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Inter-organizational sensemaking in the face of strategic meta-problems: Requisite variety and dynamics of participation

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Research Summary: When faced with complex strategic problems that exceed their individual sensemaking capacities, organizations often engage in inter-organizational collaboration. This enables them to pool the participants' different perspectives and to grasp the problem at hand more comprehensively. Drawing on data collected from two longitudinal case studies, we examine how those who participate in inter-organizational sensemaking processes are selected and how the particular selection of participants affects the dynamics of the sensemaking process in turn. In our analysis, we show how the selection of specific problem issues influences who joins or withdraws from the collaboration and we identify a mechanism that accounts for changes in the particular dynamics of the sensemaking process over time. Our findings help explain how the process of inter-organizational sensemaking can yield different outcomes.

Managerial Summary: The ability to make sense of the business environment is central to strategic management. As the complexity of the environment increases and interpreting it becomes more difficult, organizations increasingly turn to inter-organizational collaboration, which allows them to pool their expertise in order to explore strategic issues. We examine how the participants in projects of joint exploration are selected and how the selection of participants affects the process of exploration in turn. More specifically, we describe how the aspects on which collaborating organizations choose to focus influence who joins and who withdraws from a collaboration. We also identify a mechanism that accounts for differences and changes in the dynamics of the sensemaking process over time. These changes affect how the collaborators come to understand their organization's business environment.

KEYWORDS

collective sensemaking, inter-organizational collaboration, inter-organizational sensemaking, inter-organizational strategizing, meta-problems, open strategy, participation, requisite variety, strategic sensemaking

1 | INTRODUCTION

Ensuring that organizations are able to make sense of changes in their business environment is central to successful strategic management (Cornelissen & Schildt, 2015; Daft, Sormunen, & Parks, 1988; Daft & Weick, 1984; Thomas, Clark, & Gioia, 1993). The range of perspectives for interpreting the environment that are available to the organizational members plays a critical role: the more complex the environment becomes, the greater the variety of perspectives that actors need in order to comprehend it. As Weick (1979, 1995) explained, organizations need to ensure that they have the "requisite variety" in perspectives: "organizations have to be preoccupied with keeping sufficient diversity inside the organization to sense accurately the variety present in ecological changes outside" (Weick, 1979, p. 188). Sometimes, however, environmental complexity exceeds an organization's internal variety, which leads to "variety overload" (Trist, 1983, p. 272). This is especially the case when organizations are faced with so-called meta-problems; that is, multidimensional problems of strategic significance that often cut across different industries or even different sectors (Cartwright, 1987; Emery & Trist, 1965; Hardy, Lawrence, & Phillips, 2006; Trist, 1983). In such situations organizations frequently open up their internal strategy process (Hautz, Seidl, & Whittington, 2017; Whittington, Cailluet, & Yakis-Douglas, 2011) and seek inter-organizational collaboration as a way of increasing their requisite variety. In this way they "pool their expertise" (Hardy et al., 2006, p. 98) and thus create a more complex sensemaking system (Teulier & Rouleau, 2014).

While this phenomenon of facilitating requisite variety through collaboration has been well documented in the literature on inter-organizational collaboration (Gray, 1989, 2008; Hardy et al., 2006; Huxham, 1996b; Selsky & Parker, 2005; Schneider et al., 2017), there is little research on how the particular selection of participants affects the dynamics of the process of joint sensemaking. Earlier research has shown that greater diversity amongst participants of the collaboration, contributes to a richer understanding of the meta-problem at hand. However, how the perspectives that the participants bring into the collaboration affect the development of the sensemaking process is still poorly understood. Against this background, this article aims to answer the following two research questions: first, how are actors selected to take part in processes of inter-organizational sensemaking aimed at exploring strategic meta-problems? Second, how does the selection of participants affect the dynamics of the sensemaking process in turn?

To address these research questions, we use data from two longitudinal case studies on inter-organizational groups of individuals who got together to make sense of strategic meta-problems collectively. Case 1 covers a 6-year period, during which an inter-organizational group explored collaboratively the strategic role of water as a critical resource. The participants represented different companies that were confronted and had to deal with novel issues related to water. These issues

included, for example, dealing with uncertainty over the availability of fresh water, potential conflicts over access to water, and ways of treating wastewater. Because of the complexity of the issues, these companies were unable to explore them individually. Case 2 covers a 2-year period, during which the challenges associated with flexible production were collaboratively explored. In this case, the collaborators had been facing increasing pressure to make their production more flexible, but individually they were unable to find ways of tackling this highly complex problem. In both cases we examined closely the process through which representatives from different organizations were included in or excluded from the process of collective sensemaking and how their inclusion and exclusion affected the dynamics of this process.

Our in-depth analysis of these cases of inter-organizational strategizing yielded two main insights. First, we found that the process through which actors are selected to participate in projects of inter-organizational sensemaking exploring a meta-problem is largely driven by the specific selection of issues that are highlighted for joint exploration. Depending on the set of issues that they highlight, the collaborators will consider particular sets of perspectives, so-called "repertoires of frames," relevant for the exploration. If the collaborators conclude that they lack particular frames that are essential for making sense of the issues they are focusing on, they will try to attract actors who appear to possess those frames. Second, we identified a central mechanism that helps explain the dynamics and outcomes of inter-organizational sensemaking processes. This mechanism rests on the interplay between the frame repertoire of the collaborators, the concerns and interests of the participants, and the specific set of issues they intend to tackle.

2 | THEORETICAL BACKGROUND: REQUISITE VARIETY IN STRATEGIC SENSEMAKING

2.1 | The sensemaking perspective

"Sensemaking" refers to the process through which people attempt to understand issues or events "that are somehow surprising or confusing" (Maitlis, 2005, p. 21). This process is typically a collective endeavor involving several people (Brown, Colville, & Pye, 2014). As Maitlis and Christianson (2014, p. 95) write, this process "takes place in the conversations between people, [and] collective sense is generated in an ongoing iterative manner, as actors shape each other's meanings in repeated cycles of sensemaking." The process of collective sensemaking involves producing narrative accounts of the focal issues or events with the aim of developing a "shared sense of meaning" (Gephart, Topal, & Zhang, 2010, p. 285).

Formally, there are three main aspects to sensemaking (Weick, 1995, pp. 110–111). The first aspect concerns *cues*; that is, the surprising or confusing issues or events that people experience and try to make sense of. The second aspect concerns the *frames* that can be used to interpret cues. Frames are defined as "schemata of interpretation" (Fiss & Zajac, 2006, p. 1174) or "knowledge structures" (Cornelissen & Werner, 2014, p. 187). The third aspect concerns the *relation* between cues and frames. As Weick (1995, p. 110) writes, "a cue in a frame is what makes sense, not the cue alone or the frame alone." This suggests that meaning is created when people agree on which frames are suitable for interpreting the focal cues.

The process of sensemaking has two stages (Weick, Sutcliffe, & Obstfeld, 2005, p. 415). In the first stage, people *bracket* specific cues from the amorphous stream of raw experience and *label* them as points of reference that will be used in the ensuing process of sensemaking. As Weick (1995) emphasized, the bracketing and labeling of cues is a social process that might involve politics

and individual interests, which shape what people will focus on and thus which cues "are highlighted or suppressed" (Weick et al., 2005, p. 418). Maitlis and Christianson (2014, p. 77) furthermore note that people will only bracket particular cues for further sensemaking if these are "of some significance to them," because "sensemaking is an effortful and potentially costly process that requires people to feel motivated […] to work to construct new meanings."

After bracketing and labeling, the second stage involves searching for appropriate frames that will help interpret the bracketed cues (Cornelissen & Werner, 2014). There may be a political aspect to this second stage, too, in the sense that some people might try to convince their fellow actors to apply particular frames and not others (Gioia & Chittipeddi, 1991; Maitlis & Lawrence, 2007; Mantere, Schildt, & Sillince, 2012). These attempts might even turn into "framing contests" (Kaplan, 2008). The second stage concludes when the participants agree on the frames they should use to make sense of the focal cues. This shared sense of understanding manifests itself in sharing the same narrative accounts providing interpretations of the focal cues (Abolafia, 2010; Gephart, 1993).

Referring to the "law of requisite variety," which Conant and Ashby (1970) described in their work, Weick (1979, 1995) argued that the greater the environmental diversity that an organization tries to make sense of, the greater the diversity that the organizational sensemaking system has to possess. As Weick explains, "It takes a complex sensing system to register a complex object" (Weick, 1995, pp. 89–90). By increasing their internal variety, organizations can increase both the likelihood that important environmental issues or events—that is, cues—will be addressed and that appropriate frames for interpreting the cues will be available. Without sufficient internal variety, people risk developing "an impoverished, shallow version of [their] surroundings" (Weick, 1979, p. 193). The main way of increasing internal variety is by including a variety of different people, which increases the diversity of frames that are available within an organization. Different people possess different repertoires of frames that they use to make sense of the world, which depend on how they have become socialized and on their past experiences (Weick, 1995, p. 111). It follows that people with different personal backgrounds (Chreim, 2006; Whiteman & Cooper, 2011) or located in different parts of the same organization (Starbuck & Milliken, 1988) are likely to differ in their interpretation of environmental cues.

In line with the idea that variety can improve sensemaking capacity, several empirical studies have shown that managers actively engage other people in processes of strategic sensemaking in order to gain access to a wider range of frames and thereby develop a better understanding of their world. Maitlis (2005), for example, described how the executive director of a symphony orchestra drew "on stakeholders' various accounts to construct a rich, unitary understanding that took [their] multiple perspectives into consideration" (Maitlis, 2005, p. 36). Using this case, she showed that processes of collaborative sensemaking enable leaders to understand the world better than they do when they attempt to make sense of it alone. In another study, Rouleau and Balogun (2011) described how middle managers developed a personal network of colleagues with different backgrounds, whom they mobilized depending on the perspective they needed to access in order to make sense of specific issues or events. Even though these studies did not explicitly refer to the idea of requisite variety, they nevertheless indicate that collaborating with other people can help develop a more comprehensive understanding of complex environments.

2.2 | Inter-organizational collaboration as a means of ensuring requisite variety

Ensuring requisite variety becomes particularly challenging in the face of meta-problems; that is, problems that are characterized by extreme levels of complexity (Cartwright, 1987; Emery & Trist,

1965; Hardy et al., 2006). As Trist (Trist, 1983, p. 270) writes, "[t]he issues involved are too extensive and too many-sided to be coped with by any single organization, however large." Getting to grips with meta-problems is challenging, because the various aspects of a meta-problem cannot be understood in isolation, but only in relation to each other. This means that organizations have to think about different "factors together rather than separately [and] to focus on them collectively" (Cartwright, 1987, p. 93). With regard to sensemaking, this means that meta-problems are typically associated with a large number of cues that cannot be interpreted individually, but have to be considered in relation to each other. Consequently, in order to make sense of a meta-problem it is necessary to have access to a variety of frames with which to comprehend the variety of cues that are associated with it. A further complication is that meta-problems have "unclear boundaries" (Hardy et al., 2006, p. 98). This means that which cues are part of the meta-problem and which are not is not clear.

In response to the challenges of such meta-problems, organizations often open up their strategizing process (Hautz et al., 2017; Whittington et al., 2011) and collaborate with other organizations to complement their own variety and thereby ensure that they attain the overall requisite variety that is need. There is a large stream of literature that examines inter-organizational collaborations as forms of dealing with (mostly social) meta-problems (Selsky & Parker, 2005), which is a subset of the broader literature on inter-organizational relations (Cropper, Ebers, Huxham, & Ring, 2008). Although this literature does not explicitly deal with sensemaking, it examines how collaboration can foster requisite variety by bringing together "multiple perspectives" (Westley & Vredenburg, 1991, p. 66), through a "pooling of minds" (Hardy et al., 2006, p. 108), of "appreciation" (Gray, 1985, p. 912), "expertise" (Hardy et al., 2006, p. 98), and "insights" (Gray, 1996, p. 58).

In the context of sensemaking, it could be argued that collaboration pools together the "framing repertoires" (Brummans et al., 2008, p. 28) of different organizations. Given that the members of different organizations can draw on different experiences that are specific to a sector, industry, and organization, they are likely to bring to the collaboration a range of knowledge structures that could help interpret different aspects of the meta-problem. As a result, the collaborators can understand that problem more comprehensively. As Grey notes, collaborators can "see different aspects of a problem […], constructively explore their differences [and] search for solutions that go beyond their own limited vision of what is possible" (Gray, 1989, p. 5). Similarly, in their study on a case of inter-organizational collaboration between middle managers, Teulier and Rouleau (2014, pp. 325–326) observed that "in participating in collaborative work, [the middle managers] expected to increase the capacities of their own organizations to deal with the issue collectively studied."

To highlight the benefits of collaborative effort when it comes to dealing with meta-problems, Huxham and various colleagues (Hibbert & Huxham, 2005; Huxham, 1993; Huxham & Vangen, 2005) suggested the term "collaborative advantage," which alludes to, but also contrasts with, the concept of "competitive advantage." However, whether organizations are prepared to engage in collaboration depends on the salience of the issues they need to deal with (Waddock, 1989, p. 83), their interest in them (Hardy et al., 2006, p. 103), and their assessment of the associated costs (Gray, 1985; Huxham, 1993). In other words, an organization is likely to evaluate a potential collaboration in terms of whether the collaborative advantage it would gain outweighs the direct and indirect costs of collaboration (Hardy & Phillips, 1998; Huxham, 1996a).

2.3 | Tensions between the need to ensure requisite variety and the problems of handling variety

Inter-organizational collaboration creates not only costs, but also various challenges in managing the sensemaking process. While it fosters requisite variety, bringing together multiple frame repertoires makes the coordination of participants more difficult. Maitlis and Sonenshein (2010, p. 572) describe that as a "trade-off" or "tension" between the need for requisite variety in order to understand complexity and the danger of introducing more complexity than can be handled: "Too restricted a set of individuals might lead to limited complexity in the sensemaking system, yet too many individuals may lead to [significant challenges]" (Maitlis & Sonenshein, 2010, p. 572). Maitlis and Sonenshein point out that little is known about how organizations handle this tradeoff, and call for more research on this important issue. Even less is known about this trade-off in the context of inter-organizational sensemaking. While some authors, such as Gray (1985, p. 919), have argued that "[f]rom an information standpoint, the more stakeholders who participate in problem solving, the more effective the collaboration will be," others, such as Huxham (1993), have warned that including too many participants from different organizations can endanger the collaborative process and reduce the likelihood of producing any helpful output at all. In some cases, the problems that managing large numbers of different participants entails might even lead to a breakdown of the collaboration (Hardy et al., 2006; Waddock, 1989).

This directs our attention to the selection of participants of inter-organizational collaborations. In this context, the question is not only how many people are invited to participate in the sensemaking process, but also how diverse the participants are in terms of background with regard to the frames and interests that they bring to the collaboration. Selecting participants for the mere sake of increasing the diversity of frame repertoires might put unnecessary strain on the collaboration process. We expect that, depending on the definition of the meta-problem, a collaboration will require different frame repertoires and thus different participants. The existing literature on inter-organizational collaboration has touched on this issue. Gray (2008, p. 121), for example, has pointed out that the selected collaborators should have a "legitimate stake" in the meta-problem or, as Huxham (1993, p. 605) put it, represent relevant "roles or [stakeholder] values." However, these studies are more concerned with how a specific selection of participants facilitates the enactment of potential, jointly made decisions that result from the exploration of the meta-problem, rather than with how it influences the sensemaking process per se. On the whole, what precise role different frame repertoires play in the process of selecting participants remains under-researched. Against this background, the present study focuses on how those who take part in joint inter-organizational sensemaking processes that are focused on the exploration of meta-problems are selected and how the selection affects the dynamics of collective sensemaking in turn.

3 | METHODOLOGY

3.1 | Research design

Our research questions are exploratory and aimed at theory elaboration rather than theory testing (Eisenhardt, 1989). Given our interest in the unfolding dynamics of inter-organizational sensemaking processes, we chose a longitudinal case-study design (Pettigrew, 1990; Yin, 2014). Using purposeful sampling, we looked for prototypical cases that would allow us to study our subject "in

depth and over time" (Patton, 2015, p. 266). In line with similar studies (e.g., Bucher & Langley, 2016; Kaplan, 2008; Maitlis, 2005; Whiteman & Cooper, 2011), we decided to focus on two exemplary cases, rather than one (Bucher & Langley, 2016), as this helps distinguishing between idiosyncratic and general patterns (Leonard-Barton, 1990). In both cases, representatives of different organizations got together to jointly explore a strategic meta-problem. The respective sensemaking processes began with the identification of a strategic meta-problem and the mobilization of members of other organizations with the aim of joint sensemaking. The processes ended once the participants had developed a "sufficient" understanding of the meta-problem that would allow them to continue the sensemaking processes on their own. Both cases involved a large number of participants from different organizations and many of the discussions concerned the perspectives that other participants could potentially contribute. Who joined and who exited this process had clearly observable effects on the dynamics of the sensemaking process in both cases.

At the same time, there were some interesting differences between the two cases. First, the two sensemaking processes concerned different types of meta-problems; namely, a problem of sustainability ("water as a critical resource") in one case and a problem of business operation ("flexible production") in the other. As a consequence, different kinds of frames and people with different kinds of backgrounds were likely to be relevant to make sense of each problem. Second, the processes of selecting collaborators at the start of the process differed significantly. In the first case, the initial participants came from several different industries; in the second case, the initial participants included only managers of companies from the same industry (i.e., a producer and a supplier). This translated into a difference in the degree of diversity in the participants' industry backgrounds and in the frames they brought into the process. Together, the similarities and differences between the cases helped ensure the robustness of our findings and the richness of our theorization (Eisenhardt & Graebner, 2007).

3.2 | Research setting

The two cases of inter-organizational collaboration that we studied can be described as "exploratory arrangements" (Gray, 1989, p. 242); that is, the sole purpose of setting up those collaborations was to explore particular meta-problems jointly. In the first case, which spans a period of about 6 years, a group of mainly middle and some senior managers got together to explore the issue of water as a critical resource. They organized a series of workshops that lasted from a few hours to several days, one-on-one and larger group meetings, phone conferences, visits to company sites, and exchanges of working documents to discuss different aspects of the issue. Participation over the 6 years varied both in terms of the number of companies and the number of individuals involved. Overall, 12 organizations, with one to three representatives each, took an active part in those events. The participants came from various departments, including strategy, business development, R&D, and production. The larger-scale events, such as workshops, were attended by 15–40 individuals, including occasional visitors who were not affiliated with the participating companies. The second case spanned a period of about 2 years (see also Werle & Seidl, 2015). This too involved a group of middle and senior managers, who organized the same range of activities to explore the issue of flexible production. The occupational background of the participants was very diverse in both cases; however, in the second case, given the nature of the meta-problem, there were more people with a technical background than in the first case. Eight companies, with one to five representatives each, participated in the second case of collaboration. The larger-scale events were attended by 10–25 participants.

3.3 | Data collection

We followed the two cases from the beginning using ethnographic methods and interviews to collect qualitative data from a range of sources (see Table 1). Observations of the participants' activities made up a key part of the data. One of the authors participated in most of the workshops and several meetings. The author offered to take on a support role in some of the workshops, thus gaining access to these events. This approach is in line with Balogun, Huff, and Johnson (2003), who suggested that researchers adopt such methods to ensure close proximity to key events as they unfold. However, in order to reduce the risk of bias in the collection of data that such active involvement might entail (Alvesson & Deetz, 2000), to investigate the second case, we employed an additional, independent researcher, who was present during the meetings and workshops in order to observe the participants' activities. For reasons of confidentiality, this was not possible in the first case. Both observers took detailed field notes of the observations, which they extended and completed within 24 hr of taking them (Emerson, Fretz, & Shaw, 1995). These included notes on the specific contributions of individual participants to the discussions, the reactions of the participants to each other's contributions, as well as on the level of engagement of different people. On these occasions, we also collected or took pictures of artifacts such as flipchart notes, white-board drawings, or paper sketches. Where we were not able to attend meetings or workshops, we tried to reconstruct them on the basis of meeting minutes, participants' narrative accounts of these events in subsequent meetings or workshops, and interviews with the participants.

The second most important type of data were semi-structured interviews. We conducted 80 real-time and retrospective interviews with key participants: 35 in Case 1 and 45 in Case 2. In each case we had two key informants, with whom we conducted several interviews. We also interviewed at least one representative of each participating organization, some of them also several times. We identified the remaining interviewees on the basis of the outcome of earlier interviews and often on the basis of suggestions that our interview partners made. In the interviews, we focused particularly on the respondents' views on particular aspects of the meta-problem in question, on how the respective collaboration developed, and on how they perceived the views and behaviors of other participants. We also posed questions concerning specific events and actions. The interviews lasted 20–90 min and were recorded and transcribed with the aid of a professional transcription service.

TABLE 1 Data sources and types

Data source	Type	Amount/length (Case 1: "water")	Amount/length (Case 2: "flexible production")
Observations	Field notes from workshops, meetings, and site visits	>70 hr	>80 hr
Interviews	Semi-structured interviews with workshop participants and other relevant actors in the process	35 (20–90 min)	45 (20–90 min)
Documents	Presentations, workshop reports, internal memos, agendas, meeting minutes, emails, public documents, architectural and technical drawings, production and infrastructure plots, other material	>300 items	>500 items
Miscellaneous	Photographs from workshops and site visits, sketches and flipchart drawings, handwritten notes of workshop participants, other material	>200 items	>400 items

The third type of data consisted of various types of documents such as workshop presentations, internal memos, agendas, emails, and meeting minutes. These documents provided valuable information not only about events and activities that we had not been able to observe (e.g., email exchanges between participants), but also helped us trace how the participants' understanding of these topics evolved in the course of the discussions they held.

Finally, we collected a range of miscellaneous data such as photos from the workshops and from site visits and handwritten notes that the participants made available. This category of data served various purposes in our research project, such as helping the nonparticipant author gain a better understanding of the events. On the whole, combining these different types of data enabled us to compile rich descriptions and to create opportunities for triangulation.

3.4 | Data analysis

To analyze our data, we followed the example of Gioia and Chittipeddi (1991) and complemented the "inside researcher," who, in our research, had been immersed in these two processes, with an "outside researcher"—in this case the author who had not been involved in the field—in order to ensure "a more objective analysis of the data" (Gioia & Chittipeddi, 1991, p. 436). To further validate the data and our interpretations, we discussed the results of our preliminary analyses with some of our informants. Generally, we followed an iterative approach, circling back and forth between our empirical material, the emerging interpretations, and the literature (O'Reilly, 2005; Orton, 1997). We started our analysis with a broad interest in inter-organizational sensemaking, but were open to following any themes that emerged from the analysis. The most important themes that did emerge in the course of our analysis were (a) the question of how various actors are included in or excluded from participating in the process of sensemaking and (b), how the process of selection affects the dynamics of sensemaking on the group level.

The analysis proceeded in four stages. In line with other examples of research on multiple case studies (Campbell, 2010; Yin, 2014), we conducted each stage of the analysis separately for each case and only compared the respective results at the end of each stage in order to discover differences and commonalities. At the first stage, we created a timeline of the key events for each case, ordered the datasets chronologically, and wrote down rich case descriptions (Langley, 1999). At the second stage, we proceeded with open coding, using the NVivo software to sort the data according to the actors involved and the activities that each piece of data concerned. At this stage, we identified many interesting aspects of the dynamics of sensemaking, which we noted down as potential themes for further analysis.

In the third stage, we compared the themes that had emerged in the analysis of each case and identified the more general, rather than idiosyncratic, themes that we discerned. We took up several of those themes and developed them further, consulting the literature as we did so. Three things caught our attention: first, we noticed that the content of the discussions alternated between negotiations over which issues to include in the joint exploration and attempts to interpret those issues. This directed us to the distinction between bracketing cues and searching for frames with which to interpret cues, which has been drawn in the literature (Weick, 1995). Second, we observed that the negotiations over which issues to explore were often driven by differences in interest. This drew our attention to the role of politics in bracketing cues for the purpose of collective sensemaking. Third, we observed that the selection of issues that the participants wanted to focus on influenced their views on which perspectives would be necessary for the purpose of exploration and, consequently, on which other actors they should invite to join the collaboration. This directed us to the literature on the role of requisite variety in making sense of complex environments.

On this basis, we went back to our data and conducted another detailed analysis of each case, using both the NVivo and Microsoft Excel software. This analysis revealed that, in each case, the process we had examined consisted of distinct phases: phases in which the focal point was bracketing cues and phases in which the focal point was applying frames to interpret those cues. We then coded our data with reference to the following questions: (a) Which issues did the collaborators put forward as cues for sensemaking? (b) Who suggested a particular issue or a particular interpretation of an issue, what prompted this participant to do so, and how did the participant try to convince others to accept the suggestion? (c) How did other participants react to the suggestion? (d) Which actors were invited to take part in the collaboration and for what reason? (e) How did the collective understanding of the participants change over time, as manifested in (more or less) shared narrative accounts of the issues at hand?

In the fourth stage, we used the results of the detailed analysis we had derived in the preceding stage to identify the temporal dynamics of the two processes of sensemaking. We did this for each case separately and then compared the patterns we identified in order to discern the mechanism underlying the identified dynamics. The variations we noted, such as differences in the initial conditions in each case and differences in the disruptions of their sensemaking processes that each group of organizations faced, allowed us to examine how the same mechanism behaved in different conditions and thus helped us sharpen its description. On the basis of the results we derived at this stage, we developed a general process model that summarizes our argument.

4 | TWO CASES OF INTER-ORGANIZATIONAL SENSEMAKING

In this section, we present narratives of our two cases of inter-organizational sensemaking on strategic meta-problems using representative quotations and excerpts from our field notes and documents (note that for reasons of confidentiality all company names are pseudonyms and that some quotes from the second case have been translated into English). On the basis of the findings reported here, we developed a process model of inter-organizational sensemaking (see Figure 1), which we introduce already at this point in order to facilitate the understanding of the narratives.

Our process model is structured around three central boxes that represent the three basic elements of sensemaking that Weick (1995) identified: a set of bracketed *cues*, a repertoire of *frames* (including actors and their respective interests), and the *relationship between frames and cues.* In the model, we differentiate between two phases of the inter-organizational process of sensemaking, which relate differently to these three elements. The first phase concerns the dynamics involved in bracketing a set of cues derived from the meta-problem for further sensemaking. Depending on their interests, different people will bracket different sets of cues and will require different sets of frames to interpret them with.

If the participants do not have access to all the frames that they consider necessary, they will try to identify people from other organizations who might have those frames in their interpretive repertoire and invite them to join them (arrow 2). These new participants, however, may be interested in different cues, so when they join the collaboration, they may try to change the set of bracketed cues (arrow 1). This, in turn, may change the set of frames that are considered necessary and the constellation of participants (arrow 2). If no match is achieved between the set of bracketed cues, the frame repertoire, and the participants' interests, the collaboration will break down and the participants will

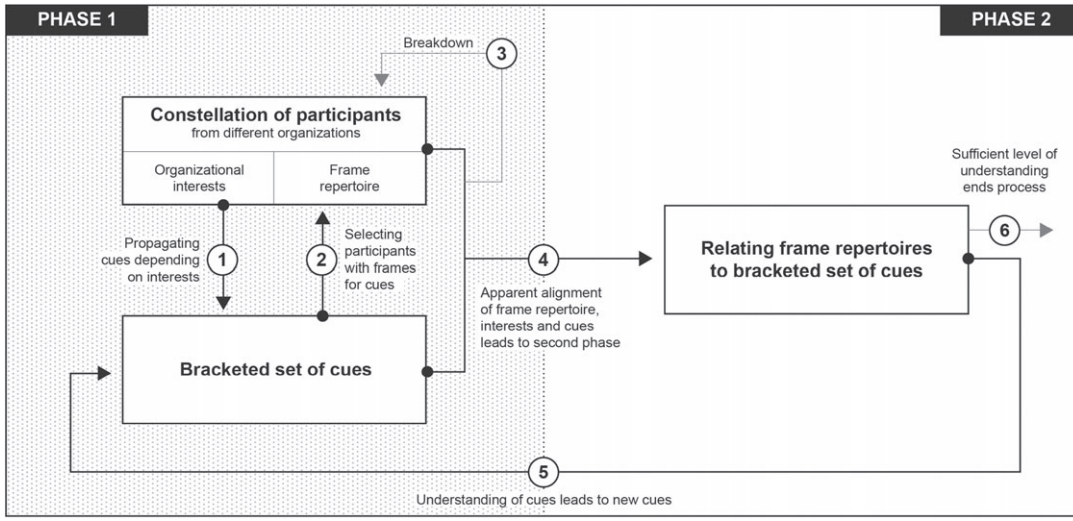

FIGURE 1 The interplay between cues, participants, and their interests in inter-organizational sensemaking

probably disperse or try to set up a new collaboration (arrow 3). However, if the participants come to an agreement on the set of cues they should bracket, the first phase will lead to the second phase.

In the second phase, the participants try to relate the frame repertoire to the cues (arrow 4). This process may eventually lead to a shared understanding of the bracketed cues and have either of two outcomes. The first possible outcome is that the participants will identify new cues to make sense of jointly; this will set in motion a new cycle of sensemaking that will involve fresh negotiations over which cues to bracket (arrow 5). The second possible outcome is that the participants will feel that they have reached a sufficient level of understanding of the meta-problem to continue the sensemaking process individually, in which case, the entire process will end (arrow 6). Each of the two narratives that we present next comprises two complete sensemaking cycles. To distinguish between the two cycles, we labeled the respective phases Phase 1_1 and Phase 2_1 for the first cycle and Phase 1_2 and Phase 2_2 for the second cycle.

4.1 | Narrative 1: inter-organizational sensemaking on "water as a critical resource"

4.1.1 | Point of departure

The inter-organizational collaboration that was set up to explore the topic of water as a critical resource was initiated when the managers of three companies, EnerCo, MinCo, and WatenCo, who happened to attend the same event of an industry initiative, met up and realized that they had all been troubled with various concerns about water. All had been confronted with media reports about the critical role of water in the global ecosystem, discussions in their respective industries about water as a precarious resource, and water-related problems in their operations. The managers realized that the water problem was of strategic significance and, for that reason, referred to it as "the next big crisis" (Manager, MinCo). However, they felt unable to make sense of the water problem individually. As one manager stressed, "there was confusion, there was almost a little bit of a shock." Furthermore, they were all at a loss as to how to answer the question "how do you begin to do something about it?" (Manager, EnerCo). As one of the managers of MinCo explained, the water problem is "difficult to deal with because there are so many […] dimensions of water" (Manager, MinCo) and another manager, who got involved a little later, explained that "the problem with water

is, it's not a single issue. It is about thirty different issues that all just happen to be connected by the molecule of H_2O" (Manager, ConCo). In theoretical terms, the water problem was a meta-problem (Cartwright, 1987; Hardy et al., 2006): the managers were confronted with many interrelated cues for which they lacked the necessary frames. To deal with this challenge, the managers suggested collaborating in order to benefit from each other's knowledge of different aspects of water (Figure 1: arrow 2). One manager who joined the group a bit later explained what motivated them to collaborate: "So, lots of what I would say would be joined-up thinking. To emerge from companies. I think that [it] all comes from […] the ability or the realization that working together, you can do a lot more than trying to solve it by yourself" (Manager, UtiliCo).

4.1.2 | Phase 1_1: Negotiating over cues and mobilizing participants

Propagating different cues (arrow 1)

Once they had agreed to collaborate, the managers of the three companies got together to discuss the issues on which they should focus in their joint exploration. In theoretical terms, the managers debated which cues they should bracket for further sensemaking. It quickly became clear that, as a result of their different industry and company backgrounds, they were interested in and propagated different sets of issues. For example, as a company in the extractive industry, MinCo had been exposed to some water-related conflicts with their stakeholder and, as one of their managers explained, "in that sense, we hit the wall." For that reason, the MinCo managers were particularly interested in gaining a better understanding of the issues that were associated with the company's stakeholders. As a participating MinCo manager explained: "with [MinCo] the experience that we had, it was more the engagement with the stakeholders beyond the fence—how you do that, what's the best approach to do that—and I think that was what we were trying to make sense of. And that was the key for us." In contrast to that, the managers of WatenCo, whose core business involved "contracts and licenses with national, more usually local governments" that had to do with sanitation and water management, had been confronted with inconsistencies in how different people perceived water in different places and at different times. Accordingly, they wanted to focus the exploration on these issues. As one manager explained, "there are a lot of different uses of water […] and [...] we must address this issue properly if we want not to have big problems in the future" (Manager, WatenCo). The managers of the energy production company EnerCo, in turn, had been confronted with the unexpected impact of its own water usage in oil and gas exploration on water availability for agricultural purposes. For example, as a note in a workshop memo indicates, they were surprised to find that in some countries, "using excess production water [from oil and gas exploration]… is not possible because of the reluctance (cultural mindset) that waste-water should be used for agriculture." Against this background, the EnerCo managers were particularly keen to explore issues that had to do with how water, energy, food, and climate change are interconnected.

The differences in interest that we observed led to some intense, but for the most part friendly, negotiations between the participating managers of EnerCo, WatenCo, and MinCo. Each tried to convince the others that the issues they had suggested concerned everybody. However, the managers soon realized that they would have to compromise for the collaboration to work. Eventually they agreed that instead of choosing any particular one of the proposed sets of issues to focus on, their exploration should cover some stakeholder issues, some issues about regional differences and some links to food and climate change, all of which the managers intended to address in the form of scenarios. As the following excerpt from the minutes of a meeting shows, the participants grouped their selection of issues into "three main focus areas […]: availability of water in water-stressed locations,

the role of water in poverty alleviation, and growing water related dangers and risks (e.g., the impact of climate change)."

Selecting participants with relevant frame repertoires (arrow 2)

Having come to a provisional agreement on the set of issues they would focus on, the participants felt that they still lacked sufficient knowledge that would enable them to explore the issues they had selected and how they interrelated. As one manager explained, the participants thought that they would have to go beyond their own "narrow views" to bring into the project a "variety of perspectives" from a wider range of companies. As a result, they sought and invited to join the collaboration people from other companies, who would bring into the discussion different perspectives. A WatenCo manager described this process:

> Now, one of the things that we did […] with the companies participating in the project, was [that] we asked everybody "who are good 'resource people,' who should we bring into this process?" And so we had a long list of suggested names and we followed up on that. (Manager, WatenCo)

One name on the list was ConsuCo, whose managers had a lot of experience in managing water and were thus expected to possess knowledge relevant to a number of the selected issues: "they were far enough ahead of the curve on a number of […] aspects of water management that there was a lot that they could share with others and say, well, this is, you know—these are the sorts of things that you can be doing to manage water better" (Manager, WatenCo). Another suggestion was CheManCo, which had developed a particular approach to dealing with water-related issues and could thus contribute a valuable perspective on some of the issues at hand. One of its managers explained why his company had been selected: "I think I was able to bring a little bit of a different perspective because what I was looking for was different [from what the rest were looking for]." The participants were also keen to include a range of perspectives from different but relevant industries, including finance, consumer goods, and utilities. As a ConsuCo manager explained, to be able to properly explore the selected issues "you actually want a variety of perspectives across sectors that is far bigger than the variety of perspectives within a sector" (Manager, ConsuCo). In line with this view, the participants turned down interested companies that came from the industries that were already represented in the project. Eventually, managers from seven companies (BanCo, ConsuCo, UtiliCo, CheManCo, EngiCo, ConCo, EnCo) "who were selected to have different views" (Manager, WatenCo) agreed to join the collaboration.

New participants with different interests try to change the set of bracketed cues (arrow 1) resulting in a partial breakdown (arrow 3)

The new participants differed with regard to the interest they took in the set of issues that the three initial parties had agreed on. Some were pleased with the selected issues, because they were close to what concerned their companies. For example, a CheManCo manager explained, "The industry was changing. We didn't understand really what was going on and so we felt this was a good way to get a nice overview if you like." Others, however, such as the managers of the banking corporation BanCo, were not that interested in the suggested set of issues. They argued that those issues were "kind of far away from the reality in a bank" and that the focus on those issues meant that their participation would not be "supported anymore by their bosses" (Manager, BanCo). The issues they were trying to understand were very different. Having recently started to get involved in financing projects on water infrastructure in developing countries, they had been primarily concerned with

understanding the particularities of financing water-related projects, asking questions such as, "What kind of financial products can we put into a market related to water?" (internal memo). Consequently, BanCo hoped to refocus the joint exploration on such issues. As a leading BanCo manager explained, "that was why I was beginning to try to steer [the negotiations] a little bit different." The BanCo managers even threatened to leave the collaboration and establish their own group of collaborators, if the other participants refused to change the selection of issues for sensemaking. The issues they proposed that the group should explore included possibilities of "blending public and private financing to provide long-term loans for water and sanitation infrastructure projects in small to medium-sized municipalities in emerging countries" (workshop report). However, this set of issues was only of little interest to the other participants, who rejected the proposal. This led the collaboration to a temporary breakdown (arrow 3).

The other participants felt that the BanCo managers would contribute an important perspective that the group lacked, so they were keen to keep them on board. As a result, one of the EnerCo managers started fresh negotiations by proposing a slight change in the set of issues; namely, focusing more on the "financial parameters" of each issue and on how the activities that each entailed could be financed. After consulting with all the other participants, he managed to get them to accept the proposal. As one participant described it, "I guess you could call it a process of getting buy-in by consulting with other working group members." Eventually, even the BanCo managers gave in to this suggestion, realizing that they would not be able to get together enough participants to launch a separate collaboration project. Moreover, they felt that this slightly revised set of issues was close enough to their interests. As a BanCo manager acknowledged later on,

> you start with a whole bunch of companies and their different ideas, and then one wins it. And that's good! And in this case, it was [the EnerCo manager's revised proposal], and I think that was good for the [collaboration] that it went that way, so I supported that and not my own initiative. (Manager, BanCo)

In hindsight, as one of the participants explained, reaching an agreement on the set of issues the group should address was critical to the success of the collaboration: "The success of a partnership is to be able to articulate the common—a common—problem that you […] want to tackle" (Manager, ConsuCo). Hence, after about a year of intermittent talks and meetings, once all participants had agreed on the set of issues they would explore, the first phase ended.

4.1.3 | Phase 2_1: Applying the participants' frames to the bracketed cues

The negotiations of the first phase resulted in an agreement on the issues the collaborators would explore, but the actual exploration only started in the second phase. In the beginning of this phase, as one manager recalled, "I had very clear views, but not necessarily on the content of the—you know, what we were trying to achieve, what does it look like—no other than it should help to clarify the issues" (Manager, EnerCo). The aim of this part of the process was "to create a deeper understanding of the issues" (Manager, WatenCo). Compared to the earlier phase, the interactions between the participants were less marked by conflict and a divergence of interests and more by an appreciation of each other's perspectives. For example, the EnerCo manager, who in the earlier phase had competed with others over which set of issues to focus on, now explicitly acknowledged the value of having different perspectives on the issues they were discussing. As he stressed: "I was there to learn as much as to give. So I didn't have a feeling that I was steering. I was actually learning a lot, so I used that period to educate myself and understand the complexities myself" (Manager, EnerCo). Another manager stressed that the point "was to be as open-minded and to expose ourselves to the accidents of this process, which can be constructive, as much as possible" (Manager,

WatenCo). This also meant that the participants reflected more on how they could contribute to the discussions. For example, a CheManCo manager explained that he "was able to work out really where we [i.e., the CheManCo managers] were able to participate in that and where the value was that we could bring." This did not mean that all views on the issues at hand were uncritically accepted by everybody; however, the participants felt that the different perspectives enriched the group's collective understanding of those issues, instead of competing with each other. This is also evident in the following description of a debate about a particular issue:

> We had some debates about [one participant's] views on whether there would be wars around water or not. We struggled with it in the discussions, trying to understand different points of view of others but I wouldn't say that there were major differences. I think it is more, had we taken care of all the aspects which are important. (Manager, EnerCo)

In contrast to the first phase, where the collaborators attempted to influence each other according to their company's interests, in the second phase the participants invited each other to contribute their perspective and the expertise on which it rested with regard to specific issues. A WatenCo manager explained:

> I could have had a very narrow water and sanitation-man's view of it, somebody else might have a water quality vision. [EnerCo] has another view, again because water's a bloody nuisance down oil wells. We might all have our narrow views of this and so I think it was probably useful for everybody to have a discussion with people who were selected to have different views. (Manager, WatenCo)

As the participants had agreed to explore the issues in the form of scenarios, expertise in constructing scenarios also played a role in this phase. In particular, an EnerCo manager was asked by the other participants to "lead or facilitate the process" due to his general expertise in the scenario method.

After about one and a half years, this process eventually resulted in a shared understanding of the agreed set of issues. The participants spoke explicitly about having arrived at a "collective mutual understanding" (Manager, EngiCo) and that they had managed to "build up the understanding of the complexity [of water]; and actually all aspects which came or were discussed […] found a place" (Manager, EnerCo). This shared understanding manifested itself in a jointly developed and approved narrative account, which was also documented in a formal report. In this account the selected issues were described as manifestations of five interrelated drivers: ecosystems, demographics, legacy infrastructure, politics, and governance (report). As one manager stressed, the discussions had resulted in a "real understanding that I am using still" (Manager, EnerCo). Another manager explained that "what I felt we'd learned was very much a journey of understanding" (Manager, ConsuCo).

4.1.4 | Phase 1_2: New round of negotiations about cues and mobilizing participants

Emergence of new cues (arrow 5) and differences in interest in the cues (arrow 1)

As is typical of meta-problems (Cartwright, 1987; Werle & Seidl, 2015), the gained understanding of the selected issues brought new challenging issues to the fore. This started a new sensemaking cycle, which the participants embarked on after a break of a couple of months (arrow 5). As one participant described it, "there were several issues which were picked up along the way" and of which everyone became more aware. However, because of their different organizational backgrounds, the

participants had different concerns in relation to the selection of issues to explore. While some participants were interested in a focused, in-depth exploration of some few particular issues, others disagreed with the suggested focus, propagating a different set of issues for the exploration. As a ConsuCo manager explained, "for industries where certain details are more important, they resist over-simplification. And for industries that don't particularly see certain aspects of the issue, they don't see why it should be given such equal weighting." Hence, similar to Phase 1_1, in this second iteration of the first phase too there were conflicts over which issues to explore. Some participants noted that a "sort of tension existed in the conversations" that took place (Manager, ConsuCo) and some even thought that "there was *a lot of* tension in that workshop" (participant). For example, the ConCo managers pushed the group to focus on the issue of "local access to water [related to food and security]," whereas the CheManCo managers' primary concerns were water infrastructure and some aspects of the problems that the availability of water caused in the supply chain.

In the end, the sets of issues competing for the participants' attention were reduced to two. An EnerCo manager suggested that the group should focus on exploring issues related to the "interconnectivity between food, energy, water, security, climate change" (Manager, EnerCo). The same manager had already made a similar suggestion in the initial discussions in Phase 1_1. The counter-suggestion of an EngiCo manager concerned the challenge of "assessing a company's water footprint," on the grounds that "a key challenge for business in the near future will […] be to demonstrate and communicate credibly on its water 'performance'" (workshop report). The EnerCo manager justified his suggestion by explaining that all participants needed to "ask [themselves], you know, how do we measure that, how do we report that, how do we do that?" (Manager, EnerCo) with regard to a whole set of issues concerning ways of assessing water consumption, capturing its impact, accounting for differences in local contexts, responding to expectations about reporting, and so on (meeting minutes).

After some intense discussions, the EngiCo manager succeeded in securing the support of most participants for his own suggestion. In view of this level of support, even the EnerCo manager, who had proposed the alternative set of issues, announced that he would support that choice, because he realized that every company would eventually "be held accountable for its water use." However, the managers of three other companies, CheManCo, WatenCo, and BanCo, did not consider this set of issues relevant enough to their companies to continue investing time, energy, and financial resources in the collaborative project and started to withdraw. In contrast to Phase 1_1, the participants did not consider the perspectives that these three companies brought to the project, including that of BanCo, so important for tackling the new set of issues as to try to keep them engaged in the collaboration by modifying the set.

Selecting participants with relevant frame repertoires (arrow 2)

Having agreed to explore the issues that related to ways of measuring a company's water footprint, the participants discussed what other perspectives would be needed for exploring these issues and whether there were any potential collaborators that had the respective knowledge and experience. For example, one manager, whose advice on potential collaborators was sought, suggested "go talk to […] DrinCo—water is DrinCo's biggest income grower in their portfolio; [you] should go talk to DrinCo!" (internal document). As another participant explained, DrinCo was suggested as a company "that had been working on water for some time, quite seriously." Thus, the participants started to approach the managers of various companies and tried to persuade them to join the collaboration. The participants, as an EngiCo manager explained, "worked to get others to join in […] and we

went up our network and persuaded companies […] to join the process." As a result of these efforts, managers from two companies, DrinkCo and PharmaCo, agreed to actively participate in the exploration of the issues that related to water measurement, which they considered were of importance to their companies.

4.1.5 | Phase 2_2: Applying the participants' frames to the bracketed cues

Once the participants had reached this agreement, which had taken them about half a year of intermittent talks, they started exploring the set of issues they had agreed on. As in Phase 2_1, the discussions were no longer marked by attempts to influence other participants, but by their appreciation of each other's expertise and by contributions to the group's understanding of the issues at hand. The participants were encouraged to bring in their expertise and "engage proactively" (report) in the discussions and to aim for "common messages to start alignment among [the] members" (report). Recognizing EngiCo's particular experience in developing measurement tools, one of its managers was asked by the other participants whether he was willing to facilitate the discussions such as the EnerCo manager had done in Phase 2_1. As the EngiCo manager later recounted: "[The EnerCo manager] was the champion of the scenarios [i.e., Phase 2_1]; he ran with the baton and had the energy to make that go forward, and then I took the baton and ran with the [project on metrication issues] after that."

The discussions eventually resulted in a shared understanding of water metrication, which was embodied in a collectively developed and approved narrative account of a particular method of measuring. This was documented in various reports and involved developing metrics to "map [a company's] water use and assess levels of corporate risk across their global operations and supply chains" (internal document). As one of the managers explained, the method of measuring each company's water usage was based on "a portfolio understanding of where they were using water in relation to water availability and sanitation availability, and so on" (Manager, EngiCo).

This newly gained shared understanding of water usage marked the end of the second phase (arrow 6), which had involved multiple workshops and meetings and had stretched over a period of two and a half years. The participants felt that they had gained a sufficient level of understanding to continue exploring those issues on their own. The ConCo managers, for example, continued the discussions internally trying to "come[s] up with anything that is more usable [within their particular context]" (Manager, ConCo). The manager of EnerCo, however, who had not been able to mobilize support for the set of issues relating to the "interconnectivity between food, energy, water, security, climate change," which he had promoted in Phase 1_2, subsequently tried to set up a new collaboration that would focus on that set.

4.2 | Narrative 2: Inter-organizational sensemaking on "flexible production"

4.2.1 | Point of Departure

In contrast to the first case, in the second case the inter-organizational collaboration on making sense of flexible production can be traced back to the initiative of the managers of a single company, MobCo. The managers of MobCo had been confronted with a set of novel challenges to production, which, as one of them explained, were associated with a "shortage of raw materials," "increasing [product] variety," and "more and more globalized production," all of which pointed to the need to make production more flexible. The managers in one of the company's strategy departments recognized that increasing the flexibility of production was of strategic importance. However, they felt overwhelmed by the complexity of the topic. As one manager stressed, "This was a strategic topic [that] we were not able to capture and grasp in its entirety." As they had done in the past when faced

with complex strategic issues, MobCo's managers approached the managers of a key supplier, SupCo, "as a partner to collectively and in partnership [explore the topic of flexible production]" (Manager, MobCo). SupCo seemed a particularly suitable collaboration partner because there were "enough intersections" between the companies and because of its "proximity," which meant that the "information channels [would be] short" (manager, MobCo). This marked the beginning of their joint sensemaking process.

4.2.2 | Phase 1_1: Negotiating on cues without reflecting on necessary frame repertoires

Propagating different cues (arrow 1)

As in Phase 1_1 of the first case, the members of the two companies propagated different sets of issues for joint exploration. The MobCo managers were interested in exploring issues related to the process of production and particularly how the "mutability [of infrastructure]" could facilitate a "product-independent production" (Manager, MobCo). The SupCo managers, in contrast, were less interested in issues related to production processes and more in how a product's characteristics can increase flexibility in production. For instance, as one SupCo manager mentioned, they wanted to find out whether it made sense "to restrict the development of product variety in order to achieve a higher flexibility in production." Despite these differences in interests, relations between the collaborators remained very friendly, most probably also because the two companies had a strong business relationship, which the participants did not want to jeopardize. After about 3 months of intermittent talks, the participants agreed to explore "in which areas of their cooperation flexibility would be particularly relevant" (observational notes). However, this agreement was only superficial as the question left open what particular issues were to be covered. In this sense, it glossed over the fundamental differences in the companies' interests. Perhaps as a result of this vagueness, the collaborators did not discuss what other perspectives they might need to apply in order to address this question and which potential partners they should invite to join them (arrow 2).

4.2.3 | Phase 2_1: Differences in focus on cues inhibits the application of frames (arrow 4)

The lack of clarity as to the set of issues the partners would explore made it harder for them to engage with each other's perspectives. As a consequence, in the second phase the discussions were marked by differences in the companies' interests and the lack of a common aim. For example, the MobCo managers, who were interested in production processes, focused on issues such as the "flow of materials and components," "owning versus using," "functions as a service," or the advantages of "more modular production," whereas the SupCo managers were more interested in issues related to achieving flexibility through specifications of the product. As a result, one of the managers complained that "the wheel [had] become significantly bigger than we thought" (Manager, SupCo). The issues that MobCo focused on, they claimed, were too far removed from the reality of their own company. MobCo's managers, in turn, frequently criticized the SupCo managers for having "too narrow" a set of issues and pointed out the need to "open up the topic." This led to some intense discussions; as a MobCo manager said, "from our viewpoint, a conflict arose."

Over time, the discussions became increasingly fragmented. While the MobCo managers pressed ahead with the exploration of the issues they favored, the SupCo managers became increasingly alienated and repeatedly complained that they had "lost 'traction' again" (Manager, SupCo). The MobCo managers, however, did not pay much attention to the SupCo managers' complaints. They went ahead with their exploration and started to interview production experts from other industries to learn about "best practices that other industries use," as one MobCo manager said. As a result of

that, the MobCo managers came to see that flexible production did not concern only the supply chain, as they had previously assumed, and realized that "to achieve flexible production one has to work [with different industries]" (Manager, MobCo). This view, which was not necessarily shared by SupCo's managers, raised new issues about novel forms of interaction between companies from different industries. MobCo's managers believed that they needed to extend the set of issues to address in order to gain a proper understanding of what these entailed. They also felt that the discussion with the SupCo managers had led into a "blind alley" (observation notes), which hampered their effort to understand and would certainly not allow them to explore the newly identified issues. As a result, they decided to set up "the project differently" (Manager, MobCo). This marked the end of the second phase, which had lasted about 3 months, and the beginning of a new sensemaking cycle (arrow 5).

4.2.4 | Phase 1_2: Defining a new set of cues and mobilizing participants

Propagating a new set of cues (arrow 1)

Relying on the insights they had gained in Phase 2_1, the MobCo managers started discussing again what issues to explore, which they summarized in the form of a deck of slides that described "impulse clusters for flexible production" (document) and included many "cross-industry aspects." As before, the SupCo managers criticized the suggested issues as not really relevant to their company and, as a MobCo manager put it, wanted "to focus on [technological] issues that they were already familiar with from their own context" instead. The MobCo managers, however, did not consider SupCo's perspective particularly useful for exploring the set of issues that the former were interested in, so they did not pay much attention to the SupCo managers' concerns. As a result, the SupCo managers withdrew from the collaboration.

Selecting participants with relevant frame repertoires for new set of cues (arrow 2)

As the SupCo managers withdrew, the MobCo managers started looking for new potential collaborators. They had come to realize that the issues they wanted to explore required the involvement of managers from other industries. As one MobCo manager explained, the group tried to identify "other industries such as the one of [InfoCo] that we needed in order to understand at least part of the topic. For that purpose, we mobilized different networks and said, 'Do you know anybody who could make a contribution to that topic?'."

However, given the experienced challenges in collaborating with SupCo, the MobCo managers tried to approach only people who were likely to be interested in the set of issues they had chosen to explore. As one of the managers explained: "The partners were selected in such a way that they could identify with [the issues]," such that "only those people who were interested in the topics and who, so to say, could relate to [them] found each other." For example, ElectriCo's managers shared MobCo's interest in a particular issue because, as a MobCo manager explained, "ElectriCo […] had the same concern because they had to build a new plant due to a new product." Eventually, the MobCo managers convinced the members of six other companies (InfoCo, ChemCo, TechCo, EquiCo, ElectriCo, and AdviCo) to participate in the joint exploration of the issues MobCo wanted to make sense of. As these participants had already been selected precisely because they were likely to share MobCo's concerns, there were subsequently only minor requests for changes in the set of issues the group would explore, which did not cause much conflict among the participants (arrow 1). The collaborators summarized this set of issues in the form of a pie chart, whose "5 key areas of flexible production" they labeled as follows: "production concepts and infrastructure," "human

capital," "new logic and business models," "data infrastructure," and "cyclical models" (report). Thus, after about 3 months of talks, the collaboration entered Phase 2_2 (arrow 4).

4.2.5 | Phase 2_2: Applying the participants' frames to bracketed cues

In contrast to Phase 2_1, there was a clear agreement on what issues to focus on. The managers demonstrated their appreciation for each other's perspectives and actively encouraged each other to interpret the issues in question on the basis of their industry-specific expertise: "Don't put yourselves in MobCo's shoes," urged one MobCo manager the managers of other companies, "bring in your own expertise! [Ask] what does this mean from the perspective of 'my industry'?" (observational notes). In response to such calls, the representatives of different industries made presentations in which the selected issues were explored from their industry's perspective. As in the water case, here too the other participants asked a MobCo manager to facilitate the discussions. The manager they approached had experience in dealing with cross-industry projects and was in contact with experts in cross-industry work.

This process eventually resulted in a shared understanding of the identified set of issues, which manifested itself in the collective development of a shared narrative account that was summarized in a report and visualized in a PowerPoint figure. This new understanding involved "shifting [the] flexibility of production to [the] flexibility of materials" (observational notes) and explaining different aspects of flexibility on the basis of coordinating the flow of material across industries in "flexible cross-industry production cycles." This new understanding was hailed as a revelation and the collaborators stressed that it had emerged thanks to bringing together different perspectives. As one manager pointed out, "the heterogeneity of different industries and functions—innovation, strategy, production—was good and very important for developing [our] understanding" (Manager, MobCo). The same manager added that it was important to have "those parallel perspectives and to be able to relate them to each other. This wouldn't have been possible with a single strategic partner" (Manager, MobCo).

This marked the end of Phase 2_2, after a bit more than a year. As in the final phase of the water case, in the respective phase of this case too, most participants were satisfied with the level of understanding they had gained and now concentrated on "interpreting the results for their own specific context and [adapting them] to their own processes" (Manager, MobCo). This led to the dissolution of the group as such (arrow 6), after which some of the participants engaged in other initiatives.

4.3 | Cross-case comparison and the underlying mechanism of inter-organizational sensemaking

The descriptions of the two cases show many similarities as well as some interesting differences. In this section, comparing the two cases in some more detail allows us to elaborate on the elements of the empirical model that we introduced earlier (Figure 1) and to identify the underlying mechanism that gives rise to the dynamics we observed. We will start by comparing how participants and the repertoire of frames that each represented were selected. In both cases the actors reached out to colleagues from other companies in order to bring in frames, or "perspectives," as they called them, that could help make sense of the novel cues (i.e., issues) they wanted to explore. The focal actors concentrated on frames associated with the participants' industry or company background. Except in Phase 1_1 of the second case, there were explicit discussions about which potential partners should or should not be invited to participate in the exploration on the basis of the perspectives each might contribute. For instance, one of the managers explained that they had "asked everybody […] 'who

are good resource people, who should we bring into the process?'" and added that the new partners were selected on account of their "different views." Which perspectives, and therefore which participants, seemed relevant depended on the cues the focal actors had selected, so in the second cycle, where a different set of cues was selected, the focal actors regarded a different set of participants as relevant. For the same reason, in the first case, the participants were very keen to keep the BanCo managers on board in the first sensemaking cycle, but did not object much to their withdrawal in the second.

However, in Phase 1_1 of the second case, we see an interesting variation of this general pattern. To choose their partners in exploring the issues, the MobCo managers had followed their "standard approach" (Manager, MobCo) and contacted one of their strategic partners, SupCo. Their choice was largely driven by pragmatic considerations, including geographic "proximity" and existing "intersections" between the companies, rather than an effort to access a specific repertoire of frames. In contrast to the first phase of the first case, the focal actors did not reflect on the frame repertoires and partners they might need in order to make sense of the selected issues. This was probably partly a result of lacking a clearly defined set of cues, which would have served as a point of reference for discussing relevant frame repertoires. As a consequence, the group lacked the requisite variety of frames with which to make sense of the issues that the MobCo managers were interested in. As we saw, this was also explicitly acknowledged in hindsight by the participants themselves.

We also compared how the differences in interests influenced the bracketing of cues. In both cases, in Phase 1_1 and Phase 1_2 we saw that the participants' organizational background influenced the cues they were interested in. The participants did not necessarily differ in the extent to which they regarded those cues as puzzling, but they differed as to whether they thought that making sense of those specific cues was relevant to their companies and hence worth the effort, such as when participants complained that the suggested set of issues were "kind of far away from the reality of [their particular company]" (Manager, BanCo). Engaging in such collaborations involves considerable "resources of financial contribution and time" (internal document), so some participants left the collaboration when the cues that the rest had selected no longer matched their interests (particularly in Phases 1_2 of both cases). In both cases, the participants also employed various tactics in order to get their partners to agree to focus on the cues the former favored. As we described in detail, these tactics included appealing to the other participants' interests and threatening to withdraw if the rest refused to focus on their chosen cues.

In both cases, we also found that in the first phase, the constellation of participants' interests became eventually aligned with the sets of selected cues. This marked the transition to the second phase. Here, however, we also observed some interesting variations. In the water case, in Phase 1_1 the process of alignment temporarily broke down, when the BanCo managers threatened to withdraw from the collaboration. The discussions only got restarted because one of the managers tried to forge a compromise and because the BanCo managers failed in their attempt to set up a separate collaboration. This example shows that such processes can fail before they even reach the second phase. Another interesting variation we observed in Phase 1_1 of the second case was that the participants resorted to a vague description of the selected set of cues, thus glossing over the differences between the sets of cues the participants were interested in. This gave the participants the impression that their interests and the selected cues were aligned, although in actual fact they had different views of what cues they had agreed to. This seeming alignment marked the transition to the second phase; however, it impeded the subsequent process of sensemaking, to which we will return further down. A third variation was evident in Phase 1_2 of the same case. In this phase the newly included participants accepted the set of cues that the MobCo managers had suggested with only minor modifications, because the MobCo managers had selected potential candidates on the basis of their frame

repertoires as well as their interests. As one manager had put it, "[t]he partners were selected [so] that they could identify with [the issues at hand]." However, it may not always be possible to match the participants' interests with a suggested set of cues when selecting new partners, particularly when only few people with specific frame repertoires are available (as in the BanCo example).

The third area of comparison concerns the application of the frames to the set of bracketed cues in the second phase. Apart from Phase 2_1 of the second case, the interaction in the second phase was very cooperative and very different from the interest-driven negotiations of the first phase. The participants showed that they took on board the differences in their frame repertoires. As one manager had said, they found it "useful for everybody to have a discussion with people who were selected to have different views." In this phase, the participants tried to benefit from the different frame repertoires that they applied. One explanation for the cooperative mode of interaction that we observed is that once the participants had agreed on a set of cues that was in line with everyone's interests, the only reason for collaborating in the second phase was the diversity of frame repertoires that the different participants brought along. Furthermore, it probably helped that they had agreed on having one participant facilitate the discussions and the integration of different ways of interpreting the issues in question.

Phase 2_1 of the second case displayed an interesting variation in this pattern. Here, the interaction among the participants was largely marked by tension and competing interests. The main reason for that conflict was that the participants had not agreed on a set of cues that were relevant to all of them. Moreover, in the preceding phase, differences in the degree to which the selected cues were relevant to different participants had been glossed over, rather than addressed. This meant that as the participants tried to apply various frames to the selected cues, at the same time they negotiated over which cues they should focus on. As a result, the diversity among the participants was largely seen as an impediment to interpreting the cues, instead of being appreciated.

We also observed that the outcome of the second phase followed a general pattern in both cases. With the exception of Phase 2_1 of the second case, in the second phase the participants achieved a shared understanding through discussion, which was manifested in jointly developed narrative accounts. To the extent that the participants felt that they had gained a sufficient level of understanding to continue the sensemaking process on their own, the collaboration ended (in Phases 2_2 in both cases). Where this new understanding had brought new cues to the fore that the participants felt a need to address, the group embarked on a new cycle of joint sensemaking (in Phase 2_1 of the first case). In contrast to that, in the second case Phase 2_1 did not result in an adequate shared understanding of the issues in question, because of a lack of variety in frame repertoires and because the ongoing negotiations about what cues to focus on fragmented the process of sensemaking. These two points highlight the negative consequences of failing to align the set of cues, the frame repertoires, and the participants' interests before the second phase starts.

We will now take a closer look at the mechanism underlying the general patterns we described. In both cases and in all phases, the dynamics that we described could be traced back to the interplay between the participants' interests, the sets of cues, and the frame repertoires. The fact that every individual represents a particular combination of frame repertoire and interests is key to understanding this interplay. This means that when a group selects new collaborators in order to access their frame repertoires, the original members of the group will inevitably be confronted with the new collaborators' interests with regard to the selection of cues. The dynamics we observed in the two cases can be seen as the result of an alignment or misalignment between the collaborators' frame repertoires and interests in particular sets of cues. In the first phase, we saw that partners who brought a needed frame repertoire into the collaboration but were not interested in the set cues on which the rest intended to focus tried to change that selection (in Figure 1: arrow 1). Given that such

collaborations involve several people who represent different combinations of frame repertoires and interests, changes in the set of cues create potential misalignments with the interests and frame repertoires of other participants. This leads to potential changes in the constellation of participants and in the selection of cues (arrows 1 and 2). This dynamic process continues until either all participants' frame repertoires and interests become sufficiently aligned with the selected set of cues (arrow 4) or, if this proves impossible, the process breaks down (arrow 3).

The change between the dynamics of the first and the second phase (i.e., interest-driven negotiations versus cooperative interactions) can be seen as a direct result of the initial misalignment and eventual alignment between frame repertoires, interests, and cues. In the second phase (apart from Phase 2_1 of the second case), all the participants shared an interest in applying the available range of frame repertoires to make sense of the agreed set of cues. This is also why the dynamics of the second phase looked very different in Phase 2_1 of the second case, when the participants falsely assumed that their frame repertoires, interests, and cues were aligned. If new cues emerge at the end of a second phase, the participants' frames and interests are likely to become misaligned again, which will lead to a new Phase 1 (arrow 5).

5 | DISCUSSION AND CONCLUSION

This article was motivated by the observation that managers are increasingly turning to inter-organizational collaboration as a way of securing requisite variety in the face of strategic meta-problems. While this phenomenon is well documented (e.g., Gray, 1989, 2008; Hardy et al., 2006; Huxham, 1996b; Selsky & Parker, 2005), little is known about how the individuals who participate in inter-organizational processes of sensemaking are selected and how their selection affects the dynamics of sensemaking in turn. To shed light on these two questions, we analyzed and compared two cases of inter-organizational sensemaking. Our research yielded two key insights that we will discuss below.

The first key insight enabled us to understand better how participants are selected. As our analysis of the two cases demonstrated, the set of cues that the initiators of the collaboration select determines which frame repertoires (i.e., knowledge structures) they consider necessary and therefore what type of partners they seek. This also means that in order to ensure that an inter-organizational collaboration achieves the requisite variety, it is important to ensure not only that the frame repertoires are *sufficiently diverse* (Maitlis & Sonenshein, 2010; Weick, 1979, 1995), but also that the *specific* frame repertoires are available that the collaborators need in order to make sense of the particular problem at hand. The literature on inter-organizational collaboration (Gray, 1985, 1989; Hardy et al., 2006) alludes to this point when it suggests that a collaboration should include all relevant "stakeholders" with relevant expertise (Gray, 1985, p. 918; see also Gray, 1989, p. 64) and, as Huxham (1993, p. 605) pointed out, "the organizations involved [should] reflect through their roles and values, the complexity of the [meta-problem]." However, as our findings show, the choice of potential participants is not necessarily limited to organizations that are connected by the particular meta-problem, but can include any partners whose frame repertoires are deemed necessary for making sense of the meta-problem. We also found that the selection of participants depends very much on which cues are bracketed. When the cues changed, the collaborators sought different frame repertoires and thus different potential partners. Furthermore, the collaborators sometimes turned away potential partners whose frame repertoire was already available in the group or was not seen as relevant to the selected cues. This finding is in line with Gray's view that "including parties with redundant information might not be necessary" (Gray, 2008, p. 672). It also suggests that the initiators of

a collaboration typically have some idea of the frame repertoires that are relevant to making sense of particular cues, even if they do not know which particular frames will be applied in the end (Maitlis & Christianson, 2014; Weick et al., 2005). This resonates with the study by Rouleau and Balogun (2011), referred to above, who indicated that which colleagues middle managers selected to mobilize in their personal networks depended on the perspective, that is, on the frame repertoire that they considered relevant to particular cues.

Our findings also indicate that requisite variety may be temporary. Several studies in the broader literature examine (Selsky & Parker, 2005) temporary inter-organizational collaborations that pool different perspectives in order to increase requisite variety. However, our study goes a step further by revealing that even within the course of such temporary collaborations, the diversity of frames and the constellation of participants may change when the set of cues changes. The possibility of quickly establishing and changing the available repertoire of frames seems to play a critical role in the case of strategic meta-problems, when the boundaries of the problem, and therefore the set of relevant cues, shift (Cartwright, 1987).

The second key insight relates to the impact of the selection of participants on the dynamics of sensemaking. As the analysis of the two cases revealed, the combination of participants had a significant influence on how the sensemaking process unfolded. Our analysis enabled us to identify a central mechanism that underlies these dynamics. This mechanism hinges on the participants' interests in relation to the selected cues. Earlier research has pointed out that actors choose to explore cues that have some significance for them or their organization, rather than cues that merely puzzle them (Maitlis & Christianson, 2014). We take this a step further by systematically relating the role of interest and politics to concerns about requisite variety in sensemaking (Maitlis & Sonenshein, 2010). Our findings shed light not only on the role of different interests, but also on how collaborators promote tactically particular sets of cues. Cues are not merely "highlighted or suppressed" depending on the actors' interests (Weick et al., 2005, p. 418), but are also the subject of negotiations among the participants. This finding resonates with similar findings in the literature on inter-organizational collaborations on the role of interest and power in how actors define the problems they seek to tackle (Gray, 1985, p. 121; Hardy, 2008; Huxham & Beech, 2008). This underlines that the process of selecting cues can involve the same interest-driven dynamics that have otherwise only been associated with the second sensemaking stage, that is, the process of selecting frames for interpreting previously bracketed cues (Gioia & Chittipeddi, 1991; Kaplan, 2008; Maitlis & Lawrence, 2007).

The mechanism that we identified, which is based on the interplay between frame repertoires, interests, and cues, enables us to explain the differences we observed in the dynamics of the participants' interactions. Misalignments between frame repertoires, interests, and cues led to interest-driven negotiations (particularly in Phase 1), while alignments between these three elements tended to result in cooperative forms of interaction (particularly in Phase 2). This observation might explain why although Kaplan (2008) described the framing phase as a contest, we observed largely cooperative forms of interaction: in Kaplan's study the participants had conflicting interests with regard to what frames should be applied (as this had consequences for ensuing joint actions), whereas in the two cases we studied, the participants' interests were aligned in the respective phase. However, as we saw in Phase 2_1 of the second case, failing to align the interests of the partners before engaging in collaborative sensemaking affects the way in which they interact.

The mechanism we identified also sheds light on the tradeoff that securing requisite variety entails. As Maitlis and Sonenshein (2010) have pointed out, there is tension between the need for requisite variety and the danger of introducing more variety than an organization can handle. The

authors made this point in relation to the challenges associated with too much equivocality (Weick, 1995), that is, too many competing interpretations. Interestingly enough, the number of different interpretations did not constitute a serious problem in the two cases we studied. Instead, we found that, with the exception of Phase 2_1 of the second case, the collaborators welcomed and even actively encouraged different interpretations. One possible explanation for this is the intervention of a facilitator that all participants accepted. Indeed, the literature on inter-organizational collaborations highlights the role of facilitators as a critical factor in ensuring that the exchange of different views is constructive (Gray, 1985). Similarly, Maitlis (2005, p. 35) showed that "guided" sensemaking allows actors to interrelate different interpretations constructively.

While we did not observe any serious tension between requisite variety and equivocality, the mechanism that we identified points to a different tradeoff; namely, between requisite variety and the challenges of conflicting interests. When actors are faced with strategic meta-problems, on the one hand, they have to increase the diversity of participants in the sensemaking process in order to ensure the requisite variety of perspectives for approaching a particular set of cues. On the other hand, the increase in heterogeneity among participants is likely to increase heterogeneity in the participants' interests and make it harder for individual actors to focus on the particular cues that concern them most. Previous studies on inter-organizational collaborations set up to tackle meta-problems (Selsky & Parker, 2005) tend to focus on the social meta-problems that the interaction among stakeholders entails. As a result, these studies tend to underestimate the degree of diversity of interests in relation to selecting cues for sensemaking. In those studies, the collaborators were usually affected by the same issue and thus had similar interests, even though their views on those issues often differed considerably. As we showed, the tradeoff between ensuring an adequate degree of diversity among the participants' perspectives and keeping heterogeneity in the participants' interests at bay can lead the whole process to break down and thwart attempts to make sense of the problem at hand. Our analysis provided some indications of how this trade-off could be handled; for example, the initiators of the collaboration might select potential participants on the basis of their interests with regard to the section of cues (as in Phase 1_2 of the second case) or the collaborators may try to reconcile different interests (as in Phase 1_1 of the first case). These steps can facilitate the collaboration, but do not guarantee that it will be kept on track.

In sum, the dynamics we observed have potentially significant strategic consequences because they affect how managers make sense of strategic meta-problems. More specifically, as we have seen, the dynamics that shaped Phase 1 determine which cues the collaborators select to make sense of. As we know from earlier research (Barr, Stimpert, & Huff, 1992; Tripsas & Gavetti, 2000), ignoring environmental cues can have far-reaching consequences for the way in which organizations react to their environment. In this respect, selecting participants not only with regard to their frame repertoires but also on the basis of their interests might be helpful. Furthermore, the repertoire of frames that can be constructively mobilized in the sensemaking process affects whether managers will gain a comprehensive understanding of the strategic meta-problem (Gray, 1989; Maitlis, 2005) or whether they will end up with an "impoverished, shallow" view (Weick, 1979, p. 193) of what they are trying to make sense of that may prevent them from seeing different strategic alternatives (Benner & Tripsas, 2012). This explains why it is critical for the initial collaborators to select participants that provide the required diversity among frame repertoires, to keep those participants on board, and to engage constructively with each other's views. In this respect, the collaborators might want to ensure that all participants in collaborative sensemaking come to an agreement on the set of issues they want to explore and that someone is found who can guide (Maitlis, 2005) the application of appropriate frame repertoires.

As is the case with all empirical studies, this article has several limitations, some of which also offer opportunities for further research. One limitation concerns the active involvement of the second author in the field, which was necessary to ensure close access to all parts of the process (Balogun et al., 2003). Although this level of involvement is not unusual in ethnographic studies (Gioia & Chittipeddi, 1991), it creates a risk of bias in the collection and interpretation of data. As we have already clarified, we took a number of steps to prevent this bias, such as involving a neutral observer in the collection of data and combining an "inside researcher" and "outside researcher" (Gioia & Chittipeddi, 1991, p. 436) in coding the data. We are confident that these measures have reduced the risk of bias significantly.

Another limitation concerns the generalizability of our findings, which is typical of qualitative case studies. Although we claim analytical rather than statistical generalizability (Tsoukas, 1989), there are certain boundary conditions that we must acknowledge. The first boundary condition concerns the aim of the collaboration among the organizations we studied, which can be described as what Gray (1989, p. 242) has termed an "exploratory arrangement." In other words, in the two cases of collaboration we examined, the main aim was to develop a better understanding of the meta-problem at hand, not to get the participants to commit to joint action beyond the stage of exploration. Consequently, the participants were free to leave the collaboration at any time and it was up to them to utilize the understanding they had gained or to ignore it in their further actions. When joint exploration is followed by joint action, that is, when the participants in the exploration develop a so-called "collaborative strategy" (Hardy et al., 2006), other interests are likely to come into play and affect the dynamics of the interaction among them. As a result, the degree to which actors are motivated to participate in the collaboration may change, and "framing contests" (Kaplan, 2008) may ensue in the exploration of selected cues. At the same time, this boundary condition offers an opportunity for future research to explore how the dynamics of sensemaking play out in collaborations that involve committing to joint action.

A further boundary condition concerns the fact that in both cases relationships between the participants were limited to their interaction within this collaboration (with the exception of MobCo and its supplier in the second case). It is quite possible that the dynamics that we identified might play out somewhat differently when other relationships are involved. As various researchers have suggested (Gray, 1989, 2008; Hardy, 2008; Huxham, 1993; Huxham & Beech, 2008), the history of previous relationships among collaborators and the degree to which they participate voluntarily in the collaboration have a significant impact on the dynamics of the collaboration. In the context of our study, we would expect that if the relationships between the organizations involved had extended beyond the collaboration, it would have influenced not only their willingness to participate, but also the negotiations on the selection of cues. Future research could examine how different types of relationships influence the dynamics of sensemaking, focusing especially on relationships of power.

A final limitation that we would like to highlight is that we focused our analysis on the sensemaking proceses on the group level of the participating managers. While we found various indications that the outcome of these group-level processes had a significant impact on strategic thinking within some of the participating companies, we did not analyze in detail the mechanism that brought this about. Future research could examine why some organizations are more affected by inter-organizational sensemaking than others, what happens when insights from the inter-organizational groups are transferred to the context of the participating organizations, and how this might influence the process of sensemaking on the level of the inter-organizational group, in turn.

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