

Diverging sensemaking frames during the initial phases of the COVID-19 outbreak in Denmark

Rubin, Olivier; de Vries, Daniel

Published in:
Policy Design and Practice

DOI:
[10.1080/25741292.2020.1809809](https://doi.org/10.1080/25741292.2020.1809809)

Publication date:
2020

Document Version
Publisher's PDF, also known as Version of record

Citation for published version (APA):
Rubin, O., & de Vries, D. (2020). Diverging sensemaking frames during the initial phases of the COVID-19 outbreak in Denmark. *Policy Design and Practice*, 3(3), 277-296.
<https://doi.org/10.1080/25741292.2020.1809809>

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain.
- You may freely distribute the URL identifying the publication in the public portal.

Take down policy

If you believe that this document breaches copyright please contact rucforsk@kb.dk providing details, and we will remove access to the work immediately and investigate your claim.



ISSN: (Print) (Online) Journal homepage: <https://www.tandfonline.com/loi/rpdp20>

Diverging sensemaking frames during the initial phases of the COVID-19 outbreak in Denmark

Olivier Rubin & Daniel H. de Vries

To cite this article: Olivier Rubin & Daniel H. de Vries (2020) Diverging sensemaking frames during the initial phases of the COVID-19 outbreak in Denmark, Policy Design and Practice, 3:3, 277-296, DOI: [10.1080/25741292.2020.1809809](https://doi.org/10.1080/25741292.2020.1809809)

To link to this article: <https://doi.org/10.1080/25741292.2020.1809809>



© 2020 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group.



Published online: 24 Aug 2020.



Submit your article to this journal [↗](#)



Article views: 1621



View related articles [↗](#)



View Crossmark data [↗](#)



Citing articles: 1 View citing articles [↗](#)



OPEN ACCESS



Diverging sensemaking frames during the initial phases of the COVID-19 outbreak in Denmark

Olivier Rubin^a  and Daniel H. de Vries^b 

^aDepartment of Social Sciences and Business, Roskilde University, Roskilde, Denmark; ^bDepartment of Anthropology, University of Amsterdam, Amsterdam, The Netherlands

ABSTRACT

The article draws on the Cynefin framework to illuminate how distinct sensemaking boundaries appeared to co-exist among the two main group of actors, health experts and political leaders, during the crucial early response phase of the COVID-19 outbreak in Denmark. The Danish government was in a chaotic sensemaking frame where major decisions needed to be made fast to avoid an impending disaster, and where scientific evidence was not pivotal to the decision-making process. The leading health authorities, on the other hand, appeared to be in a complicated sensemaking frame where evidence-based decision-making was still the *modus operandum*, and where policy recommendations were continuously reassessed in light of new scientific data. These two sensemaking frames clashed both publicly and internally, exposing a lack of understanding and communication across different sensemaking frames. Based on the analysis, we recommend two overarching initiatives to bridge contradictory sensemaking boundaries in times of major crises: (i) training in identifying and acknowledging different sensemaking frames; (ii) communication strategies that are sensitive to the sensemaking frames of other actors in the decision-making process.

ARTICLE HISTORY

Received 20 July 2020



Accepted 7 August 2020

KEYWORDS

Cynefin framework; COVID-19; crisis governance; decision-making; sensemaking theory

1. Introduction

Effective policymaking in response to complex health crises, such as the COVID-19 pandemic, is highly dependent on expert advice (Baekkeskov 2016; ECDC 2019). Being able to translate expert knowledge from health agencies to key decision-makers is, therefore, essential in ensuring that scientific evidence is effectively integrated into the decision-making process. However, the interaction between experts and political decision-makers is fraught with challenges during times of crises where uncertainty is prevalent, the political stakes are high, and time is of the essence (Greenhalgh and Russell 2009; Salajan et al. 2020; Taleb et al. 2014). This article addresses one particular

CONTACT Olivier Rubin  rubin@ruc.dk  Department of Social Sciences and Business, Roskilde University, Roskilde, Denmark

© 2020 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group.

This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

challenge in the collaboration between political leaders and experts, namely the likely existence of different sensemaking frames in times of crisis. It identifies and discusses diverging sensemaking frames in the Danish decision-making process during the early phase of the COVID-19 pandemic.

Concretely, the article draws on the Cynefin framework to illuminate how distinct sensemaking boundaries appear to co-exist among the two main group of actors, experts and political leaders, during the crucial initial two months response phase of the COVID-19 outbreak in Denmark. The framework offers an augmented two-by-two typology of different sensemaking domains during decision-making processes and applies it to the Danish COVID-19 case. The article finds that while both leading experts and politicians did change their sensemaking frames in response to the outbreak, interestingly, the frames still appeared to run along two parallel trajectories. Importantly, different sensemaking frames are not problematic by themselves. On the contrary, different frames elucidate a range of perspectives and options on how to manage a given crisis. However, acknowledging the different sensemaking frames, and being able to translate evidence and prioritizations across sensemaking boundaries is vital in a crisis situation. During the early phase of the Danish COVID-19 response, however, it appears that the sensemaking frames were not in alignment, which contributed to a decision-making process where mistrust and disputes were openly expressed. Based on this analysis, we recommend two overarching initiatives to bridge contradictory sensemaking boundaries in times of major crises. First, training in identifying and acknowledging different sensemaking frames. As the basic principles of sensemaking theory are fairly easy to comprehend, such training would mostly focus on facilitating discussions and reflections among different stakeholders on the different prisms through which information might be filtered under varying circumstances. Secondly, taking these insights of different sensemaking domains into account when communicating during crises. In this concrete case, health authorities could optimize their communication strategy with some relatively simple communicative tools: (i) providing more regular updates; (ii) strengthening the verbal qualifier with probabilities; (iii) introducing visual risk assessments; and (iv) increasing the use of scenarios.

2. Policy problem

On March 11th, 2020, the Danish prime-minister (PM) held a press-conference where she introduced far-reaching social distancing policies meant to combat COVID-19. Flanked by the Minister of Health and the Director of the Danish Health Agency among others, the PM laid out a number of policies including ordering all people working in non-essential functions in the public sector to stay home for two weeks (private sector employees were encouraged to the same); prohibiting the congregation of more than a hundred people in public (subsequently lowered to 10); and closing down all schools/colleges/universities (Frederiksen 2020a). Two days later on March 13th, however, the union between the government and health experts began to fracture publicly. The PM held yet another press-conference announcing the closing of borders effective immediately (Frederiksen 2020b). This time she was joined by Minister of Justice, the Foreign Minister and the National Police Commissioner; there were no

representatives from the health authorities. The subsequent day, the Director of the Danish Health Agency denounced the closing of borders stating that it was a political decision with no scientific merits. He continued arguing that “there is no substantial evidence that limiting traffic and closing borders are effective” (translated from Danish, Mølgaard 2020). The PM retorted that too many lives would be put at risk if the government only based their decisions on existing scientific evidence (Nielsen 2020). She further put into question the Danish Health Agency’s reliance on scientific evidence by arguing that “a few weeks ago the health authorities said that the disease would not reach Denmark” (translated from Danish, Frederiksen 2020c). This public exchange illustrates how the two main actors subscribed to two very different sense-making frames at a critical juncture in the management of the pandemic. Internal emails and documents have since surfaced that will be used to illuminate just how deep the rift between different sensemaking frames ran.

The aim of this paper is not to assess the merits of different policy options and identify (with the benefit of hindsight) decisions that appear to have been suboptimal. Rather, it is to identify the different sensemaking frames and analyze consequences to the decision-making process. This article will identify and analyze these frames through the Cynefin sensemaking framework (Kurtz and Snowden 2003; Snowden and Boone 2007). As will become apparent both the government and the health authorities appeared to shift frames during the early phase of the pandemic without necessarily converging in terms of sensemaking frames. The exchange above strongly suggest that the PM was in a sensemaking frame where major decisions needed to be made fast to avoid an impending disaster, and where scientific evidence alone could not be trusted to reach the right policy conclusions. The leading health authority experts, on the other hand, appeared to be in a frame where evidence-based decision-making was still the *modus operandi*, and where policy recommendations were continuously updated as new scientific information became available. These two sensemaking frames clashed very publicly, exposing a lack of understanding and communication across the different sensemaking frames.

The Danish case constitutes what Flyvbjerg (2006) refers to as a *critical case*. A critical case possesses the property that one can deduce “a generalization of the sort “If it is valid for this case, it is valid for all (or many) cases” (Flyvbjerg 2006, 230). In other words, if we observe difficulties in bridging sensemaking frames between political leaders and experts in the best of circumstances where the relationship between the bureaucracy and politicians is usually frictionless and depoliticized (e.g. the Danish context), then we are likely to observe similar dynamics in contexts further removed from Weber’s ideal type of bureaucratic organization (Weber 1978). The article will rely on data collected through a systematic and retrospective review of media reports, key official documents from health authorities, internal correspondence between the health authorities and ministries, transcripts of parliamentary debates, legal documents and minutes from press briefings. Relevant media reports were retrieved from the leading media platform for Danish outlets, Infomedia (2020), based on the Boolean search terms (translated) “COVID-19 OR coronavir* OR coronacris*” among the largest national newspapers. The media reports were subsequently manually screened for information that could provide evidence for the sensemaking frames of political leaders

(the PM and the Minister of Health in particular) and the state-appointed health experts at the two Danish health agencies, the Danish Health Agency and the State Serum Institute (the General Director of the Danish Health Agency and the Executive Vice President of the State Serum Institute in particular). The analytical period was restricted to the early phase of the pandemic from January 15th where the Danish Health Authorities for the first-time published guidelines on COVID-19 to March 15th just after the PM had put in place some of the most restrictive policies in peace time. From a sensemaking perspective, this initial crisis management phase, characterized by great uncertainty and urgency, is likely to produce the most interesting dynamics, as existing sensemaking frames are put under pressure and new ones emerge. COVID-19 is an extremely protracted crisis (still very much ongoing by time of this revised submission in August 2020) and the different sensemaking frames have since had time to converge as the management focus has moved from the initial response phase to the recovery (re-opening) phase. But in the early and important phases of the pandemic this was certainly not the case. Relevant media reports and other key documents pertaining to that initial period were also included up until July 1st, 2020 on a more ad hoc basis.

3. Sensemaking theory and the cynefin framework

The sensemaking perspective first appeared in Karl Weick's book *The Social Psychology of Organizing* from 1969 (Weick 1969). The basic argument is that decision-makers in organizations constantly tries to make sense of the changing situations that they face. The sensemaking perspective discards the view of decision-makers as rational actors who, based on full information, weigh the pros and cons of each decision. Rather, ambiguities and uncertainties are dealt with through an on-going process where decision-makers attempt to create order and make retrospective sense of the situations in which they find themselves (Weick 1995). In such process, decisions are shaped by the decision-makers' sensemaking frames, which can be thought of as distinct interpretive prisms through which all new information is filtered. These sensemaking frames are usually fairly rigid due to the fact that it is easier to adapt information to a particular sensemaking frame (by filtering out conflicting information and fixating on validating information) than to fundamentally change sensemaking frames in light of contradictory evidence. However, when information clash openly and repeatedly with existing sensemaking frames, such as in crisis situations, decision-makers are often forced to abandon existing frames and mobilize alternative frames for sensemaking in order to make sense of the new situation.

Thus, the sensemaking perspective is particularly relevant in crisis situations characterized by ambiguity, confusion, and feelings of disorientation (Weick 1988). When routines are interrupted due to major crises, those involved in the decision-making processes will typically be challenged in how to make sense of the new situation. Sensemaking frameworks, therefore, have been used to analyze illuminate many different crises including epidemic health crises such as SARS and H1N1 (e.g. Keller et al. 2012; Lu and Xue 2016; Seto, Johnstone and Campbell-Meier 2018).

This article applies a distinct sensemaking framework referred to as the Cynefin framework (Snowden and Boone 2007). The framework carries two analytical advantages of value for this study. First, the framework introduces an existing typology of different frames, which makes it possible to categorize the empirical evidence according to the already deduced sensemaking domains. In other words, it simplifies the analysis by allowing researchers to map on to already established categories. Second, the framework can be used both as an analytical approach and as a tool for learning. As an analytical approach, Cynefin offers four decision-making frames or domains. However, the value of the approach is “not so much in logical arguments or empirical verifications as in its effect on the sense-making and decision-making capabilities of those who use it.” (Kurtz and Snowden 2003, 468). Thus, the framework should be understood as a typological tool rather than a causal theory. As a tool, the Cynefin framework can help decision-makers reflect on how they perceive situations in order to increase the understanding of their own and other people’s behavior. The four different sensemaking domains allow decision-makers “to see things from new viewpoints, assimilate complex concepts and address real-world problems and opportunities.” (Snowden and Boone 2007, 1–2). This makes the framework useful not just as an analytical typology of different sensemaking frames but as a learning tool on how to optimize decision-making processes.

The Cynefin framework’s four different domains is illustrated in in [Figure 1](#), and the subsequent description of domains primarily builds on Snowden and Boone (2007).

The simple (or obvious) frame is characterized by stability and clear cause-effect relationships. Decision-makers are in the scientific realm of the “known knows” where the right decisions appear self-evident and undisputed. The decision-maker can rely on best practices and put decision-making on autopilot. The decision-maker merely needs to categorize empirical facts, and then she will know how to best respond based on existing best practices.

The complicated frame is characterized by several right answers. Here the decision-makers need to consider several options to a given problem. It is not enough to categorize the problem, but decision-makers need to analyze and gather new evidence. We are in the realm of “known unknowns” where decision-makers need to take the necessary steps to fill the knowledge gaps underlying different policy options. It will be possible to response to crisis proportionally because the information necessary is available and uncertainty is negligible.

The complex frame is characterized by incomplete data and an elusive right decision. The situation is in flux and there is not enough time to fully understand the patterns of change. In this domain, categorization and analysis are not sufficient to derive right answers. Instead, the decision-maker needs to engage in probing and experimental mode of decision-making. The situation resembles the situation of “unknown unknowns” that is distinct from chaos (see below) in that a series of minor trial and error decisions, followed by new rounds of data collection and evaluations, can iteratively improve the effectiveness of the emergent practice.

The chaotic frame is characterized high turbulence and no clear cause-effect relationships. The decision-maker need to take decisions to reestablish order. The objective is “not to discover patterns but to stanch the bleeding” (Snowden and Boone 2007, 5).

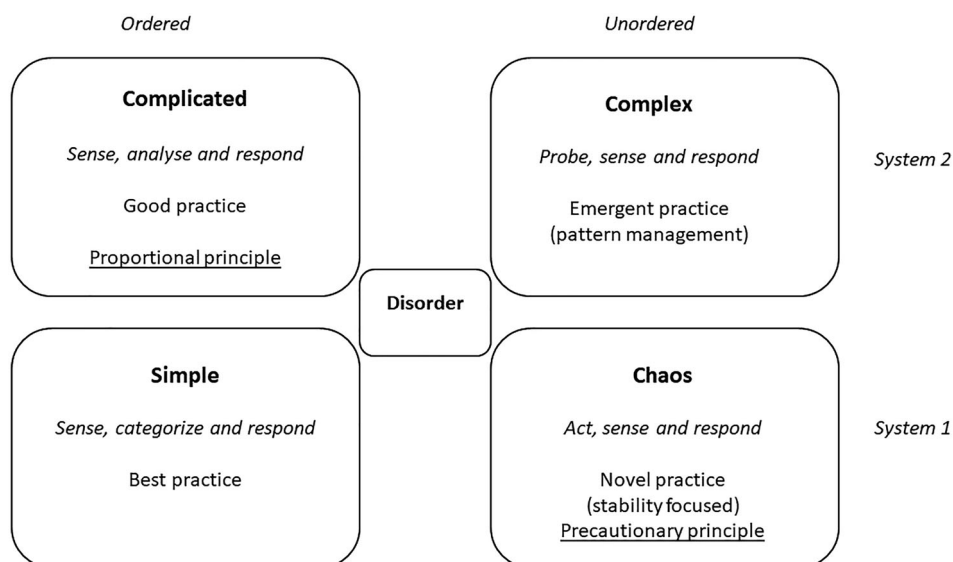


Figure 1. Cynefin Framework of sense-making. Framework reproduced from Snowden and Boone (2007). Precautionary and proportional principles added. Vertical axis inspired by Kahneman (2011).

The decision-maker's actions are based on sense and intuition with a focus on what works rather than a search for the right answers. There is no opportunity to incrementally move toward the right policies; instead, decisions aim to reform and disrupt the unsustainable status quo in order to force a new (and hopefully better) situation. Thus, the response to a crisis in the chaotic frame will often be precautionary rather than proportionally.

There is a fifth domain, the small domain of disorder in the center of Figure 1, that is more an outcome than an independent sensemaking frame. If several sensemaking domains fight for dominance without a clear hierarchy of authority in the decision-making process, then the result could be internal disorder (not be confused with external disorder): an anarchic decision-making process of contrasting sensemaking perspectives that jostle for prominence. While the four sensemaking frames are descriptive categories void of normative considerations, the outcome of processual disorder should clearly be avoided, as it leads to factionalism and cacophony (Snowden and Boone 2007, 4).

Snowden and Boone (2007) also add a horizontal axis across the four domains where the complex and the chaotic domains are “unordered” whereas the complicated and simple domains are “ordered” (see Figure 1). The axis refers to the fundamental perspective of whether empirical occurrences follow a pattern that can be established (ordered) or whether they do not appear to conform to any inferred logic (unordered). This axis has been reproduced in many applications of the Cynefin framework that we have come across (e.g. Fulop and Mark 2013; Van Beurden et al. 2013). In the context of major health crises, we would argue for the merits of including an additional vertical axis as well. During such major crises, the move from order to unordered appears self-

evident, although the move might happen in different tempi for various types of decision-makers. In fact, the descent to unordered is one of the defining features of major crises. As Snowden himself notes “most crises arise as a result of some form of collapse of order, most commonly from visible order” (Snowden 2005, 51). The important distinguishing sensemaking feature during major crises, therefore, will be on the vertical axis. Modeled after Nobel Laureate Daniel Kahneman’s central thesis of two models of thought laid out in “Thinking Fast and Slow” (Kahneman 2011), we have categorized this axis along a continuum of System 1 and System 2 based decision-making (see Figure 1). According to Kahneman’s cognitive thesis, System 1 thinking is fast, intuitive and automatic while System 2 thinking is slow, analytic and structured. System 2 thinking absorbs substantially more cognitive resources than do System 1, which means that the majority of our everyday decisions are based on System 1 thinking and only occasionally do we activate System 2 thinking (Kahneman 2011). The same basic mechanisms also appear to hold true in decision-making. Major works on political agenda-setting have documented that political organizations can only give attention to a limited set of policy-options at any given time (Kingdon 2014; True, Jones & Baumgartner 2007). Political leaders engage daily in decision-making on several fronts, which means that they have to prioritize attention across multiple issues at any given time. Most decisions for political leaders, therefore, are based on System 1 thinking governed by routine, ideology and best practices. Only a few issues are elevated into System 2 decision-making at particular points in time. Adapted to the Cynefin framework, System 1 based decision-making relies on ideology, experience and intuition more than systematic deliberations and logical deductions. Decision-makers will either operate on autopilot where the right responses can easily be discerned based on existing best guidelines (simple frame). Or they will operate in a chaotic frame where the lack of right solutions necessitates decisions guided by experience, sense and intuition. Despite these two sensemaking domains being very different, the decision-making process in both domains is mostly rooted in System 1 thinking, either because there is no need for more (simple frame) or because there is no alternative (chaotic frame). System 2 based decision-making, on the contrary, is based on logical deductions and systematic deliberations. Regardless of whether the domain is complicated or complex, the decision-maker relies on analysis, causal inferences, experiments, data collection and evaluations. Thus, complicated and complex frames call for System 2-based decision-making. Even in the complex domain, decision-makers will try to navigate using the best available scientific and methodological tools rather than falling back on pure intuition and experience. This additional vertical axis allows us to illustrate how the two key actors, experts and political leaders, both moved from the ordered domains to unordered domains in the course of the outbreak while at the same time subscribing to two distinct dimensions of decision-making, namely System 1 and System 2.

4. Sensemaking during the early phase of COVID-19

The augmented version of the Cynefin framework will here be used to identify and discuss the different sensemaking frames of the two key actors in the Danish decision-making process: the health authorities and the government.

4.1. The sensemaking frames of the health authorities

The Danish health authorities consists of two main agencies, namely the State Serum Institute (responsible for the Danish preparedness against infectious diseases) and the Danish Health Agency (the highest health authority in Denmark). In the initial phase of the outbreak, both health agencies worked within the complicated frame. Snowden and Boone (2007, 3) even explicitly refer to the complicated frame as “the domain of experts.” While there is little doubt that the health authorities underestimated the severity of the outbreak in the initial phases, their assessments and advice were predicated on the information available to them at the time. Many of the first public announcements compared the initial outbreak in China to the 2003 SARS outbreak, another more deadly but less contagious coronavirus also originating in China (Kott 2020; Mortensen 2020; Rasmussen 2020; Wang 2020). The SARS virus was effectively combatted primarily through a strategy of containment (quarantine measures) and never made it to Denmark (Winther 2020). On January 15, the Danish Health Agency officially informed the health personnel about COVID-19 for the first time, and on January 22 the health authorities compiled the information into guidelines on how to handle potential cases of COVID-19 (Danish Health Agency 2020a). At the time, the agency refrained from recommending travel restrictions, citing a lack of evidence that such initiatives would halt the spread of the infectious disease (ibid.). The official assessment was that the risk of the outbreak reaching Denmark was very small (ibid.). On January 28, after a case of COVID-19 in Germany, the health agencies sent out another briefing indicating that they have not changed their previous assessment that the risk of the disease spreading to Denmark remained small (Danish Health Agency 2020b). Notice, however, the subtle removal of “very.” The briefing also outlined quite elaborate contingency plans in case the outbreak would reach Denmark (ibid.). On January 30th, the World Health Organization (WHO 2020) declared the outbreak a Public Health Emergency of International Concern. Again, however, the Danish health authorities’ risk assessment remained the same: the risk of experiencing COVID-19 cases in Denmark was considered small (Danish Health Agency 2020c). Concurrently with these similar risk assessments over time, the Danish health authorities were in constant dialogue with the WHO, the European Center for Disease Prevention and Control (ECDC) and health agencies in other countries. The Danish health agency also sent out daily briefs with updated information to the relevant authorities. Thus, although the health authorities’ risk assessment and advice did not change during period, they were constantly gathering and analyzing new evidence.

In the beginning of February, the health authorities’ sensemaking frame appears to show signs of more complex characteristics. The Head of Department from the State Serum Institute officially expressed how the comparison to SARS might not be valid after all, noting instead that the number of deaths and cases were more in line with a normal seasonal flu (quoted in Byrne 2020). She floated the idea that Denmark should instead soften the existing “aggressive” restrictions on travel from China (ibid.). The former Director of the State Serum Institute also admitted being “at a loss” with regards how the outbreak would develop (quoted in Aagaard 2020). The experience and evidence on which the health agencies had hitherto relied appeared to be contradicted by this new flow of empirical evidence of how the outbreak spread. On February

14, the Executive Vice President of the State Serum Institute argued that the outbreak appeared to be reseeding, and that it was essentially a coin toss whether Europe could prevent a bigger spread (Ritzau 2020a). These remarks from the health experts suggest prevalent scientific uncertainty due to the unique and novel characteristics of the outbreak. After COVID-19 cases emerged in Sweden and Norway, the Director of the Danish Health Agency argued in an interview that the risk of COVID-19 cases in Denmark was now “moderate” (Krak 2020). It was not until February 25 that the Agency made this risk assessment official (Danish Health Agency 2020d). Despite this moderate risk assessment, the Director of the Danish Health Agency told the Health Minister in a closed meeting that there was no doubt that Denmark would experience COVID-19 cases (Klarskov 2020). On February 27, Denmark got its first COVID-19 case when a person returning from vacation in Italy tested positive. The Director of the Danish Health Agency told the media that it had only been a matter of time before Denmark would get its first infection. He insured the population, however, that there was no reason to worry, noting that health authorities still considered the risk of an outbreak in Denmark to be low (quoted in Ritzau 2020b). On the same day, the health authorities gave their first press briefing where they highlighted that the contingency plans in place were sufficient to avoid a health emergency in Denmark but that they would continue to monitor the situation on a daily basis (quoted in Pedersen 2020). On March 6, the PM held her first press conference together with the director of the Danish Health Agency where they recommended that all events with more than a thousand participants should be postponed or canceled. The Director of the Danish Health Agency explicitly cited empirical evidence as source of this recommendation, which suggests a logic based on a complicated sensemaking frame (Frederiksen 2020d). However, the number of cases rose exponentially the following days from 90 on March 9 to 262 the next day (Ritzau 2020c). In this period, the original strategy of containment was openly abandoned in favor of mitigation. The core objective was now that the outbreak should not overwhelm the Danish health sector. The health authorities also changed positions a few times with regards test-strategies and whether the WHO guidelines of implementing rigorous contact tracing measures applied to the Danish context (Christoffersen and Jensen 2020). Zigzagging between different pandemic management strategies in a relatively short time span is indicative of a trial and error decision-making process that attempts to make headway in a situation characterized by uncertainty and unordered information.

From having assessed the risk of an outbreak in Denmark to be low just a week before, the health authorities released a report on March 10th projecting that the first wave of the outbreak might infect 600.000 Danes (10 percent of the population) over three months and cause fatalities in the thousands (Danish Health Agency 2020e). The Executive Vice President of the State Serum Institute went on record estimating that around 60 percent of the Danish population could be expected to be infected by the virus long-term (Ritzau 2020d). At the same time, the health authorities continued to make comparisons between COVID-19 and the seasonal flu. In an internal correspondence to the Ministry of Health on March 11, the health authorities stated that in their expert opinion the fatality patterns of a COVID-19 epidemic would be no different than a serious seasonal flu epidemic (Lund, Birk, and Jessen 2020). Reflecting back in a

June interview, the Executive Vice President of the State Serum Institute acknowledged that they would have done things differently with the knowledge they have now but that “in the beginning we thought it was a new SARS. Then we believed it was something like the flu. But it has become increasingly clear to me that this virus is something completely different” (translated from Danish, quoted in Schmidt and Rasmussen 2020).

In conclusion, the health authorities started out in the complicated sensemaking frame. Although they made several statements and assessments to the effect that the outbreak did not pose a threat to Denmark, they would often qualify their statements, emphasizing that their assessments were based on the knowledge available to them at the time. They continuously engaged in further analysis as new data became available and operated with several contingency plans. As the outbreak escalated, the health experts appeared to move from a complicated to at least a semi-complex sensemaking domain. The outbreak turned out to be unlike previous epidemics and the health authorities appeared to lack empirical evidence that could be easily translated to this new situation. One reason might be that the pre-COVID-19 public health preparedness and response evidence landscapes were “weak,” (Khan et al. 2015) and that “the ideal of a preparedness and response field fully grounded in scientific evidence” was unrealized (Carbone and Thomas 2018). As such, health agencies had to base many decisions on incomplete data and a trial and error decision-making process in which they struggled to understand the dynamics of the outbreak; made sudden shifts in risk assessments; and changed pandemic management strategies from containment to mitigation. While the health authorities did not seem to operate exclusively in a complex sensemaking frame of “unknown unknowns”, they did encounter an increase in unordered data as evidenced by their highly inaccurate risk assessments in this initial phase. Regardless of whether their sensemaking frame can be classified as exclusively complex or complicated, the fact remains that the health experts continued to operate along a System 2 dimension in the course of the initial phase of the outbreak. Throughout the early phase of the outbreak, the health authorities adhered to the logic and principles of scientific inquiry as the gold standard of decision-making regardless of whether they were faced with ordered or unordered patterns of evidence. This, importantly, is not the same as arguing that confusion and organizational chaos were absent in these agencies or that decisions were never made off-the-cuff by individual experts. However, the dominant frame of scientific reasoning meant that decisions, even the ones that might have been based largely on intuition, were communicated, justified and evaluated by means of scientific evidence and systematic inferences.

4.2. The sensemaking frames of the government

In the initial phases of the pandemic, the relevant political leaders were in the simple/obvious frame. There is no evidence of the government taking much notice of the new infectious disease outbreak in China. For the whole month of January, the PM did not make any public statements regarding the COVID-19 outbreak. Political leaders were

assured by the health authorities that the risk of a Danish outbreak remained low, and that the authorities, in the unlikely event that COVID-19 did spread to Denmark, had the means necessary to contain it (Danish Health Agency 2020b, 2020c). From the perspective of the PM, therefore, the COVID-19 situation seemed to be under control, and the Chinese outbreak did not interfere with the simple sensemaking frame. One noticeable exception was a quickly escalating diplomatic crisis rooted in the COVID-19 outbreak, which appear to have forced the PM into the complicated frame. On January 27, one of the largest newspapers in Denmark printed a cartoon of the Chinese flag with virus-like figures in place of the symbolic yellow stars. The enraged official response from Chinese ambassadors and high-level politicians that followed forced the PM out of the simple frame. The PM needed to respond delicately to the Chinese outcry in a way that did not compromise the freedom of speech enshrined in the Danish constitution but that also acknowledged the hurt feelings of the Chinese in order to retain the diplomatic and economic ties between the two countries. This shift in sense-making domain for the PM toward a complicated frame, however, was caused by this diplomatic crisis rather than a health crisis, and it quickly subsided in the beginning of February, as the outbreak weakened in China but strengthened its grip on Europe.

It was not until the question time in parliament on February 25, two days before the first case of COVID-19 in Denmark, that the PM for the first-time publicly expressed concerns about the spread of the virus during parliamentary question hour. While the virus had not yet spread to Denmark, she explained, the Danish authorities needed to be more vigilant than just a few days ago (Danish Parliament 2020a). In the immediate aftermath of the first case of COVID-19 on Danish ground on February 27, the PM summoned the government health and safety committee. In the closed meeting, the Minister of Health expressed an interest in the heavy-handed initiatives that were beginning to be implemented in Italy, and he told the Director for the Danish Health Agency that if these initiatives were successful, it would be difficult to argue against doing the same in Denmark (Gjertsen and Seidelin 2020).

Still, the PM had not publicly spoken to the Danish citizens about the outbreak. On March 6, the PM held her first press meeting where she recommended postponing or canceling events with more than thousand participants as well as refraining from shaking hands and hugging. On March 9th, when the first exponential spike of COVID-19 cases was documented, the PM spoke to the Danish citizens again about the need to take COVID-19 more seriously and abide by the government's sanitary guidelines. While health authorities as late as March 9 still compared a possible COVID-19 outbreak with the relatively low infection rates of a seasonal flu, internal correspondence reveals that the Ministry of Health explicitly requested that the health authorities should produce calculations of more gloomy scenarios with infection rates of up to 25 percent of the population (Lund, Birk, and Jessen 2020). On March 11, after the exponential growth continued, the PM announced the most severe and intrusive measures on Danish ground after World War II. These policies, by in large, were not hatched in the Danish health agencies that had recommended more lax social distancing measures (Rytgaard and Seidelin 2020). Instead, from the perspective of political leaders, the evidence-based risk assessments that they had previously relied on turned out to have been wrong. Faced with an exponential rise in COVID-19 cases, they, therefore, turned

to political intuition and experience to guide the major decisions necessary to mitigate the crisis.

Denmark was among the very first countries in Europe to implement strict lock-down policies. Political leaders were primarily influenced by the chaotic scenes in Northern Italy with armies patrolling the streets and hospitals completely overwhelmed with patients (Reuters 2020). At the press conference on March 11, for example, the PM drew heavily on the dire Italian situation to justify her decisions. In the first part of her speech, she emphasized that Denmark had to avoid the Italy scenario at all costs. Reflecting back some months later, the PM recalled the situation on March 11 as “a matter of life or death. I can still see the images from the rest of Europe before my eyes” (translated from Danish, quoted in Ritzau 2020e). At the press conference, the PM explicitly emphasized that the proposed initiatives were precautionary. She further stated that “the authorities” had recommended these precautionary measures of closing down all unnecessary activities for a period (Frederiksen 2020a). At the time, everyone assumed that the PM was referring to the *health* authorities. However, as became apparent in the days that followed, the health authorities had not recommended closing down the borders, and neither had they suggested closing down schools or the public sector in their catalogue of recommended policy options submitted to the government (Rytgaard and Seidelin 2020). In fact, the Director General of the Danish Health Agency explicitly argued against school closures in an email just seven hours before the press-meeting (Friberg 2020). It is more likely that the PM referred to recommendations by the National Operational Staff led by the police department, although the PM has refused to reveal the actual source of these “authority” recommendations (Mcghie and Marquardt 2020). The Minister of Health also seemed to filter information through the chaotic sensemaking frame. He justified the government’s lock-down initiatives as being aligned with ECDC recommendations, filtering out the important caveat that while the agency did list lock-down initiatives as a potential policy option, the agency explicitly recommended trying less intrusive measures beforehand (Findalen 2020). On March 12, an amendment to the epidemic law passed through parliament, which – among other pieces of social distancing legislation – moved the authority to take extreme social distancing measures (such as closing down schools and public institutions) from the Danish Health Agency to the Ministry of Health (Danish Parliament 2020b). The stated objective was to contain and mitigate the consequences of COVID-19 in the Danish society to the greatest extent possible (ibid.), which supports the existence of chaotic sensemaking frame focused on stanching the bleeding. In a public hearing, the health authorities argued against key parts of the legislation on the grounds that the outbreak was not severe enough to justify these extensive amendments to the existing epidemic law (Danish Parliament 2020c). This critique of the proposed legislation appears to be in line with a proportional response and a complicated sensemaking frame. On March 14, the Permanent Secretary of the Ministry of Health emailed the Director General of the Danish Health Agency with direct instructions to abandon the proportionality principle in favor of an extreme precautionary principle when considering testing policies for COVID-19 (Rasmussen and Larsen 2020). This is indicative of a government that attempts to force its own chaotic sensemaking frame on the health authorities.

In conclusion, the PM and the minister of health moved from a simple to a chaotic frame in what appeared to be a matter of days if not hours. The PM revealed in a later interview that when she met for work at the State Department on March 11, she had no idea that she would end up taking the major decision of a society-wide lock-down hours later (Toefte 2020). The political leaders moved beyond evidence-based decision-making, reprimanding the health authorities for their inaccurate forecasting of the spread, pushing for legislation that moved decision-making power from the authorities to the political leaders, and instructing the health authorities to abandon the proportionality principle (characteristic of the complicated frame) in favor of an extreme precautionary principle (characteristic of the chaotic frame). The former Director of the State Serum Institute described the initial decision-making phase as a confrontation between the composed and scientific perspective of the experts and the more emotional gut-feelings of politicians (Jensen, Birk, and Lund 2020). It should be emphasized, *ceteris paribus*, that one sensemaking frame is not superior to others. In fact, the former Director of the State Serum Institute lauded the government's precautionary gut response (*ibid.*).

Fortunately, the decision-making process never did dissent into disorder. The clear hierarchy in the political decision-making process was instrumental in avoiding this adverse outcome. In Denmark, as in most other polities, the decision-making authority during major crises is unequivocally put at the feet of political leaders. These political leaders have the power to remove decision-making power from the health authorities and to ignore any advice from these authorities. Still, the sudden move from simple to chaotic sensemaking domains short-circuits inputs from System 2 thinking as well as inhibits constructive dialogue across sensemaking boundaries. Rather than bridging different sensemaking frames in the decision-making process, political leaders appear to have asserted their own chaotic sensemaking frame in the decision-making process.

5. New directions and recommendations for improvement

While the hierarchy of authority and accountability, characteristic of a mature liberal democracy, appears to have prevented disorder, there are still lessons to be learned when seeking to optimize the decision-making process in the early phases of crisis management. It should be emphasized that this paper focuses on decision-making processes rather than the actual policies implemented. The preceding analysis argues that the main decision-makers remained in different sensemaking trajectories as the pandemic unfolded, and that there was limited bridging across sensemaking boundaries in the initial phase of the outbreak. Boundaries are possibly the most important elements in sensemaking, because they represent differences among or transitions between the patterns of how different actors perceive a given situation (Snowden and Boone 2007). Health experts, on one side, complained that key policies were not based on scientific evidence. Political leaders, on their side, felt that they had been misled by the health authorities' scientific forecasts, and that their prime obligation was to act immediately to avoid an impending health catastrophe. A crucial question is how to bridge these sensemaking boundaries in a crisis situation. There is a sizeable academic literature on how to translate health science to political decision-makers during crises

(cf. Salajan et al. 2020; ECDC 2019; Oliver and Cairney 2019; Liverani, Hawkins, and Parkhurst 2013). A strong recommendation emerging from this literature is the need to incorporate social and political sciences so “as to develop more sophisticated approaches to knowledge transfer.” (ECDC 2019, 12). The transfer of evidence depends crucially on social issues such as training, relationship-building and communication (Salajan et al. 2020). In the context of sensemaking frames, this paper advocates for increased training in acknowledging different frames as well as communication tools capable of bridging the sensemaking boundaries. We will address both initiatives below.

5.1. Training in sensemaking frames

An important first step is to familiarize key decision-makers with the concept of sensemaking frames. Recall that sensemaking typologies can both be used as analytical and training tools. Health experts, in particular, could receive training in sensitivity to different sensemaking frames. Writing about decision-making during crises, Higgins & Freedman note how the fact that Cynefin framework is not “rocket science” is an advantage from a training perspective because the framework can still capture concepts and ideas that requires focused cognitive effort to activate in a decision-making process (Higgins and Freedman 2013, 33). Being cognizant of different sensemaking frameworks is particularly important for emergency response and crisis management. Due to the rapid evolution and complexity of public health emergencies, decisionmakers are under pressure to respond urgently and strategically to meet public health needs. Training in awareness of sensemaking frames therefore must be built into the modus operandi long before crisis decisions need to be made, during preparedness management phases. Such training also needs to pay attention to political dynamics. Political dynamics are naturally underdeveloped in the generic Cynefin framework for decision-makers (rooted in Business Studies). However, electoral dynamics might pressure politicians into a chaotic sensemaking frame. Research suggests that citizens expect political leaders to act in a crisis situation (Boin, McConnell, and Hart 2008; Rubin 2020). Measured responses are rarely electorally rewarded in a crisis context where effectively responding to a crisis is rewarded much more than effectively preventing a disaster, despite cost-benefit calculations favoring the latter policy option (Healy and Malhotra 2009). In the initial phase of the COVID-19 response, political success was almost exclusively determined by the number of COVID-19 fatalities and infected. Danish news outlets would daily update a “scorecard” in this regard and compare it to other European countries. Thus, electoral pressure often leads to precautionary policies that have very concrete and visible benefits but where the costs are more dispersed both spatially and temporally. An appreciation of these political dynamics and their potential impact on sensemaking frames is important for bridging sensemaking boundaries between experts and politicians. Such training would increase the recognition that there may be other ways of making sense and maintain a cognitive openness to the other voices and institutional pressures.

Table 1. Contrasting the Danish health authority's assessments with the political reactions during the initial phase of COVID-19.

	January 22	January 28	February 25	February 27	March 10
Health authorities' assessment	Very low risk of COVID-19 cases in Denmark	Low risk of COVID-19 cases in Denmark	Moderate risk of COVID-19 cases in Denmark	Low risk of a COVID-19 outbreak in Denmark	600,000 Danes could be hit by first wave
Political reaction	No reason to worry	No reason to worry	No reason to worry	No reason to worry	Worry!

Legend: Based on risk assessments by the Danish Health Agency (2020a, 2020b, 2020c, 2020d, 2020e). Political reaction is somewhat hyperbolic.

5.2. Internal communication

Acknowledging that decision-makers might find themselves in different sensemaking domains in the early phases of a crisis is important because it might draw attention to the need to bridge the boundaries. One of the most effective ways of bridging the boundaries is through communication. In the current case, it appears that the communication between health experts and political leaders did little to align sensemaking frames. Table 1 contrasts the health expert assessments at different times with the likely (albeit somewhat simplified) political reaction.

Table 1 illustrates why the government's sensemaking frame changed so fundamentally in such a short period of time: while the health experts in the complicated frame continuously updated their risk assessment in light of new evidence, their communication failed to bridge over into the simple sensemaking domain. The difficulties of communicating complex scientific evidence to politicians has been well-researched (ECDC 2019; Hesse and Croyle 2009; National Academies of Sciences, Engineering, and Medicine 2017). Politicians need clear information in a crisis situation without too many uncertainties and caveats. Experts, however, are often reluctant to simplify scientific findings because doing so tends to mask the related uncertainties and assumptions. During COVID-19, health authorities decided to communicate risk using verbal qualifiers. Substituting actual numeric values or probabilities with verbal qualifiers can simplify the message, making it more easily digestible for political leaders and the public at large. However, research suggests that lay audiences, including politicians, often interpret low or minimal risk as no risk at all (Hesse and Croyle 2009). Indeed, the Danish health authority's assessments of "low risk" appear to have been interpreted by the political leaders as no risk, which is evidenced by the fact that no political leaders took notice of the outbreak for months and that the PM blamed the health authorities for having said that the outbreak would not hit Denmark. The latter argument clearly conflates "low-risk" with "no risk." One communicative suggestion would be to add numerical probabilities to the verbal qualifiers, even though such probabilities would contain much uncertainty. From a communicative perspective, a 25 percent risk of a catastrophic outbreak can perhaps still be considered "low" but would provide the decision-maker with a greater sense of urgency. In addition, a risk might quadruple, as more evidence becomes available, jumping from five to 20 percent while still being termed "low". Another communicative tool would be to apply visual scales. The advantages of visual scales are that they are easy to communicate to a broader audience and easier to remember. Furthermore, it is unclear what "moderate" risk of COVID-19

cases in Denmark actually entails, not just because the numerical qualifiers are lacking but also because the range of possible categories is unknown. Many organizations work with clearly delineated categories, combining verbal qualifiers, visual representations and numerical probabilities, during different crises such as earthquakes (the Richter Scale), hurricanes, (the Saffir–Simpson Scale) and food security (Integrated Food Security Phase Classification). Lastly, tying risk assessments to scenario analysis would constitute an effective communicative tool early on in the decision-making process. Recall, that the government had to demand that the health authorities produced specific scenarios for their consumption. Preemptive use of scenarios can be used to bridge sensemaking boundaries. Presenting different possible scenarios might activate a complicated sensemaking frame based on a range of possible outcomes and policies earlier on in the process and activate some System 2 thinking.

Disclosure statement

No potential conflict of interest was reported by the author(s).

ORCID

Olivier Rubin  <http://orcid.org/0000-0002-2364-6782>

Daniel H. de Vries  <http://orcid.org/0000-0001-7455-0628>

References

- Aagaard, L. 2020. “Hvor bange bør du være. *Berlingske*”. February 4, 2020. Accessed 20 July 2020. <https://www.berlingske.dk/videnskab/coronavirus-hvor-bange-boer-du-vaere>
- Bækkeskov, E. 2016. “Explaining Science-Led Policy-Making: pandemic Deaths, Epistemic Deliberation and Ideational Trajectories.” *Policy Sciences* 49 (4): 395–419. doi:10.1007/s11077-016-9264-y.
- Boin, A.; McConnell, A. and Hart P. (Eds). 2008. *Governing after Crisis – the Politics of Investigation, Accountability and Learning*. Cambridge: Cambridge University Press.
- Byrne, T. 2020. “Statens Serum Institut om Corona-Virus: Minder Måske Mere om Almindelig Influenza End om SARS.” Avisen Danmark, February 3, 2020. Accessed 20 July 2020. <https://avisendanmark.dk/artikel/statens-serum-institut-om-corona-virus-minder-m%C3%A5ske-mere-om-almindelig-influenza-end-om-sars>
- Carbone, E. G., and E. V. Thomas. 2018. “Science as the Basis of Public Health Emergency Preparedness and Response Practice: The Slow but Crucial Evolution.” *American Journal of Public Health* 108 (S5): S383–S386. doi:10.2105/AJPH.2018.304702.
- Christoffersen, J., and S. Jensen. 2020. “Retstaten og COVID-19.” Justitia Report. Accessed 20 July 2020. <http://justitia-int.org/wp-content/uploads/2020/06/Justitia-Retsstaten-og-Covid-19.pdf>
- Danish Health Agency 2020a. Sundheds personalet får retningslinje om det nye coronavirus. 22 January 2020. Accessed 20 July 2020. <https://www.sst.dk/da/Nyheder/2020/Sundheds-personalet-faar-retningslinje-om-det-nye-coronavirus>
- Danish Health Agency 2020b. Ny Coronavirus – fortsat kun lav risiko i Danmark. 28 January 2020. Accessed 20 July 2020. https://www.sst.dk/da/Nyheder/2020/Ny-Coronavirus_-fortsat-kun-lav-risiko-i-Danmark
- Danish Health Agency 2020c. WHO erklærer global nødsituation på baggrund af ny coronavirus. 30 January 2020. Accessed 20 July 2020. <https://www.sst.dk/da/Nyheder/2020/WHO-erklærer-global-noedsituation-paa-baggrund-af-ny-coronavirus>

- Danish Health Agency 2020d. Sundhedsstyrelsen ændrer risikovurdering og udsender nye retningslinjer for håndtering af COVID-19. 25 February 2020. Accessed 20 July 2020. <https://www.sst.dk/da/Nyheder/2020/Sundhedsstyrelsen-aendrer-risikovurdering-og-udsender-nye-retningslinjerne-for-haandtering-af-COVID-19>
- Danish Health Agency 2020e. COVID-19 Risikovurdering, strategi og tiltag ved epidemi i Danmark. Report. 10 March 2020. Accessed 20 July 2020. <https://www.sst.dk/-/media/Udgivelser/2020/Corona/Strategi-for-COVID-19.ashx?la=da&hash=067BF6AF0A95D88B3E0A329ABB3C8935E12DDDF>
- Danish Parliament 2020a. Minutes from question hour with the PM. 65th meeting. 25 February 2020. Accessed 20 July 2020. https://www.ft.dk/forhandling/20191/20191M065_2020-02-25_1300.htm
- Danish Parliament 2020b. L 133 Forslag til lov om ændring af lov om foranstaltninger mod smitsomme og andre overførbare sygdomme. Legal amendment approved 12 March 2020. Accessed 20 July 2020. <https://www.ft.dk/samling/20191/lovforslag/l133/index.htm>
- Danish Parliament 2020c. L 133 supplerende svar på spørgsmål 23: bilag til supplerende svar på spm. 23 til L 133. Accessed 20 July 2020. <https://www.ft.dk/samling/20191/lovforslag/l133/spm/23/svar/1645251/2167636.pdf>
- ECDC 2019. *The use of evidence in decision making during public health emergencies*. Report, Stockholm, ECDC. Accessed 20 July 2020. www.ecdc.europa.eu/sites/default/files/documents/use-of-evidence-in-decision-making-during-public-health-emergencies_0.pdf
- Findalen, J. 2020. "Kritik af Heunicke: Strammede Anbefaling om Nedlukning." *Ekstrabladet*, June 7, 2020. Accessed 20 July 2020. <https://ekstrabladet.dk/nyheder/politik/danskpoltik/kritik-af-heunicke-strammede-anbefaling-om-nedlukning/8149575>
- Flyvbjerg, B. 2006. "Five Misunderstandings about Case-Study Research." *Qualitative Inquiry* 12 (2): 219–245. doi:10.1177/1077800405284363.
- Frederiksen, M. 2020a. *Pressemøde om COVID-19 Den 11. marts* Accessed 20 July 2020. https://www.stm.dk/_p_14920.html
- Frederiksen, M. 2020b. *Pressemøde den 13. marts 2020*. Accessed 20 July 2020. https://www.stm.dk/_p_14930.html
- Frederiksen, M. 2020c. *Pressemøde den 15. marts 2020*. Accessed 20 July 2020. https://www.stm.dk/_p_14925.html
- Frederiksen, M. 2020d. *Pressemøde den 6. marts 2020*. Accessed 20 July 2020. https://www.stm.dk/_p_14913.html
- Friberg, M. 2020. Mail afslører: Søren Brostrøm frarådede at lukke skoler kort før pressemøde. Accessed 3 August 2020. <https://www.bt.dk/samfund/mail-afsloerer-soeren-brostroem-fraraadede-at-lukke-skoler-kort-foer-pressemoede>
- Fulop, L., and A. Mark. 2013. "Relational Leadership, Decision-Making and the Messiness of Context in Healthcare." *Leadership* 9 (2): 254–277. doi:10.1177/1742715012468785.
- Gjertsen, M., and M. Seidelin. 2020. "Krisen Indefra: Allerede i Februar Voksede Uenigheden Mellem Regeringen og Myndighederne." *Jyllands-Posten*, March 28, 2020. Accessed 20 July 2020. <https://jyllands-posten.dk/premium/indland/ECE12040710/krisen-indefra-allerede-i-februar-voksede-uenigheden-mellem-regeringen-og-myndighederne/>
- Greenhalgh, T., and J. Russell. 2009. "Evidence-Based Policymaking: A Critique." *Perspectives in Biology and Medicine* 52 (2): 304–318. doi:10.1353/pbm.0.0085.
- Healy, A., and N. Malhotra. 2009. "Myopic Voters and Natural Disaster Policy." *American Political Science Review* 103 (3): 387–406. doi:10.1017/S0003055409990104.
- Hesse, B. W., and R. T. Croyle. 2009. *Making Data Talk: Communicating Public Health Data to the Public, Policy Makers, and the Press*. New York, USA: Oxford University Press.
- Higgins, G., and J. Freedman. 2013. "Improving Decision Making in Crisis." *Journal of Business Continuity & Emergency Planning* 7 (1): 65–76.
- Infomedia 2020. Accessed 20 July 2020. <https://infomedia.dk/>
- Jensen, H., C. Birk, and M. Lund. 2020. "Interne Dokumenter Afslører Strid om Coronastrategi: »Politikerne Har Villet Udvide Handlekraft for Enhver Pris – Uanset

- Eksperternes Rådgivning.” Berlingske, May 28, 2020. Accessed 20 July 2020. <https://www.berlingske.dk/samfund/interne-dokumenter-afsloerer-strid-om-coronastrategi-politikerne-har>
- Kahneman, D. 2011. *Thinking, Fast and Slow*. New York: Farrar, Straus and Giroux.
- Keller, A. C., C. K. Ansell, A. L. Reingold, M. Bourrier, M. D. Hunter, S. Burrowes, and T. M. MacPhail. 2012. “Improving Pandemic Response: A Sensemaking Perspective on the Spring 2009 H1N1 Pandemic.” *Risk, Hazards & Crisis in Public Policy* 3 (2): 1–37. doi:10.1515/1944-4079.1101.
- Khan, Yasmin, Ghazal Fazli, Bonnie Henry, Eileen de Villa, Charoula Tsamis, Moira Grant, Brian Schwartz, et al. 2015. “The Evidence Base of Primary Research in Public Health Emergency Preparedness: A Scoping Review and Stakeholder Consultation.” *BMC Public Health* 15: 432. doi:10.1186/s12889-015-1750-1.
- Kingdon, J. W. 2014. *Agendas, Alternatives, and Public Policies*. 2nd Edition. London: Pearson Education Limited.
- Klarskov, K. 2020. “Se, Hvad de Diskuterer: Politiken Har Fået et Unikt Indblik i Regeringens Lukkede Corona-Strategi.” Politikken, February 25, 2020. Accessed 20 July 2020. <https://politiken.dk/indland/politik/art7673129/Politiken-har-f%C3%A5et-et-unikt-indblik-i-regeringens-lukkede-Corona-strategi>
- Kott, S. 2020. “Sundhedsstyrelsen om Kinesisk Virus: Danmark er Forberedt på Sygdommen.” Jyllands-Posten, January 22, 2020. Accessed 20 July 2020. Retrieved at: <https://jyllands-posten.dk/indland/ECE11891858/sundhedsstyrelsen-om-kinesisk-virus-danmark-er-forberedt/>
- Krak, N. 2020. “Beredskabsplan Klar Hvis Coronavirus Når Danmark.” Kristeligt Dagblad, February 16, 2020. Accessed 20 July 2020. <https://www.kristeligt-dagblad.dk/danmark/beredskabsplan-klar-hvis-coronavirus-naar-danmark>
- Kurtz, C. F., and D. J. Snowden. 2003. “The New Dynamics of Strategy: Sense-Making in a Complex and Complicated World.” *IBM Systems Journal* 42 (3): 462–483. doi:10.1147/sj.423.0462.
- Liverani, M., B. Hawkins, and J. Parkhurst. 2013. “Political and Institutional Influences on the Use of Evidence in Public Health Policy. A Systematic review.” *PloS One* 8 (10): e77404. doi:10.1371/journal.pone.0077404.
- Lu, X., and L. A. N. Xue. 2016. “Managing the Unexpected: Sense-Making in the Chinese Emergency Management System.” *Public Administration* 94 (2): 414–429. doi:10.1111/padm.12261.
- Lund, M., C. Birk, and C. Jessen. 2020. “Seruminstitut Nedtonede Alvor få Dage Inden Nedlukning: Coronavirus Var Blot en »Alvorlig Influenza«.” Berlingske, June 3, 2020. Accessed 20 July 2020. <https://www.berlingske.dk/samfund/seruminstitut-nedtonede-alvor-faa-dage-inden-nedlukning-coronavirus-var>
- Mcghie, S., and F. Marquardt. 2020. “Centrale Myndigheder anbefalede Ikke Med et Eneste Ord at Lukke Danmark Ned. Men de Blev Stillet over for et Ønske »Fra Politisk Niveau«.” Berlingske, July 18, 2020. Accessed 20 July 2020. <https://www.berlingske.dk/samfund/centrale-myndigheder-anbefalede-ikke-med-et-eneste-ord-at-lukke-danmark>
- Mølgaard, C. 2020. “Det Sagde Søren Brostrøm om Graenslukninger.” *Altinget* March 15, 2020. Retrieved at: <https://www.alinget.dk/sundhed/artikel/det-sagde-soeren-brostroem-om-graenselukninger>
- Mortensen, A. 2020. “Læge om Coronavirus: ’Vi Kender Ikke Risikoen Ved Smitte.’” BT, January 25, 2020. Accessed 20 July 2020. <https://www.bt.dk/udland/laege-om-coronavirus-vi-kender-ikke-risikoen-ved-smitte>
- National Academies of Sciences, Engineering, and Medicine 2017. *Communicating Science Effectively: A Research Agenda*. Washington DC: National Academies Press.
- Nielsen, N. 2020. “Mette Frederiksen om Tiltag Uden Eksperternes Opbakning: Vi Mister for Mange Menneskeliv, Hvis vi Venter.” DR, April 1, 2020. Accessed 20 July 2020. <https://www.dr.dk/nyheder/politik/mette-frederiksen-om-tiltag-uden-eksperternes-opbakning-vi-mister-mange-menneskeliv>

- Oliver, K., and P. Cairney. 2019. "The Dos and Don'ts of Influencing Policy: A Systematic Review of Advice to Academics." *Palgrave Communications* 5 (1): 1–11. doi:10.1057/s41599-019-0232-y.
- Pedersen, F. 2020. "Sundhedsvaesenet er Oppe i Højeste Omdrejninger: »Vi Tager Ingen Chancer.«" Berlingske, February 27, 2020. Accessed 20 July 2020. <https://www.berlingske.dk/samfund/sundhedsvaesenet-er-oppe-i-hoejeste-omdrejninger-vi-tager-ingen-chancer>
- Rasmussen, L. 2020. "Mens Dødstallet Stiger Dag for Dag: Verden Knokler på en Corona-Vaccine." Politiken, January 31, 2020. Accessed 20 July 2020. <https://politiken.dk/forbrugogliv/sundhedogmotion/art7630027/Verden-knokler-p%C3%A5-en-corona-vaccine>
- Rasmussen, L., and J. Larsen. 2020. "Departementschef Bad Brostrøm om at Tilsidesætte Sin Faglighed." Politiken, 28 May 2020. Accessed 20 July 2020. www.politikensundhed.dk/nyheder/art7805381/Departementschef-bad-Brostr%C3%B8m-om-at-tilsides%C3%A6tte-faglighed
- Reuters 2020. Italy to use army to enforce coronavirus lockdown in worst-hit region. March 20, 2020. Accessed 20 July 2020. <https://www.reuters.com/article/us-health-coronavirus-italy-army/italy-to-use-army-to-enforce-coronavirus-lockdown-in-worst-hit-region-idUSKBN2171ZA>
- Ritzau 2020a. "EU gør klar til kamp mod coronavirus." Kristeligt-Dagblad, February 13, 2020. Accessed 20 July 2020. <https://www.kristeligt-dagblad.dk/udland/eu-gor-klar-til-kamp-mod-coronavirus>
- Ritzau 2020b. "Myndigheder: Coronasmitte i Danmark har været forventet." Berlingske, February 27, 2020. Accessed 20 July 2020. <https://www.berlingske.dk/danmark/myndigheder-coronasmitte-i-danmark-har-vaeret-forventet>
- Ritzau 2020c. "Antal coronasmittede i Danmark tager største hop på én dag." Kristeligt Dagblad, March 10, 2020. Accessed 20 July 2020. <https://www.kristeligt-dagblad.dk/danmark/coronasmittede-i-danmark-tager-hidtil-storste-hop-pa-en-dag>
- Ritzau 2020d. "Strategi skifter snart fra inddaemning til begrænsning af corona." BT, March 11, 2020. Accessed 20 July 2020. <https://www.bt.dk/samfund/strategi-skifter-snart-fra-inddaemning-til-begraensning-af-corona>
- Ritzau 2020e. "Mette Frederiksen på samråd: Der er ikke et skriftligt grundlag for nedlukning." DR, June 9, 2020. Accessed 20 July 2020. <https://www.dr.dk/nyheder/politik/mette-frederiksen-paa-samraad-der-er-ikke-et-skriftligt-grundlag-nedlukning>
- Rubin, O. 2020. "The Political Dynamics of Voter Retrospection and Disaster responses." *Disasters* 44 (2): 239–261. doi:10.1111/disa.12376.
- Rytgaard, N., and M. Seidelin. 2020. "Det Skete Der i de Vilde Dage, da Danmark Lukkede Ned." Jyllands-Posten, May 21, 2020. Accessed 20 July 2020. <https://jyllands-posten.dk/premium/indblik/Indland/ECE12152206/det-skete-der-i-de-vilde-dage-da-danmark-lukkede-ned/>
- Salajan, A., S. Tsovala, M. Ciotti, and J. E. Suk. 2020. "To What Extent Does Evidence Support Decision Making during Infectious Disease Outbreaks? a Scoping Literature Review." *Evidence & Policy: A Journal of Research, Debate and Practice* doi:10.1332/174426420x15808913064302. (Epub ahead of print).
- Schmidt, A., and L. Rasmussen. 2020. "Kåre Mølbak: »Jeg Vil Ikke Sige, at Jeg Tog Fejl, Men Jeg Har en Noget Anden Vurdering i Dag.«" Politiken, June 9, 2020. Accessed 20 July 2020. <https://politiken.dk/forbrugogliv/sundhedogmotion/art7816094/%C2%BBjeg-vil-ikke-sige-at-jeg-tog-fejl-men-jeg-har-en-noget-anden-vurdering-i-dag%C2%AB>
- Seto, I., D. Johnstone, and J. Campbell-Meier. 2018. Experts' sensemaking during the 2003 SARS crisis. *Proceedings of ISCRAM Asia Pacific*. Accessed 20 July 2020. http://idl.iscram.org/files/ivaseto/2018/1649_IvaSeto_et al2018.pdf
- Snowden, D. J., and M. E. Boone. 2007. "A Leader's Framework for Decision Making." *Harvard Business Review* 85 (11): 68–76.
- Snowden, David J. 2005. "Strategy in the Context of Uncertainty." *Handbook of Business Strategy* 6 (1): 47–55. doi:10.1108/08944310510556955.
- Taleb, N. N., R. Read, R. Douady, et al. 2014. "The Precautionary Principle (with Application to the Genetic Modification of Organisms)." arXiv, arXiv:1410.5787.

- Toeffte, M. 2020. "Mette Frederiksen om Nedlukning: Jeg Har Aldrig Nogensinde Vaeret så Meget i Tvivl." DR, June 5, 2020. Accessed 20 July 2020. <https://www.dr.dk/nyheder/politik/mette-frederiksen-om-nedlukning-jeg-har-aldrig-nogensinde-vaeret-saa-meget-i-tvivl>
- True, J., and B. Jones. and Baumgartner 2007. "Punctuated-Equilibrium Theory - Explaining Stability and Change in Public Policymaking. Chapter 6." in Sabatier, P. (ed). *Theories of the Policy Process*. Second Edition. Cambridge, MA: Westview Press.
- Van Beurden, E. K., A. M. Kia, A. Zask, U. Dietrich, and L. Rose. 2013. "Making Sense in a Complex Landscape: how the Cynefin Framework from Complex Adaptive Systems Theory Can Inform Health Promotion Practice." *Health Promotion International* 28 (1): 73–83. doi: [10.1093/heapro/dar089](https://doi.org/10.1093/heapro/dar089).
- Wang, L. 2020. "Forskere Vil Udvikle en Vaccine Mod Coronavirus – Men Måske Når Den Aldrig at Blive Brugt." Information, February 4, 2020. Accessed 20 July 2020. <https://www.information.dk/indland/2020/02/forskere-udvikle-vaccine-coronavirus-maaske-naar-aldrig-brugt>
- Weber, M. 1978. *Economy and Society: An Outline of Interpretive Sociology* (Vol. 1). California: University of California Press.
- Weick, K. E. 1969. *The Social Psychology of Organizing*. Reading: Addison-Wesley.
- Weick, K. E. 1988. "Enacted Sensemaking in Crisis Situations." *Journal of Management Studies* 25 (4): 305–317. doi:[10.1111/j.1467-6486.1988.tb00039.x](https://doi.org/10.1111/j.1467-6486.1988.tb00039.x).
- Weick, K. E. 1995. *Sensemaking in Organizations* (Vol. 3). London: SAGE Publications.
- WHO 2020. 2019-nCoV outbreak is an emergency of international concern. Accessed 20 July 2020. <https://www.euro.who.int/en/health-topics/health-emergencies/coronavirus-covid-19/news/news/2020/01/2019-ncov-outbreak-is-an-emergency-of-international-concern>
- Winther, L. 2020. "Dansk forsker i pest, kolera og SARS: »Det er meget ubehageligt med den hastige stigning i antallet af smittede«." *Berlingske*, Januar 27, 2020. Accessed 20 July 2020. <https://www.berlingske.dk/internationalt/dansk-forsker-i-pest-kolera-og-sars-det-er-meget-ubehageligt-med>