it alone divides people into citizens and professional participants. Neither do we argue that the picture portrays the process in the way most experience it. We tell the story it because it is exemplary in understanding the issues raised by the citizens about the project. There are fundamental issues that surround understanding and influencing the involvement process, which causes concerns, scepticism and confusion with the citizens.

Citizen gatherings generate concerns and arguments

In this subsection, we unfold how people perform very differently in the gatherings, and how this makes the knowledge encounters almost as diverse as the people. However, we are still able to draw some broader lines as we argue that the knowledge encounters that happen through and about the gatherings are pathways to aligning what citizen involvement is.

The municipality presents the citizen gatherings as one of the main elements of their citizen involvement (Dragør Kommune 2020, 10). Throughout the gatherings more than 300 citizens attended. As Dragør is a relatively small municipality, this results in almost 2,5% of the adult citizens attending a gathering, although we did notice few people showing up to more than one gathering (Social- og Indenrigsministeriet 2020).

While they are one of many places where Dragør's citizens involve themselves in the coastal protection project, they play a rather significant role in the idea of what involvement is and how it unfolds. Here we focus on conversations about the involvement's format, rather than the other topics and issues raised there.

We thus dedicate ourselves to understand how officials and citizens relate to the involvement through the gatherings and what role knowledge play in these encounters.

We first dedicate a subsection to how the municipality portrays the gatherings, where we discuss the framework as set forth by the officials and how they relate to it. Then we investigate the first type of encounter - the short ones. This is followed by a subsection where we unfold the lengthier types of knowledge encounters.



Figure 5-10 Picture from the citizen gathering in Dragør Nord at the local school.

The gatherings as vehicles of involvement

Throughout this subsection, we unfold how the gatherings are framed and facilitated. They follow almost the same script; first an introduction, then a walk-through of the project's process, both historically and onward. Following this, then they present the expert information relating to the stretch; conservation laws, the geographical outlay of the land, historical and characteristics within the area, and particular aspects that could be leveraged or be hindering. The last half they dedicated to "*how the citizens' voices can wander into the project*", where they presented other involvement initiatives, among which we find that database, which we explore in the subsection Applying a tool negotiates transparency.

During the introduction, the program was presented, together with the reasons for the gatherings. The introduction was the one part that was most alike across all gatherings, where they would say:

"In 2018 we were here. We got together, we discussed. What is this challenge we are facing? What is it we are trying to look into? How high should it, if the occasion should arise and we continue down the road that's named dikes. Where should it be? And what is the acceptable price? Some decisions have been made in those regards, and today Eva will touch upon that and tell what the point of departure for the future work is, the inductive and directive in relation to this." (Appendix O)

First, the official sums up the project's history. He focuses more on questions debated earlier than the decisions made. Thus, they frame the gathering in a way where they assign prior conversations priority over prior decisions. The issues previously discussed are played into the scene as old news and questions already answered. It compels people to act upon it in a way that brings new issues to the conversations. However, it also helps create a common frame of reference, reminding the citizens what the main issues were in the coastal protection project, attempting to draw them into solving these. The official continues:

"People may think that not a damned thing has happened since then. Here I can assure you already: process has been made. So, there will be some updated material in all these sorts of things, and you'll be told a little about what it is, in this day's program. But we need you again! Now we are facing starting up an architecture parallel competition. That we will introduce and tell some more about on this meeting, but we need your input as take-off for these teams to begin their work. What we really want is that you bring forth your wishes to everything that is about to happen, and then these teams can work on the solutions. So, you shouldn't. It is not expected that you provide all sorts of solutions, and then afterwards the teams are saying: oh well, let's snatch that one. No, it's more like the weight in wishes, and then they will be providing proposals for us, and then we will be discussing the things that arise." (Appendix O)

Next is the speech; the municipal needs the citizens, the people. Only they can make the project a success. This is said and emphasised several times throughout the gatherings; they need the citizens' input. However, the official differentiates between types of inputs. Some are preferable - the ones with the citizens' wishes, but the citizens need not provide solutions, that is not the point. Thus, the framing from the municipality is that they wish to understand the citizens in a way that does not impose challenges upon the competing teams. They frame it as the citizens' task to provide insights that can expand the knowledge of the experts, effectively entrusting decisions and construction of solutions to politicians and competing teams. Some citizens engage in this aspect, debating this framing and the role of their input. The official ends his introduction by explaining the program and setting the rules for the gathering:

"There will be room for clarifying questions. There will also be room to say something, but in the next half, after we have had an introduction to the coastline and what factors play prominent roles here, then there'll be an introduction to 'how my voice can come into the debate' and become part of the stepping stone for the competition. Certainly, clarifying questions in regard to this, but of course also opinions and utterances, that there will be." (Appendix O)

The official moves from framing the citizens' role to argue *how* the conversations and questions should unfold at the gathering. Here they promise to share information with the citizens, who will learn about the coast and the project. In return, they ask the citizens to participate. As the gatherings unfolded, we got the sense that the officials considered the knowledge sharing and the walk-through of scientific reports and conservation laws necessary for the citizens before they can fully engage. Thus, rather than an exchange, it was performed more as a prerequisite for getting opinions. It creates a possibility for the citizens to act or react to the knowledge presented, forcing forth specific issues and opinions.

We are left to ask how the officials then argue that the gatherings should be performed. We see attempts at being accommodating and adjusting the way the gathering unfolds, to match the citizens' way of participating. Furthermore, we see that it is not purely informational events, where only the officials present their knowledge of the project. We have also noted how the officials put great emphasis on needing the citizens' input, thus allowing them to play an active part.

It appears that the gathering is a vehicle for involvement, that depends on how one performs involvement. Thus, the officials perform several roles, one of informing, one of debating, one of moderating, one of collecting knowledge. The roles adjust depending on how the citizens act within the gathering. As it allows citizens to be involved, and to involve themselves in multiple ways. The success is somewhat hidden though, because whenever the performances of the citizens and the officials align, in whatever type of involvement, it resonates with them. It becomes unproblematic and therefore takes up less space, time and energy. It is the person showing up, listening for an hour, taking a cookie, and going home. It is the person asking a question about how to best answer the questionnaire, or when the next event will be, gets an answer and is not heard from again. These are uncontroversial knowledge encounters. While they are a big part of the involvement, they are not a big part of the issues.

Other times the officials performing gatherings and the citizens do not align. We see two types of encounters here, which we call the short and the long. We unfold both in the subsections below.

Creating a common world settles encounters

In the encounters, we distinguish between the short and long ones. We group the encounters together based on the way they play out. The short ones unfold as citizens raise questions or suggestions regarding the gathering, showing concerns and arguments, that the official in some way acknowledges and responds to. We investigate these because of their contrast to the lengthy encounters, which never seem to conclude. It seems that the short encounters settle because the officials and citizens arrive at a mutual understanding, which, even though they often disagree, allow some closure.

Below, a citizen suggests that certain things should be figured out prior to gatherings, in order for them to be meaningful. The purpose of the gathering seems to be related to having a fruitful debate. However, the citizen argues that this requires some fundamental calculations first:

Bengt: *"Jan, until next time when we have the next phase, I think you should go home and practice your economics a little because we all have some great wishes, and there are no limits as to how many beaches we should have, and all sort of other things. But it has something to do with the money, as Claus started out by saying. It's no use that we look at a Ferrari if we can only want to pay the price of a Skoda."*

Jan: *"Exactly"*

Bengt: *"And then you should go home and look into your finances because we'll be bloody fine. I'm more concerned about the municipality, so therefore I think you should go home and figure out where you'll get the money from, because otherwise we'll still be having this discussion in ten years, and by then we'll be knee-deep in water. (the audience laughs)"* (Appendix O)

Bengt is concerned about finding a solution but is prevented in this because of the financial questions. The debate is difficult for him to participate in because the framework is not appropriately outlined as he does not have enough information. The knowledge regarding the project's format and its conditions, the know-how and understanding of citizen involvement and municipal processes, we call procedural knowledge. This type of knowledge plays a rather significant role in how the citizens engage with the citizen involvement itself.

Bengt argues that his goal is to help the municipality, and the citizens with all their wishes, to figure out a solution that matches both means and goals. The structure of the gathering allows Bengt to share a concern that is handled, mainly by Jan who accepts being the target of a joke about the municipality's competence. We see several of these short encounters, where a citizen raises a concern about the

involvement, that is met with an understanding and acknowledged. We will not present additional examples here, but two other examples are presented in Appendix Y.

We notice across the short encounters that the way the citizens and officials each perform involvement align and that the role of procedural knowledge is rather small. As in the example above, Bengt needs to make a suggestion to voice his concern. Because Jan meets the concern, their worldviews do not clash. The aspects surrounding procedural knowledge are somewhat simple. However, while they seem minor, they could quickly unfold and become rather complex. Bengt and Jan do not dive into the finer economical details of the project, i.e. how much of the finances does the municipality need to account for, before a solution can be debated. We share this observation because this is what separates short encounters from the long ones.

However, the easy settlement is not always possible, as there are several instances of issues that return throughout a gathering. To better understand what we can learn from the short encounters, we, therefore, dive into the long, unsolved encounters. In the following subsection, we investigate why some encounters and issues surrounding the format create such profound gaps that citizens and officials almost become unable to converse, and the atmosphere becomes agitated.

Unaddressed concerns prolong encounters

In this subsection, we unfold the long encounters. The long encounters revolve around citizens concerns about the format of the involvement. As the concerns are either not addressed or understood, they progress and evolve into consisting of more and more issues, until the gatherings themselves stop or the citizens abandon the project altogether. Scepticism increase and the officials' attempts at producing a transparent involvement process becomes undermined.

At one gathering, we meet Lisa and Britta. They arrived together with two men and raised quite a few sceptical points and questions regarding the project and its citizen involvement. After a short presentation on the issues that the competing teams need to consider in their solution, Lisa interrupts with a question:

Lisa: *"May I ask, what are the criteria to win the competition?"*

Eva: *"That was a good question (people laughs). And when we look like this, you must think; 'Is it because they haven't thought about it?'. But we have. But it's. Exactly this is complex."*

Lisa: *"But what have you thought?"*

Eva: *"Well, but it is that you can work convincingly with your nature conservation, that you can make something that is aesthetic and functionally incorporated, which eh, you see..."*

The questions appear simple; what are the criteria for winning, and what did they think about it. Through them, we see Lisa's concerns about the project itself because both lead to answers about what solution she will actually live with. So she seeks more procedural knowledge about how the competition will unfold. However, the official does not fully align with Lisa, and even though she responds, she fails to answer the questions and Lisa continues her line of questions:

Lisa: (interrupts): *"Who decides that? No, but really, I'm a little eh..."*

Eva: *"You see, it's a little, I'm sorry. The three proposals will be laid out to public debate, amongst other things. So everybody will be allowed to have an opinion about it."*

Lisa: *"Soooooooo?"*

She clearly has difficulties making sense of what Eva says. As she has questioned both criteria and considerations, without having her concerns addressed appropriately, she turns to figure out who makes the decisions. Again, the official misunderstands her questions and acts as if Lisa is concerned about receiving enough information, rather than understanding the processes. Eva thus shares that Lisa will have plenty of opportunities to see proposals and form opinions. The officials continue to share information about how she can learn about different aspects. They then say how they can choose parts from the competing teams that they find great, and continue working on, to which Lisa interrupts and asks:

Lisa: *"But who is that decides what's good?"*

Jan: *"Ultimately it is the municipal council. And those..."*

Eva: *"The popularly elected..."*

Lisa continues the line of questions and turns the conversation to be about the role of ambassadors and whether they are part of decision-making. This draws Britta into the debate because she has concerns about how citizens should be continually involved instead of the chosen format of citizen gatherings. Britta voices her concerns about the possibility of the municipality dragging their feet in finding a solution, due to the political delicacy of the project. Following up on this Britta concludes her participation:

Britta: *"Hm, I think it's nice that we can voice our opinions as private citizens, but I would like to know if there will be a sort of more formalized hearing process at some point?"*

Eva: *"There will, in accordance with the law. This is just extra, not because we have to, preliminary – because we want to have a comprehensive preliminary hearing. Then all the legal stuff about coastal conservation laws. That will be when there is a project."*

Britta: *"And there, you use all this preliminary to?"*

Eva: *"It'll..."*

Ole: *"We, we will use it to make sure that the ones, who are going to draw it, that they can make something proper. So, your opinion will be used, wouldn't you say?"*

Eva: *"Yes. In Denmark, when you make hearings, according to law, then you are fairly far in the process. Then it's sometimes hard to..."*

Britta (cuts in): *"But you never know!"*

Eva: *"Then it's difficult sometimes. We are really trying to do it a little early, to see if we have the possibility to listen to people at an early time, to get some good ideas."*

Jan: *"Yes, the alternative is that it is Eva and I who draw the line, right?"*

And so, the involvement comes to a head; either you put knowledge into the project, or the officials will draw something. The citizens are more bewildered than before about the legitimacy of the involvement process, awaiting the formal hearing process. The mood in the room at Kongelunden was questioning, it was also light, and people were laughing, joking and smiling. At Søvang, we saw another long encounter, which ended in heated debates and citizens abandoning the involvement altogether. In Britta's example, we see how concerns are not able to be handled by the officials in a way, that lays them to rest. The involvement process becomes opaque to her, while officials try to be as transparent as possible. Thus Britta's procedural knowledge never aligns with the officials.

In this section, we have looked at the long encounters. We have seen that concerns, that are not handled well inside the format of the involvement sometimes lead to more questions and uncertainty. This uncertainty produces a scepticism on the part of the citizens, in regard to if the involvement process is actually hearing the voices of the citizens.

Producing ambassadors becomes a legitimacy problem

Diving into the topic touched upon several times now; we dedicate this subsection to investigate and understand the ambassador format. We see the officials attempt creating a role where the knowledge of locals is linked to the knowledge of experts.

The municipality decided to involve citizens more actively than earlier. They attempt to go further than the gatherings by connecting citizens with the technical experts, through a group of ambassadors. Eva explains the reason and use of the ambassadors as follows:

"I think I've said that we have these ambassador groups in order for them to secure that local knowledge gets to these professionals, so it's not me and Jan who has to translate what you say, or what you think. But that the citizens can get closer to these professionals and the other way around so that they can go home and tell their neighbours what's going on so that there is not so much uncertainty or." (Appendix O)

As it seems quite a few roles to place upon the ambassadors, let us unfold them. First, she presents the ambassadors as facilitators, or translators, for transferring local knowledge to the teams. This closely connects to the second role, where ambassadors should redistribute information about the project, to their neighbours. The purpose here is to both limit uncertainty and increase the level of knowledge. One citizen had understood the ambassadors as a representative, such that all citizens of Dragør would have an ambassador. Some issues arise, as he discovers this is not the case, although they are solved quickly:

Elias: *"You talk about homeowners' associations and ambassadors, but what if you live in a place where there is no homeowner's association? I live out by the golf course; how does one find out who ones ambassador is?"*

Eva: *"... It's not everyone who is organized in an association, and its simply not possible resource-wise, to get everyone organized in one. So, the city council has chosen to say that the associations that are there can send a representative to this, but we also have all those open things alongside it, and everything that is put before these associations is on the website as well, so..."*

Elias: *"Dragør municipality's website?"*

Eva: *"Yes"*

Elias: *"But if I had a question, could I go to the ambassador from Søvang?"*

Eva: *"Yes, or you are more than welcome to get in touch with us." (Appendix L)*

The citizen is concerned about who his representative is, mostly because he wishes to know where to direct his questions. Here we see the officials are quite aware of the deficiencies in the ambassador format when it comes to representation of the citizens. Some fall through the cracks, but there are no available resources to manage this. Instead, they rely on citizens to intervene if they feel they are not being heard. Thus, they argue that if the citizens have concerns about not being involved, they should react on that.

At Kongelunden, the fact that not everyone belongs to an HOA becomes an issue, which seems closely connected to the local geography and tendencies to favour the northern and most Copenhagen oriented communities. This raises concerns that lead to issues with the legitimacy of the whole involvement:

Anders Johan: *"You say that you are inviting board members of homeowner's associations that live near the coast? Do you realize that the ones living closest to the coast, on Strandjægervej, on Wiedersvej, on Drogensvej, on Rønne Allé..."*

Jan: (interrupts) *"They are not members of a homeowner's association."*

Anders Johan: *"They are not members of a homeowner's association. Only the ones on Nordstranden is."*

Jan: *"Yes, that's how it is. Why don't you band together?"*

Anders Johan: *"You invite the homeowner's associations that lie up near Copenhagen to be a part."*

Jan: *"No, we invite all these homeowners' associations, but we can't go around and pick all of you up." (Appendix K)*

Here, like the example before, we see how the representation plays a role in how these ambassador roles are seen by citizens. We also note that the concern is about whether someone receives precedence rather than receiving information about the project. Since the way the ambassadors are chosen become a legitimization of a few people in the process, the citizens who are left out become sceptical about the whole involvement process. They argue that the use of HOAs in choosing ambassadors excludes some groups from the involvement, which they find problematical.

In this subsection, we have seen how the ambassador role is made with the intention of increasing the interaction between citizens and professionals. However, it also becomes a source of scepticism because of how ambassador roles are assigned. Some citizens gain legitimization from the municipality in the project's decision-making, while others notice that they are left out – and therefore critiques the format for its unwillingness to hear their voices.

Applying a tool negotiates transparency

The municipality employed the consultancy firm Backscatter to create a technical tool to complement the other citizen involvement elements. This tool consisted of a questionnaire with four questions; 1) which road people lived on, 2) which stretch they would like to express an opinion about 3) how they would like to use the stretch in the future and 4) what they thought was particularly important about the coastal

Notat med opsummering i højre side finder du et notat, som samler op på meninger og holdninger.

Databasen: herunder kan du søge i de 340 skriftlige besvarelser indsendt via online spørgeskema, Facebooksiden Diger i Dragør, mails til diger@dragoer.dk og læserindlæg i avisen DragørNyt. Udover de 340 besvarelser indgår 148 besvarelser, som omhandler konkrete forslag, fra tidligere borgerinddragelse "Diger i Dragør" fra 2018. Alle indlæg i databasen er anonymiseret og eventuel personfølsom information er fjernet

Strækning

Emner

Frisøg

Viser 32 resultater.

Fra spørgeskema. Spørgsmål: Hvad mener du er særlig vigtigt vedrørende kystbeskyttelsen af delstrækningen?
At det tilgodeser de gårde som har ligget der i 100 år, og beskytte dyreliv ynglesteder mm.

Fra spørgeskema. Spørgsmål: Hvad mener du er særlig vigtigt vedrørende kystbeskyttelsen af delstrækningen?
At det virker 🌞 Så man føler sig tryk. At det understøtter det natur og dyreliv, herunder fugleliv, der er her i forvejen.

Fra Diger i Dragør 2018
Bemærkninger til digerapport Hermed mine personlige bemærkninger og forslag til ændringer og yderligere undersøgelser mv. i forhold til den udsendte Niras rapport og egne oplysninger. Ikke meget at sige til de oplagte foreslåede forhøjelser af Nordstrandsdiget, Sdr. Strandvej, Søvangsbugt-diget og Søvangsdiget. Kun om den nødvendige forhøjelse med hensyn til 50-, 100- eller 500 år scenarier. Jeg foreslår i første omgang max. 100 året. Så kan vore efterkommere evt. bygge og betale videre senere. Mine bemærkninger med start forfra og lidt spring frem og tilbage. 1. Side 7 figur 0.2 viser et lille knæk ned fra Sdr. Strandvej af St. Mangleby Strandvej til Søvangsbugt-diget. Virker urationelt. Læg et dige inde på Kålmarken til Søndergården nordende, så der bliver et nogenlunde lige digeforløb. Brug evt. det nuværende materiale i stien fra St. M.

The database is a supposed overview to the politicians and architects, but as the following indicates, it does not always support the citizens' feeling of involvement. Here we focus on the database as a tool intended for enacting a transparent link between the inputs of the citizens and the professionals. However, due to practical obstacles and readability, it often has the opposite effect. It leaves the citizens bewildered about the involvement and does not make them feel heard.

Ann-Sofie Hielt Thorsen, Jeppe Hæstrup Kamstrup & Rasmus Nielsen Nissen

Birgitte: *"Is it predetermined? ... no matter how much energy we spend on meetings and writing and such,... are they completely indifferent to everything? The line is placed, and it goes to the water."*

Rasmus (author): *"Ahh, is the cake baked in advance?"* (everyone eagerly says yes)

Birgitte: *"Are we a joke? Is it just to sound good when we sit at the citizen meetings with all the things, they can fix? We got this and this ... so can you write it, but then they don't care"* (Appendix T)

Despite the amount of energy that stakeholders have put into digital involvement, it makes citizens concerned about whether they are influential. Sometimes, a lack of transparency becomes very obvious, especially when paired with an inability to use the digital interface. An older man, Anders Johan, did not see any advantages of a digital solution. For him, it was unintelligible which added to his sceptical views of city hall:

Anders Johan: *"Does it become fairly readable? What we sent in in '18. If you print it out, it becomes 74 A4-pages, but the text is a small stripe in the middle. You need a magnifying glass to read it."*

Ove: *"We will do what we can, but... You actually printed it out?"*

Anders Johan: *"Yes, I've asked about it in the city council. 'yes, yes, we will figure it out', but bugger all happens."*

Jan: [replies jokingly referring to Anders Johan's occupation]

Anders Johan: *"It's okay. I will manage the high tide as well. I'll just find a dinghy."* (Appendix O)

It is clearly nonsense in the eyes of Anders Johan. Even the attempt to print it out to increase readability – something Backscatter never contemplated as a possibility – does not make the tool comprehensible. It ceases to be a transparent tool. This show that digital tools can quickly become the opposite of the authors' intentions. Most citizens did not experience transparency in digital citizen involvement. On the contrary; their experience was that of not being heard and not understanding the process of the involvement.

In this subsection, we show how the database, while meant as a transparency tool and effective in involving citizens, often become opaque, due to the readability of the tool. This produces a scepticism towards the involvement process, where citizens often feel they are not being heard. Additionally, we see that practical matters, such as computer literacy, further increase these feelings.

Outro

In rounding off this section, we draw upon the case of citizen involvement in Pickering, as described in section 3.2, by comparing it to the citizen involvement in Dragør. In Pickering, the development of flood protection was staged with shared knowledge production in the centre. The framing blurred the boundaries between citizens and scientists, which allowed them to construct a common solution. In Dragør, the split between citizens and expert was already present in the overall project plan. The plan was so vague and briefly reviewed that citizens were confused about their purpose and uncertain about their involvement. The municipality tried to help them by telling them to inspire the architects instead of providing solutions. Clearly, this is also contrasting to Pickering, where the authors stress that collaborative knowledge is the principal designer. Instead of facilitating a shared space for knowledge production, Dragør relied on the database. However, the lack of engagement with the database makes the communication one-way, which makes the citizens speculate if things are predetermined. Dragør succeeds when the officials are able to address their concerns as we saw in the short encounters, where they co-create knowledge.

Throughout this section, we investigated how the format of the involvement is interacted with and negotiated. We argue that it is mainly through the gatherings that topics, themes and solutions are discussed; hence it becomes the centre of citizen involvement.

We learn that citizens are interested in negotiating the format itself and that the gatherings allow the officials to perform involvement in several ways, which essentially caters to more citizens worlds. By comparing the long and short encounters, we see the importance of procedural knowledge aligning. Knowledge here plays the role of ordering concerns and arguments, into those concerns that are understood and addressed, and those that are not. The latter evolve and extend, effectively overflowing to several different aspects of the involvement, which becomes increasingly problematic.

Through investigating the format of the ambassadors, we touch upon questions of legitimacy and representation. Here the citizens are concerned about being heard, having influence, and receiving appropriate information. As the format itself creates an apparent separation between those involved and those who are not, arguments arise that take the form of critique and questioning. Here we introduce the term procedural knowledge. We see that this type of knowledge allows people to react to their assigned

performances; ambassador, member of a HOA, citizen. Depending on what concerns they raise; acquiring more information or lack of involvement, they react to the assigned performance of citizens differently.

Last, we touched upon the database and work of Backscatter, which revolves around transparency. We here see the implementation of a tool intended to redistribute knowledge and opinions by being transparent. However, the tool is incomprehensible for citizens, and thus their concerns are raised. Here we again see the role of procedural knowledge and local knowledge surrounding the earlier involvement process, both playing the role of instigating issues. As officials call substantial attention to it during the gatherings, it contrasts with how the citizens see it used. This creates scepticism, as they do not experience its implications match the promised use; they have written their opinions, but still, nobody seems to listen.

5.3 Open debates negotiates design solutions

In the last part of the analysis, we switch the perspective from a starting point of encounters with the objects of public involvement. The starting point in this section is the open debate on coastal protection design between citizens and experts.

The section shows situations where the content of the debate can unfold in the scope of the public engagement and other situations where the content is not frameable by the municipality. Again, we start to see how the framing's limitations become a negotiation about the scope of the forum. First, we present the municipality's position that is tied to the EU flood directive, the involvement process in 2018, and the decisions that followed. The chapter that follows outline how some citizens require more knowledge. The next, why some think it is the wrong knowledge, and finally a chapter with the interpretations of the right knowledge. Throughout the section, citizens' concerns and arguments are counterbalanced by the municipality's.

The municipality is a repository of knowledge

In Jasanoff's description of institutions, she argues that they *"serve as stable repositories of knowledge and power. They offer ready-made instruments for putting things in their places at times of uncertainty and disorder"* (Jasanoff 2004a, 40). When we juxtapose the municipality and the citizens, it is not a simple confrontation between two homogeneous units. The municipality is the institution that contains a whole body of knowledge, just like the heterogeneous public.

Today, the coast of Dragør is protected against flooding by more or less contiguous dikes of varying shape and height. Their work with the EU flood directive showed uneven protection along the coast. The need to equalize this is one of the basic arguments brought forward by the municipality because that is the first step towards reducing the threat from storm floods. The argument is conveyed in the introduction to the summary report from 2017 (see section 2 State of the dike) where it states that an even protection level is needed because the water would otherwise flood the municipality through the weakest areas (NIRAS 2017, 5). Based on this, the municipality invited citizens to debate the alignments and the size of the protection levels proposed in the report.

After the first round of citizen involvement in 2018, the local council settled how to reduce the risk of storm surges by fixing a principal alignment of the dikes and heights equal to protection against a 100-year incident. It also entailed that emergency services would be a secondary part of the scope as a supplement to the permanent structure.

In the following sections, where we present citizens that share concerns or counterargue, the responses from the municipality always have a connection to the three main elements: The EU directive and reduction of risk, the summary report from 2017, and the decision in 2018 about protection level and alignment. These three elements set the frames of the projects in many ways. Under a common term, we refer to it as institutional knowledge as it comprises different kinds of expert knowledge justified by politicians through citizen engagement in 2018.

The expert knowledge from various disciplines is publicly accessible and transparent but also stored and interpreted conjointly in the municipality, and the project history. As we will unfold, this type of knowledge sometimes conflicts with local knowledge that is based on grounded intelligibility. In the clash, we see how they play different roles as the public engagement process take place.

A precautionary clash

The first clash we have identified is the one we have called the precautionary clash. It based on scepticism towards all three elements of the municipality's argumentation. The knowledge encounters unfold through debates about a precaution toward the proposed coastal protection. The citizens fear premature decisions and substandard inappropriate solution. In contrast, the municipality brings forward the dikes as necessary to reduce the risk of flooding as agreed in the first round of citizen involvement.

One of our informants, Annika, became a good example of how this discussion is about many different elements all at once. Through her statements, we see the encounter between a local interpretation and the expert interpretation of coastal safety that question the content. Furthermore, a boundary arises when she questions the political framing of the process and critiques the citizen involvement in 2018.

A need for more knowledge

Annika lives close to the south beach of Dragør. She has lived there almost all her life and has early memories of walks on the dike with her father when she was a little girl. Today she is 70 years old, living with her husband in an area of the south beach called Hvidtjørnen. Furthermore, she has been active in local politics for many years.

For Annika, it was a question of not rushing into things, when there is uncertainty about the scale of the problem facing Dragør. Her worries stem from the fact that she saw little correlation between what the engineering reports conveyed about the local area and its dangers, and her lifetime of living there.

"I have my doubts whether the desktop calculations hold water when I see that Hvidtjørnen is designated a high-risk area. There has never been a drop of seawater, in the 70 years I have lived."
(Appendix N)

Annika let us know that she is not a climate sceptic, but as her quote show, she is afraid that the conclusions in the report are flawed. When she combines that with her knowledge of the politicians, she can become worried. She mentions it during an interview:

"... there is someone (local politicians) who sits and sleeps during meetings, they do not have the agenda, and have been there for many years. There I can be worried. These are ordinary people like me and you sitting there, and someone who may not be so educated. Do they have the ability to see through what is needed?" (Appendix V)

Since she has been active in that sphere for many years. Her time spent at political meetings and in different political parties in Dragør's local political life has given her some apprehensions as to whether she trusts the politicians to do the right thing; or if the whole project is being done due to politicians uncritically being talked into solving a problem that might not be as big as they believe it to be.

Annika is not opposed to the idea of coastal safety; she believes it to be important in the overall planning – as well as knowledge about climate change. But she wants the knowledge that grounds the solutions to hold up – to remove the uncertainty that is there. And she does not believe that the local council is fully able to live up to that task. Therefore, it becomes her responsibility as an active citizen to speak up about the problems she sees with the knowledge leading to the current decisions.

Besides her questioning of the report, she also questions the need for an even protection level along the coast that was decided after the citizen involvement in 2018. She thinks that there must be a balance between price and protection:

"I think there has to be a relationship between what you protect and what the price is for it. Because if there is a single farm out on Aflandshage, should one then build a giant dike to protect it? Put out straight. Or can it be resolved with emergency services?" (Appendix V)

She justifies the question referencing the first round of citizen involvement. In her view, it was never up for debate whether they should build dikes or rely on the current coastal protection and emergency services. The decision back then was about protection level and alignment. She sees the narrow scope back in 2018 as one-way communication from the municipality:

"I think it's really nice with citizen involvement, but the citizens have not been involved regarding if we should have dikes at all. It was pure one-way communication." (Appendix V)

Annika's arguments are historical and draw on memories and beliefs. She shares her local knowledge of flooding, and she back it up with nearly 70 years of living in Dragør. Her knowledge of the Hvidtjørnen area contradicts what is produced in the report – and therefore she doubts "the wise heads" as she calls them. From the knowledge, encounter emerges uncertainty, and she performs a scepticism that is made more prominent by her knowledge of the inner workings of the municipality's political life. Citizens like Annika who are expressing a need for applying a precautionary principle are brought in to action by their local knowledge of the area and its conflict with the expert knowledge. Uncertainty related to expert assessments as the scope of the project, preconditions and the long-term predictions are raised but often not addressed due to the absence of the experts. It leads to scepticism and distrust that is amplified by the uncertainty of the politician's motivation. The outcomes are suggestions of more public scrutiny and less radical measures than the dike proposed by the municipality.

A need for reproach

Another group of citizens also voiced scepticism towards building dikes. They contrast with citizens like Annika on their view on how to deal with coastal protection. They think that long-term improvement of the current permanent protection is the right road to follow. Hence, they do not investigate if the form or the content of the project is correct. Instead, they argue why it is wrong both through local concerns and different expert knowledge about coastal protection. In their advice for caution about the municipality's proposals, we see concerns emerge that are precautionary like Annika's. We elaborate on the arguments for long-term solutions in the next chapter. For now, we look into what concerns they bring forward and how it plays a role in the project.

One of the areas where we witnessed significant concerns about constructing dikes together with arguments for better alternatives was in Søvang. During the citizen gathering, we noticed a man that was very active in the debate. After the meeting, we approached him to arrange an interview. Immediately, he seemed to be interested in the prospect of an interview where he could disseminate his views but abruptly refused as he found out that the interview was for a research project. He did not seem to conceal that he was seeking public attention through faster channels and that his time was too limited to engage in research. He suggested that we instead interviewed Karlson from Søvang, who represents the same opinions as himself. In the interview with Karlson, we learn that Anton moved to Søvang recently. According to Karlson, Anton's house is quite impressive. It was built from the ground and drawn in

cooperation with an architect. They designed it with a focus on the ocean. Karlson mention Anton's house during our talk:

"I do not know if you noticed there is such a small pitiable house facing the water (Being ironic). Arh it is actually a very pretty nice big house. But he had just built it, and he had been sitting with the architect, and they had visualized how he could sit on his couch and adjusted the height of the house to the dike so he could still look out and then he gets such a storm surge pole that says it must be 2.5 m higher, and I can understand it requires heart medicine to see something like that." (Appendix U)

Obviously, there are several reasons for Anton to be against a higher dike: It will block his view, he must pay for the construction, and it will significantly reduce the value of his house. Instead of declining the proposition, he counterargues for a better, more recreative solution. It tells us that he does not mind spending much money, as long as it improves the value of the area. From the interview with Karlson, we understand that this is general for the Søvang area. From Karlson, we learn that they try to avoid the debate to revolve around the economy. At one of the citizen hearings, Anton criticized land dikes:

"If we raise the dike and spend 40-50 million DKK to increase it, then it just builds on top. We get nothing for the money other than it being a less nice place to be. It will be a bit of a joke that you come up to the Berlin Wall." (Appendix L)

Through his condescending reference to the Berlin Wall, we can observe a clash between epistemic knowledge and a local interpretation. The technical object becomes normative by attaching the symbolism of The Berlin Wall to the scientific object. The imagery of living next to a Berlin Wall is not desired for citizens who live by the sea and enjoys its advantages. The symbolism is mobilized in the debate, and we see support amongst the citizens through several derogatory statements containing the term Berlin Wall or simply the wall. The criticism is directed towards the project scope with dikes, but as the quote shows, it is also connected to the economic framework.

Therefore, the concern behind the long-term solutions also poses the question of whether to have land dikes or not. It is less visible because people also argue for their long-term propositions.

A place where we see the concerns about the scope and economic directly is through the discredit of the municipality's economy. By insistence on a weak economy in the municipality, the dikes are presented as a cheap, quick fix that is substandard without relation to the crucial problems.

Weak economy, wrong scope

The citizen Emil attended all citizen gatherings and posed this concern every time. He is an interesting character in this fieldwork because of his clear expression of arguments and concerns. He came to the gatherings prepared to the teeth, with a small binder filled with papers. He never really used the papers as anything other than a prop – he showed the binder, but never opened it. But what was remarkable about Emil was his story, which was prepared from home. Emil had done his homework and showed up ready to combat the municipality on its way of informing citizens. At a citizen meeting where he is given the word, he starts out by telling an anecdote.

First, he explains that he moved to Søvang in 1970s and has worked at Kastrup Airport for many years. He has been living next to the coast and has his daily life there. Then he tells a story about his daily bike ride where he becomes aware of new coastal protection. The encounter makes him aware of the engineering report on the topic, and he starts to explain the content of them. As the speech evolves with still more technical detail, one of the officials asks him to get to the question. He finishes his speech with the same argument as presented at all other gatherings:

“Yes! In short, what's on the table now doesn't work! It is the cheapest, cheapest solution available.” (Appendix N)

This shows how the municipality lacks money in Emil's eyes – Why does the state not help with the funding of this problem? Why has the municipality not cooperated with the other municipalities on Amager to make a coastal protection solution instead of choosing the cheapest option?

At another citizen gathering, he puts it in plain words:

Emil: *“It is quite clear that we are lacking money. It's the cheap solution!”*

Bosse: *“It is a little associated with the fact that it is too big a burden for the municipalities. They talked about that it was too much of a burden to impose the municipalities, to make this budget, it is not just our municipality.”* (Appendix K)

Bosse, another citizen, gets his point and complete the argument by problematizing the legal structures behind Danish coastal protection legislation. For the municipality, this is outside their scope. The reduction of risk, according to the EU directive, is their scope. With this, we start to see how the arguments run in circles: The state point at the municipalities through the EU flood directive. The municipalities point at the citizens through the coastal protection legislation. And the citizens point at the state as we have seen with Emil. To break the chain, the scopes must find common ground amongst the parties.

We notice how other citizens also have concerns about the economy that influence the scope of the project. According to a citizen in the focus group interview, the concern about quick solutions stem from a history of poor economic administration in the municipality:

Lotta: *"They have been under administration before many years ago, and now they are very close again, so the trust it is probably a bit wobbling."*

Karl: *"I'm also afraid that it will result in a quick-fix⁷ solution."*

Lotta: *"Yes, yes, we are indeed."*

Karl: *"But such a water tube, it could do a lot."* (laughing in the living room)

Johanna: *"That we could control it ourselves, right."* (Appendix T)

Here we also see the water tube being brought up. It is a tool for emergency services that are not a part of the project scope, but when the assumptions behind the dikes are questioned, the entire scope is for debate. An object of autonomy like a water tube lightens the concerns in the allotment association.

In conclusion, the precautionary clash has unfolded two central versions of precaution that emerged from clashed with the proposed project. One where concerns like Annika's requires further scrutiny to reduce the uncertainty before decisions are made about design. A second like Anton and Karlson's where precaution is necessary because they imagine better solutions than the substandard dikes. The concerns about a project solution with dikes are fueled by speculations like Emil's about the municipality's weak economy.

The negative presentations are all symptoms of resentment against the short-term dike solution and a lack of confidence in the politicians. They all prefer a precautionary approach to the project that is outside the municipality's scope. The scepticism that emerges from the inability to address these types of concerns within the scope of the project shows how these types of local knowledge play a role in the citizens' involvement.

⁷ Translated from "*Klondike-løsning*" which refer to the spontaneous building of structures on random locations.

A visionary clash

The visionary clash is the knowledge encounter between the municipality's arguments and people with designs they find better. Instead of revolving around dikes, the clash is about the solutions citizens propose as better alternatives to the dikes. In this clash, the roles turn so that citizens are the part arguing for a certain design where the municipality counterargues with references to the limitations for the project.

In the chapter, we outlay two local interpretations of the project that are conflicting with the municipality's framing. The first is a recreational interpretation that argues for improving the amenity of the coast. The second is a technical interpretation where a comprehensive solution for the whole island of Amager is highlighted. Again, we pay attention to situations where different types of arguments and concerns are mobilized and the knowledge production that emerge from them.

From section 5.1 we recall that storm surge poles were installed to represent the dikes. During a citizen gathering, Anton, that we introduced earlier, objected directly to the representation:

"We have a full engineering report that is very serious with a dike. It doesn't have to be a dike ... we have the NIRAS-report and poles of 2 meters. That is what we are clinging to." (Appendix L)

Many citizens shared this view. They are not against coastal protection but disagree with one or more of the assumptions in the dike solution. Some of them are even sceptical about the extent of climate change in Dragør but are still in favour of building coastal protection if it adds value to Dragør.

One of the most common ways to voice disapproval and draw up boundaries at citizen gathering was to propose alternative solutions. They are worth dwelling on because it tells us something about how the actor's knowledge is situated and justified. It highlights their knowledge about coastal protection and links it to their lives. One of the solutions that many propose is sea dikes or a beach park.

Recreative local interpretation

A recreative sea dike or a beach park is presented as a form of coastal protection that is placed in front of the current coastline out in the water. Central to the solution is that it protects against storm floods and remove nuisance from large dikes close to houses. Furthermore, it can add recreative value.

In the precautionary clash, we described how Anton criticized dikes. In one of the quotes we used, he follows the critique with a suggestion. We show it again; this time with the suggestion added:

"If we raise the dike and spend 40-50 million DKK to increase it, then it just builds on top. We get nothing for the money other than it being a less nice place to be. It will be a bit of a joke that you come up to the Berlin Wall. I keep thinking; if we pushed it out into the water, then we suddenly got

something that could be recreational where you could live with children, you could ride a bike, you could get experience, from our 60 million DKK.” (Appendix L)

In contrast to the unflattering construction of a Berlin Wall, Anton suggests recreational protection displaced in the water. A presentation that is supported by images of children, bike riding and experiences that draws attention towards freedom. Significant support of this view is clear through the many suggestions of sea dikes and beach parks. We also notice his mentioning of the cost that he would like not to be too rigid and limiting for the design. In the interview with Karlson, he elaborated:

“We would like that it was not a financial exercise, but a life enjoyment exercises instead. We talk so much about nature, and I think we can create a lot of good nature through coastal protection.”
(Appendix U)

His statement points attention to the payment model and the limitations they fear from the municipality’s project structure.

We understand that Anton and Karlson do not mind paying for recreational protection but are not allowed according to the conservation law. They do mind paying for protection that degrade the recreational value, but that they have to according to the coastal protection law. To explain the municipality’s counterargument, we use the opportunity to briefly examine the payment model and the conservation law’s influence on the project.

Conservation laws and the payment model

Nature and environmental screening was a part of the 2017 summary report. The screening shows that it is almost impossible to construct coastal protection without interfering with conserved areas. It is unclear how projects, in general, can be adapted to it, but during the citizen gatherings, we learn that the EU conservation areas Natura 2000 are particularly essential. The influence on Natura 2000 areas are important to minimize because it entails comprehensive impact assessments or even a deviation case in the EU that can take years. Even if they make a deviation case, the municipality cannot expect to win (Appendix N).

It is this law that Anton, Karlson, and many others want to challenge because the sea dike or a beach park is in conflict with the Natura 2000 area. On Figure 5-12 we see how dikes in the sea will have to be constructed in the Natura 2000 area hatched on the map.

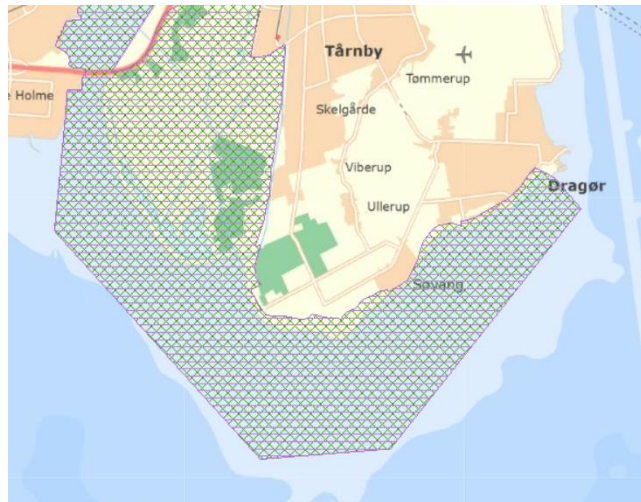


Figure 5-12 Figure showing the conservation area Natura 2000, in the hatched area.

According to Karlson, the municipality change their arguments about Natura2000 all the times. Some times they are told that the conservation can be challenged, sometimes it is impossible.

“There they (ed. the municipality) are pretty dodgy. One day, there are no problems with Natura2000 and other times there are. And there we might not feel quite... they do not score enough points to seem completely honest.” (Appendix U)

The uncertainty related to a challenge of the conservation law cannot be addressed without an actual design. Thus, the possibilities of challenging it are also hard to comment on. When the municipality tries to do it anyway, they are caught up between citizens and the project scope about reducing risk within a few years. An EU deviation case is so long-lasting that they cannot do it within a few years. On the other hand, they cannot say that it is impossible when the citizen challenges their statements. The discrepancy makes Karlson and other citizens feel that the municipality is dishonest in the involvement process.

The second big element in the summary report is the payment model. The distribution of cost has root in the Danish coastal protection law. It is complicated because it is based on a landowner pay principle where the definition of who the landowners are, is vague.

According to the law, coastal protection must be paid by the landowners who benefit from the protection. In past times it was the landowners living next to the sea who should pay. A logical conclusion that over time proved insufficient because landowners next to the first row were also affected by storm surges and flooding. Therefore the Danish coastal protection law was made to protect victims of storm surges. In addition to the owners of beach land, the municipalities can today also impose financial contributions on landowners who indirectly benefit from the protection. (Danish Board of Technology 2017).

8.3 Partsfordeling

Der er i Tabel 8.4 foretaget en simpel partsfordeling ved at tage det samlede anlægsbudget inklusive moms (Kapitel 0) og dele det mellem antallet af beskyttede matrikler (Kapitel 7).

Tabel 8.4: Simpel partsfordeling anlægsudgifterne inkl. moms per beskyttet matrikel ved de to højvandsstands-scenarier med hhv. 100- og 500-års returperioder i år 2050.

| Scenarie | Anlægsbudget | Antal | Pris/matrikel |
|----------|----------------|------------------|----------------|
| | DKK inkl. moms | Matrikler sikret | DKK inkl. moms |
| 100 år | 125 mio. | 2.318 | 54.000 |
| 500 år | 340 mio. | 3.262 | 104.000 |

Figure 5-13 Pro rata distribution. Shows the scenario in the uttermost left column, followed by the plan budget; the number of cadastre; price pr. cadastre. (NIRAS 2017)

If we look at the simple distribution model presented in the summary report, we can see that 2318 citizens are protected by a dike dimensioned against a 100-year incident. If they build a bigger dike that protects against a 500-year incident, 944 more citizens benefit from protection. The 944 must, however, pay the same amount as the 2318 citizens even though they were only exposed to storm floods above the 100-year scenario.

In the simple example, scenarios are split into 100-year and 500-year protection. For other protection levels, it would be different. Setting it to 10.000 years would include all citizens but have undesired esthetic or economic consequences for the design of coastal protection.

As we know, Anton lives right next to the coast, and he would not like to pay for a dike in his backyard that steals his ocean view. He fights a high dike that will affect his life aesthetically in a way, he finds much worse than the protection he gains from it. As we know, he does not mind to pay more money if he gets something recreational. The simple example we examined above is what Karlson refers to as *a financial exercise*. They would much rather make it *a life enjoyment exercise* with an aesthetic design and recreative possibilities. Important to notice is that the payment model is not settled in the current phase of the project. It is deliberately postponed by the municipality, so the debate about it can be contained within the scope of the project without friction between citizens and the municipality.

Another citizen that has issues with the payment model is Emil with whom we are familiar. In the precautionary clash, we showed how his concerns about dikes led him to critique the municipality's economy and argue that it is a project for the state to handle. In the following, we unfold his arguments for a better solution and the municipality's objections.

Technical local interpretation

Emil's technical local interpretation is also voiced through an argument about a grand design in the sea but differs substantially from the recreative interpretation. Where the recreative interpretation highlights the importance of amenity and draws mostly on a normative understanding of life, Emil's arguments are grounded in epistemic sources as engineering reports. The clash is still between him and the municipality, but this time it is his arguments which are criticized.

During a long speech at a citizen gathering, he refers to a new report from September 2019 called *"Opportunities for joint protection against storm surge at Amager"*. The reference is quite interesting because it shows where some of his argument is situated – in the modelling and measuring of engineers.

At page 8, which he refers to, is the results and

conclusions, which is followed by Figure 5-14. The figure presents how often the island of Amager will be flooded, especially in regard to the vital infrastructure such as the highway, and the metro system. What it shows quite clearly is that large areas of Dragør municipality can expect to be flooded at events deemed to be lesser than 100 years events. This, of course, shows the importance of some sort of solution – the problem is quite clear from the report.

What struck Emil was, that the reports were not about Dragør municipality, but the island of Amager as a whole. So why does Dragør not cooperate with the neighbouring municipalities? Emil estimates that Dragør has a quarter of the coastal line of Amager, but only 15000 of the 205000 inhabitants of Amager. In his eyes, it is simply unfair, that such a small amount of people should bear such a large part of the expense. The report equips him with an argument for protecting the whole island of Amager to the same level:

"From Sund & Bælt's point of view, it will only have limited effect (apart from the temporal) if the Municipality of Dragør builds land dikes to meet a 100, 500 or 1,000 years high tide since water from a 2,000-year high tide will, in any case, reach Sund & Bælts facilities and stand at the same height by the maximum water level."(COWI 2019, 38)

Emil uses the argument to pose that a land dike with a protection level of 100-years is a cheap solution. The solution he proposes also comes from the report:



Figure 5-14 Map showing where the water breaks through the land (COWI 2019, 8)

“An outer protection, with a beach park 200 m from the coast and at a height corresponding to a 1,000-year high tide in the year 2050, will provide the greatest delaying effect of the inflow, but is also the solution that will probably cause the largest environmental and regulatory challenges. Creating the dike all the way from Hvidovre to Kastrup fort will give greater effect, and if it is built to withstand a 2,000-year high tide, there will be no need to secure Sund & Bælt's facilities.”

He wants a sea dike placed 200 m from the current coastline. What he ignores is detail about *environmental and regulatory challenges*. The counterargument is the same as earlier; a deviation case in the EU is difficult to win and takes a long time no matter what. If the municipality turns the proposal down, they overrule the citizens. If they accepted it, the short-term scope of minimizing the flood risk is left unaddressed. The latter is not acceptable because of the EU flood directive. Again, we see how different types of knowledge play a role in the project. Negotiation of the content is inevitable also negotiations of the form, and citizen involvement is complicated in the latter.

5.4 Outro

In rounding off this section, we draw on the case study in Cumbria by Wynne that we described in Section 3.2. Wynne argues that credibility is constructed continually through relationships and identities. We see that most clear through our informant Annika, who does not trust the scientist despite the professional reports. Like the sheep farmers in Cumbria, her local knowledge is not recognised as valuable, which makes her sceptical about the project. Similarly, Antons and Karlson's concerns about a wall in their backyard are only addressed with a standard reference to a database that no one gives much credit. In both cases, it is clear that their social identities connected to the local area play a role in the knowledge production that they do not experience to have an impact on the designers. However, Anton and Karlson's criticism of the storm surge poles is acknowledged by the municipality, and new expert calculations make the municipality adjust the poles according to the new results. This is different from Wynne's case, where experts do not engage with laypeople, which indicate a constructive knowledge production between citizens and experts. Furthermore, the municipality's change of scope to include both a long-term and a short-term solution show how the municipality establishes knowledge exchange between experts and citizens.

In the visionary clash, we have shown two interpretations of the project content through local arguments and concerns. In the recreational interpretation, citizens argue for a project that improves life enjoyment

through aesthetic design and recreational possibilities. In the technical interpretation, a comprehensive and long-term protection resolve concerns about a land dike and the economic burden associated. Both are concerned about the payment model and in conflict with nature conservation legislation.

The concern about the payment model makes Anton and Karlson suggest that aesthetics and recreativity are more decisive than the payment distribution. It also plays a role in Emil's suggestion of a sea dike 200 m from the coast, because he finds it unfair for citizens in Dragør to handle the protection alone. However, the distribution of cost is not settled, and therefore it does not form a conflict between citizens and the municipality in the engagement process. Later in the process, when it inevitably becomes a part of the process, a conflict can be lurking ahead.

The conflict between both local interpretations and the nature conservation legislation pose a problem for the project form. A challenge of the legislation will take years and stop the reduction of risk. If the municipality decides not to challenge the legislation, they overrule the citizens. They can choose to do both, but it might leave them with expenses for two projects and citizens with precautionary concerns that feel excluded anyway. As we have shown, the precautionary and the visionary citizens can be the same, and often are, because it is two different ways of performing arguments and concerns.

In the open debate between citizens and experts, the precautionary citizens made visible how elements of the debate were hard to address because it required the format to be different. For Annika, we saw how her lack of trust in both engineers and local politicians is not addressed in a format where both were absent. For Anton and Karlson, their attempt to avoiding a "Berlin Wall" is not possible if the risk of flooding must be reduced within a few years. The two local interpretations in the visionary clash showed conflicts with the payment model and conservation laws. We have described how the conflict with the payment model was addressed within the current format, but we also noticed the settlements temporary character. In the future phases of the project, negotiation about the payment model will inevitably return and challenge the format. Finally, the conflict with conservation laws was also handled by adapting the framework to distinguish between a long-term and a short-term solution. The outcome will materialize as a part of the upcoming architect competition and form new issues and public that call for engagement.

6 Reflections upon implications

In this section, we reflect upon the findings from our analysis. Rather than collect the threads, we draw ideas and observations out and discuss them through theory. We, however, mainly stay within three themes; framing, knowledge production, and transparency. Through these three topics, we unfold our findings towards practical learnings, but also nuance the theory that has formed our perspective.

Section 1: From the analysis, we learned how the municipality of Dragør currently is the one party defining and framing aspects in and surrounding the involvement processes. They, however, have framed the involvement with the hopes of it becoming a cooperative approach to solving the issue of coastal protection. This leads us to consider aspects surrounding the consequences of the mentioned framing. As we ponder that question, we revolve around if other ways of approaching framing could influence the cooperation and involvement of actors in the forum.

Section 2: We also learned how the involvement process has been configured to be mainly a mediated transfer of knowledge between citizen, experts, and politicians, through municipal officials, reports, and the database. We reflect upon this and consider what implications may arise if cooperative production of knowledge become more prominent than the transfer of knowledge.

Section 3: From the analysis, we saw several initiatives that focused on making the coastal protection project more open and transparent. Drawing upon the reflections in the above sections, we here discuss the notions of transparency, as related to the roles of both framing and knowledge. This leads us to reflect if notions of transparency can be reconsidered, by including a more socio-technical understanding.

In the analysis, we have shown how different types of knowledge play different roles in the public engagement process. By showing how both arguments and concerns are situated and justified, we have gained a grounded understanding of the citizens' perspective. In the first section, we paid attention to objects of engagement like storm surge poles and a line on a map. In the second, we examined the form of the engagement process, i.e. the hybrid forum itself. Finally, in the third chapter, we analyzed the open debate between citizens and experts. The roles knowledge play can be interpreted differently depending on the perspective from which the engagement is viewed. In the following, we will juxtapose the roles different knowledge plays if we try to view it from the perspective of the technical department in Dragør and from the perspective of citizens.

6.1 Framing

We have structured this section to first touch upon the perspective of the planner, which is mostly collecting our findings from the analysis and drawing them together.

Planners' perspective

Through the analysis, we gained a grounded understanding of the citizens' perspective on the involvement processes. As framing can be understood differently depending on who one focuses on, we here discuss what role framing plays if we try to view it from the perspective of the technical department in Dragør. We do so to juxtapose this with the citizens perspective in the following subsections.

Until now, we have told the story about a municipality that designed an involvement process with the purpose of creating a permanent solution to their coastal protection problem. The solution has not yet been developed, and the involvement process is still ongoing. However, we have learned about several obstacles that influenced the process already, such as the harbour in the old part of Dragør, which caused the citizens to voice their opposition. This caused the municipality to remove a part of the alignment, in an attempt to reframe the project's scope. This is the planner's perspective. The original proprietor of the problem, however, through their framing, they attempt to enrol citizens in participating in the forum. Thus, if their framing fails, they reframe. The municipality has framed the solution and the problem. The problem is that the coast needs protection. The solution should run along the alignment and be able to be built with a budget of 125 million DKK.

In Dragør, they spent a significant amount of resources to plan a framework, in which citizens and experts could meet, develop and construct a solution together. They are currently in the process of executing that plan and hope to arrive at a solution that has public support. If not, they still believe that they have obtained something, as the citizens have become more accustomed to the ideas. If not, they are better prepared for the next storm surge. However, during this process, we have seen that some issues cannot be contained - the framing produces overflows. The municipality then readjusts and try again. This iterative progress is also the procedure put forth by Callon et al. to frame, overflow, reframe and readjust until you arrive at a solution. (Callon 1998: 4)

As example, the first project in 2018 'Dikes in Dragør' resulted in noticeable resistance against dikes, which could not be contained within the framework. Two years after, a new framework was made and renamed 'Robust Kystkommune' because the project scope was no longer limited to dikes.

The example shows how we can understand our empirical findings drawing on Callon et al. However, it shows us public engagement from the perspective of the planner. Thus, when we understand our analysis through framing and reframing, we mostly see the author of the problem. Meanwhile, our analysis was largely oriented towards the voices of the citizens, and how they engaged with the municipality. In this, we saw that the citizens were often sceptical and showed resistance towards the process. Due to the fundamental idea in Callon et al.'s work that people would accept being excluded if the process was open enough, we found the scepticism difficult to explain. This difficulty we reflect upon further, in our discussion about transparency in section 6.3.

Participants' perspective

Through our analysis, we argued that through framing both the problem and the solution, the municipality also frames the forum itself. Furthermore, we showed that the citizens engage with all three aspects; they engage with the problem and articulate other issues, they interrogate the forum and its construction, they redevelop and renegotiate the solution spaces. Thus, we can argue that citizens do not attend the forum and participate in constructing a solution. Rather, they involve themselves and engage with issues that do not necessarily fit the frame. Citizens are very constructive in their engagement, but what they construct is a socio-material reality and not simply the solution to a planner's problem.

Arguably, the current project can be seen as a negotiation in a hybrid forum where issues are debated, and technical aspects get adjusted to fit the social reality of the hybrid actors involved. When the framing overflows, the involved actors adjust it accordingly.

Another way of approaching it could be by arguing that the forum constructed by Dragør, mainly consist of citizens and officials. The officials' role then becomes to be mediators by transferring knowledge from the citizens to the technical experts and politicians. Experts and politicians then develop a new framing and transfer it back. Citizens do not negotiate their socio-technical worlds but only a technical version that they continuously try to adjust to a reality that is both social and technical. We shall elaborate on this later in section 6.2, where we discuss knowledge production.

There is a problem of symmetry since not all actors are heard in the same way. The hybrid forum is not framed to be an entirely joint pursuit. Influence is not distributed through public meetings between the heterogeneous actors that constitute it and, in the end, citizens are asked of their opinion instead of being allowed to fully influence what the project is about. The citizens are asked what they think of different problems and solutions but are not invited in to help produce it or help form what the forum should contain.

Should citizens negotiate with actual experts and politicians, rather than just play a role in reframing the technical scope, it could give citizens contributory influence and agency, because they would be allowed to contribute more to the process. They are thereby becoming a more equal participant. We call this idea the participant perspective. That is when we do not focus on the planner, but rather look at how the other actors can become more involved.

Thus, rather than having a planner dictate the process, other people are allowed to take part in the planning and framing as well. The question then is how much creative influence can be delegated from the experts to citizens for it still to be a realizable project, and how much decision-making that can be delegate to citizens and still move the project forward and avoid debates running in circles? This we discuss further in the subsection titled: Reconfiguring the format could lead to more robust knowledge production and involvement.

Practical perspective

If we see the municipality through the constitutive lens of Jasanoff, we see an actor that tries to uphold an ordering of knowledge, and the institutional arrangements made to handle this knowledge. The problem that the water poses does not go away but must be handled by the institutional structure currently in place. Here, the planners from the municipality have a role that they cannot step away from. They are placed in order to handle such concerns for society. They must handle the risk, and therefore cannot turn over responsibility. Due to the concerns placed upon the municipality when it comes to EU's requirements and the municipality's institutional power to handle common concerns for the citizens, the planners are required to find a solution to the coastal protection.

We also see how this handling sparks citizens into formulating new concerns regarding the municipality's proposals, we see citizens fashion the new knowledge distributed by the municipality into something that will fit their own understanding of the world. Here, some citizens question whether that knowledge is correct if it is sufficient and if something is biased because of who is advocating it—an approach to knowledge production, that we recognize from Jasanoff's interactional lens.

The citizens are concerned about the indirect consequences of the actions proposed by the municipality—this uncertainty of what might happen sparks issues into being (Marres, 2007: 768). As we see in Dragør, technical solutions, political and monetary issues are far stronger than other more intangible issues such as quality of life or living with nature.

Should issues be understood not as indirect collateral damage of needed solutions, but intrinsic to making citizens involve themselves, the production of a frame for the hybrid forum may encounter fewer issues

regarding involvement. Thus, if issues are anticipated in the discussion and given equal place, they can be submitted to the same criticism and handling that the technical aspects of such a project entail. And as such, be involved, but not take over the process.

This, of course, poses practical problems for the decisionmakers. How is such a framing to be undertaken? This should be a question for further investigation. For now, we can inform future citizen involvement projects about how a difference in framing between planner and citizen draw in issues and publics, and that these can lead to attempts and requests of renegotiations of the general format of the forum.

6.2 Knowledge production

Through this section, we discuss the role of knowledge and knowledge production in the involvement processes.

Dictating specific solutions influence common worldbuilding

We argue that the citizens voice issues as legitimate and important for them as the need for protection proposed by the municipality, and that they, therefore, engage with both the format and the content in the forum. Thus, the aspects they draw in should not be considered as being dissimilar from the issues proposed by the municipality. We can, therefore, understand their way of engaging with knowledge similar to how we understand the municipality's relation to knowledge. Above we investigated the framing; thus, the constitution put forward by the municipality. Here we discuss the role of knowledge within the forum.

Citizens also work within the realm of constituting knowledge through representations that make sense. For citizens, however, representations are not used to support the intelligibility of a design but have a political or normative agenda. They gather knowledge the municipality provides them, frames it with their local knowledge and produces their own possible solution, their own world. This world-building is mirrored by many of the other publics that emerge – they construct solutions that handle their specific issues. Thus, we can learn that they are not confined to the role of critics, they produce and display possible worlds, that according to them handles their issues better than the proposal of the municipality.

In Søvang, they mix the reports of the engineers with knowledge of the local history and the knowledge of what the locals want to live next to. These other possible worlds are tailored to fit the forum constructed by the municipality because they are in line with the overall goal of protecting the coast. Unfortunately for the municipality, these worlds do not fit within the boundaries of the forum which make them difficult to

handle. When the municipality manages to adjust the framing as we saw in the analysis with the Natura 2000 protection and the implementation of a long-term scope to encompass the conservation area, it is questionable if it solves anything because the representation might just be a way of battling the short-term solution.

Therefore, if a process is configured around discussions of specific solutions, it will allow citizens to draw in knowledge and construct other worlds. This can lead to difficulties in approaching a common world and reach an agreement because the citizens are not involved enough. Readjusting the project scope so citizens accept or reject it can, therefore, turn out to be a Sisyphean task, i.e. never-ending.

Reconfiguring the format could lead to more robust knowledge production and involvement

In the third part of the analysis, we investigated the knowledge brought forward in the open debate at the gatherings. In the debate, officials took on different roles to facilitate different ways for citizens to involve themselves. The roles comprehended: 1. Facilitation of expert knowledge that they had gathered in a summary report. 2. facilitation of the political knowledge that originated from the local council. 3. their own roles as political officials where they administrate technical renovation and operationalize legislation in the near democracy.

The debate took offset in the knowledge surrounding the technical design but did not involve the experts and politicians as social entities. Only the facts in reports, maps, etc. took part in the debate. Therefore, citizens could accept and be enlightened by the facts or decline and transfer back arguments and concerns. When we view the role of the knowledge in the open debate from the municipality's perspective, we recognize how new knowledge from citizens is being transferred to readjust a design to the existing social structures. Had the experts and politicians been present, citizens would have had the opportunity to engage in knowledge co-production and make compromises. In the current setup, the knowledge co-production is bound to depend on knowledge transfer back and forth until the issue is settled by acceptance or refusal.

An empirical example would be the Natura 2000 area around the coast that form an existing social structure. It is a law that organizes social life. Local knowledge about a sandbank offshore is conflicting with the conserved Natura 2000 area, but the project could be adjusted by adding an element where EU legislation is challenged in a long-term perspective. The adjustment addresses the technical concerns voiced by the citizens, but since it is not a negotiation about the arrangement of a social world, the citizens often did not feel heard. To elaborate a little, some citizens that wanted to decline a land dike suggest a sea

dike. When the municipality adjusted the scope to include options of both a short-term land dike and a long-term sea dike, they did not feel heard even though the municipality managed to include a sea dike as an option.

By viewing the debate from the citizens perspective where their socio-technical worlds are central, we understand that knowledge plays another role than it does for the planner. While the municipality moves toward a technical solution, the citizens observe how their input affect the design and the decisions. They are left without direct interaction with neither experts nor politicians. Thus, when adjusted designs do not make sense, a natural scepticism occurs as an effect of their indirect involvement.

Exclusion of matters and ideas are inevitable in the process of co-producing solutions, but in the framing-reframing version, perpetual propositions of technical designs are put out for the citizens to decline or accept. In a version where citizens get a stake in developing a common design, allowing the process to be more than a transfer of knowledge, they might feel more heard. While we touched upon some of these aspects above as well, we did so regarding the framing. In that discussion, we suggested that another framing of the forum could draw forth collective renegotiations of the forum, which in turn could lead to more actual involvement regarding decisions. Here we approach an idea of reconfiguring the forum, thus not the framing but the actual format, to entail more than a transfer of knowledge. This could also increase the involvement of citizens, and thus decrease scepticism. While this approach would not be oriented toward delegation of decision-making, it would rather lead to more robust knowledge production, and by that a more robust foundation for a coastal protection solution.

Knowledge acts the role of building both technical and social configurations

We start by looking at knowledge associated with the poles and the lines from the municipality's perspective. The installation of the poles confronted people with technical knowledge relating to their social life, and their responses were indispensable in the process of constructing coastal protection. Over the years, people have provided the municipality with knowledge about how the dikes conflicted with their worlds; knowledge that can be used to adjust the project accordingly.

If we now switch perspective, we saw in the analysis that the objects are not viewed as technical objects by the citizens. To them, the poles were foreign elements that created disorder. To restore order, people interpreted them as both social and technical and responded by performing according to the consequences they foresaw in relation to their lives.

In the municipality's public forum, the knowledge that emerges from the interaction can help architects produce new designs. These can again be debated amongst citizens that again can provide new insights,

eventually leading to a common view.

From Marres' perspective, where issues are central, the knowledge is a negotiation about how the social and material can be adjusted to their lives. The knowledge that emerges might provide insights to designers about a technical configuration, but it might also be a negotiation of a social configuration.

From the analysis, we can take Emil as an example. He suggests a sea dike 200 m outside the coastline, which in one version provide designers insight on his technical preferences. However, Emil's main concern with a land dike might as well be that the current social arrangement makes citizen in Dragør pay for coastal protection. A problem that his suggestion solves by transferring the project to the state.

Emil is a good example of how different approaches to knowledge production appears in Dragør. Emil is preoccupied with ordering his world with the knowledge he has and makes sense of it from his point of view. He questions the validity of what he is told to be true, and therefore he becomes sceptical of the municipality. If we understand him through the interactional lens of Jasanoff, we see him as an actor that is ordering knowledge. He voices that the municipality must have a different agenda than coastal protection since their proposal is so different from Emil's interpretation of what the engineers find to be the ideal solution. Emil produces a knowledge conflict, where the municipality due to its budget issues is not proposing the best protection, but the cheapest.

The municipal officials that Emil confronts have other concerns they need to manage. They have to uphold a format of what is permissible in the debates, and what is viable from their body of knowledge. Due to their role in the project, they have the responsibility of producing a solution. Therefore, they cannot let Emil side-track the work by trying to involve the state in a funding issue. In the eyes of the official, its simply not possible to do so and does not fit in the discussion about the coastal protection solution. Here we see an approach to knowledge production, that through Jasanoff's constitutional lens, tries to uphold a certain arrangement of knowledge. Emil's arguments try to undercut the ordering of knowledge that the municipality is upholding and therefore his inquisitive approach to the municipality is seen as a disturbance.

If we look at the encounter through the lens of Callon et al., the outcome becomes that Emil's knowledge ordering is treated as an overflow. Emil's concerns are not valid enough to be a part of the discussion, and he does not succeed in producing a new frame, that encompasses the budgetary concerns of the project. From Callon et al.'s perspective, all actors should be willing to accept that outcome, as long as the procedures are transparent. However, Emil is not negotiating rationality with the municipality, so his scepticism increases instead of disappearing.

6.3 Transparency

Drawing upon the discussions above, we here discuss how the role of transparency influence citizen involvement.

Callon et al. are of the opinion that transparency about the decisions and procedures provide a solution to the problems produced by silencing voices in a knowledge exchange. Transparency is not meant as a way of showing the whole social landscape of the actors involved, but instead, it applies to the procedures of engagement that structure the public space. As they describe it:

“The meaning of the notion of transparency should not be misunderstood. In no way does it entail revealing the whole of a social body hidden by a veil that the procedure tears away, a world that was already there, demanding only recognition. Transparency applies only to the procedures themselves and the way in which they structure and organize the public space. The latter, simply through its existence, expels a whole set of actors, problems, and question into the shadow of the private sphere. Transparency always has a high price, which is the opacity that is its corollary, but the worst situation is one in which, to the inevitable but always re-negotiable exclusion of actors and causes relegated to the shadows of the private sphere, there is added the more insidious exclusion of those actors who play a part in the public space but whose voice is lost.” (Callon et al. 2009, 163)

Through our investigation in Dragør, this ideal of greater transparency has merit – but meets a practical ceiling. The amount of work and resources needed to enforce such transparency makes it nearly impossible for a small municipality like Dragør.

Marres finds that this kind of transparency model by Callon et al. breaks with the commitment in controversy studies to follow practices-in-the-making and that it in its generalized prescription places impossible demands on the practices it describes (Marres 2007:763). We argue the same; however, we would like to nuance it.

Because it does not mean that Dragør Municipality does not try – they are put in positions of trying to weigh how to be transparent, and in what way knowledge should be accepted or declined in the arena. But it is not perfectly executed, and little can be omitted from this attempt at transparency in order to raise suspicions for those with differing opinions about the project. The scepticism of this perceived lack of transparency was nearly always connected with the recent history of the municipality and how citizens viewed its proposed projects as the signs of an irresponsible political administration. Since the citizens were

not negotiating with the politicians but instead provided knowledge to them, the scepticism was not addressed. That allowed feeding the speculations about political motives behind the technical design.

Here in Dragør, the perceived ineptitude of the municipality became a focal point for critique by the sceptics we encountered. What can be found is, that while transparency is easy on paper – it is difficult in the absence of people. As we have shown, citizens' interpretations of reports, maps, and databases are less governed by the facts they contain and more of what they do to people's social lives. Through the engagement process, technical objects are being interpreted to the purpose at hand. Ideally, the interpretation happens in cooperation with both politicians and experts. By letting the interpretation happen cooperatively, it allows new issues to emerge and evolve, thereby creating shared boundaries and making common normative decisions that are transparent for the involved.

If we return to the example with Emil, we see how his scepticism does not dissipate through transparency. This is because procedural transparency of what is being admitted or excluded is only subjected to the technical elements. We agree with Callon et al. that transparency about "*the whole of a social body*" is not the point. What must be handled through transparency is a complex mix of knowledge, concerns and issues that interact, question each other, and organizes the world that is perceived. Through the lenses of Jasanoff, we see that the social world is also irrational, and a rationalization of the social is practically impossible. Instead, transparency in-the-making must be handled by the only ones who fully understand the social entanglement – the hybrid actors themselves. In other words, transparency of the social happens when people participate. Callon et al. do not disagree that involvement is important in a hybrid forum, but we fully agree with Jasanoff when she criticizes Callon et al. for "*reducing people to their capacity to address epistemic questions*" (Jasanoff 2012, 206). Making socio-material procedures transparent, in our view, require participation that embraces irrational social actors to overcome what she calls "*disunion rooted in radically different versions of the good*" (Jasanoff 2012, 206).

In reality, it is an overwhelmingly big task. Dragør tried to support participation of citizens by implementing the database collecting the insights of all citizens interested. Its objectivity was intended to be available for all users and provide the transparency of all inputs united in a map of the positions in the debate. It was often introduced as a channel to come in contact with politicians and experts. However, open critique of it also showed that neither citizens nor municipal officials had the level of digital literacy to exploit its idealised transparency, and this instead turned to opacity.

The database and its representation of the public were valuable for politicians according to the project manager, but for sceptic citizens, it was merely regarded as yet another way the municipality did not truly want to hear the dissenting opinion – it was not able to escape the historical view, some citizens had of the

municipality. Here we clearly see the practical ceiling regarding transparency unfold, but also how transfers of knowledge cannot be detached from its setting – the municipality cannot ask for inputs from the citizens, without being confronted with their views about the municipality itself. It shows quite clearly transparency-in-the-making is not a matter of simply doing more of it. A new perspective on how to do transparency is needed – we argue in favour of participatory design processes where socio-technical arrangements are negotiated and configured.

7 Conclusion

Through our work in Dragør, we learn that technical objects draw in people through being material representations that directly speak to a vast range of concerns. These mostly arise as citizens feel their daily life being threatened or their normative values about the city and coast being neglected. In relation to the involvement itself, citizens mostly perform concerns about being heard, revolving around the legitimacy of their voices, and the transparency of the municipality.

In relation to specific designs and solutions, the concerns mostly revolve around whether the solution will be *good*. However, from exactly the concerns, we learn that the idea of good differs. The citizens' arguments frequently connect to their concerns; however, it is not a given. Arguments brought forward are often of either a precautionary type, where fears of unintended consequences should be understood before proceeding, while others find that the proposed solution is not visionary enough and should be expanded upon to produce a better result for all.

The municipality's arguments are often concerning the necessity of protection due to technical knowledge. Their need for including the citizens' knowledge, weigh heavily in their arguments about creating a robust solution.

Generally, we have seen three types of knowledge play a role; procedural, local and expert. We learn that expert knowledge embedded in objects as poles and line play the role of forming issues and convoke local citizens with concerns into publics. It does so by its very obvious or visual threat to local aspects or lives.

Procedural knowledge generally plays the role of ordering whether citizens feel involved or not. It does so through either creating common or separate worlds. When creating common worlds, citizens' concerns are met and addressed, and their arguments are brought into the debate. When it separates worlds, citizens and officials do not align regarding information and know-how about citizen involvement and municipal processes. This creates concerns that remain unaddressed. These types of encounters lead to citizens becoming sceptical, abandoning the involvement or being critical, sometimes obstructive.

Local and expert knowledge play the role of ordering concerns and arguments, often through how the two types of knowledge align. In situations where they differ, citizens become critical, because either one of the two types is wrong, or somebody is mismanaging the debate. In knowledge encounters that mostly revolve around expert knowledge, it plays the role of ordering values, rather than exploring facts. Otherwise, it revolves around uncertainty, which again draws forth values about what should be known. Lastly, it plays

the role of forming issues that create publics. As an actor presents others with knowledge, some are forced into acting. Often, this makes them draw in their own issues, or reorganize in other groups.

Through our work we have become able to further nuance the work of Callon et al. The proposed definition of transparency by Callon et al. lacks a description of what we have called transparency in-the-making, where people are not reduced to purely rational actors. What is needed is a redefinition of transparency. From our work, we suggest to leave Callon et al.'s definition of transparency behind and adopt a new one where the negotiations about solutions are both social and material. Furthermore, acknowledging that people make sense from both social and material configurations also imply that knowledge production about a technical solution, in the social framework of a hybrid forum, entails negotiations about the framing of the forum itself.

More work must be done to understand how hybrid forums are made in practice to develop models of citizen involvement further, which are grounded in continuous renegotiations of both forum and its content. By understanding issues on the citizens' terms, through their arguments and concerns, we see a new way to understand citizen involvement. Not as a tool for decisionmakers, but as a democratizing guide that can produce robust solutions.

7.1 Our stance

Throughout this work, we have drawn forth the relationship and interactions between citizens, officials and science. We show that the officials' framing of the forum, influence the conversations happening within. We also argue that the citizens' way of performing different types of involvement act back upon both the officials and the forum and draw in the scientific representations to become participating actors. Reflecting on this, we realise that no party can be held solely responsible for the forum nor the solution. Thus, we can not argue that the successful involvement of citizens depends on the officials, neither that participating in specific ways is only upon the citizens. It appears clearly that finding the truth has a lesser influential role than types of knowledge interacting, and therefore we further argue that, in this case, no group can be said to use "correct knowledge". However, we see the ramifications of the initial framing of an involvement process, both in regards to which technical knowledge is brought in and how, and in regard to debating the format itself. We find that this inevitably argues for officials to be more aware that the choices they enact due to their own concerns, the version of the format they produce, generate certain concerns for the citizens. Ideally, it should compel them to design a format, which itself can be subject to actual renegotiation with citizens.

We, even more so now, do not believe in involving for the sake of involvement. An ideal that the last 100 pages hopefully have made our reader reconsider. We, however, firmly trust that actual involvement processes produced together with engaged citizens can lead to more robust solutions. However, in practice, that is difficult to obtain and therefore, involvement processes should be given a reasonable amount of resources, critical thought, time, energy and honest intentions.

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