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On The Role of Adaptations in Organizational Crisis Management – A Conceptual Framework

Henrik Hassel[a*], Alexander Cedergren[a]
[a] Division of risk management and societal safety, Lund University, Lund, Sweden

Abstract: This paper addresses public sector organizations that provide vital services to society. A common tool to prepare and respond to crises is Risk and Vulnerability Assessments (RVAs) which is a requirement for many public sector organizations, e.g. in Sweden. RVA concerns identifying scenarios and estimating their likelihoods and consequences. However, concerns have been raised about limitations of solely relying on scenario-based assessments in creating capacities to face both expected and unexpected events. When organizations face unexpected events, pre-developed plans are not available or suitable, which require that organizations fin new solutions to minimize harm. The concepts of adaptation and adaptive capacity have been increasingly used in the field, but additional conceptual clarity is needed. The aim of this paper is to suggest a conceptual framework for adaptation and adaptive capacity. From a literature review, a framework proposed by Vert et al.'s was identified as a suitable point of departure. Based on insights from other conceptualizations, we suggest extensions of the framework and then briefly demonstrate it by using empirical data collected from a case study of COVID-19 response in a Swedish municipality. It is concluded that the proposed framework provides a good basis for developing methods for assessing adaptations and adaptive capacity in public sector organizations, which is the authors' long-term research aim.

Keywords: Adaptation, adaptive capacity, conceptual framework, public sector organizations.

1. INTRODUCTION

The concepts of adaptation and adaptive capacity have been increasingly used across several disciplines and areas of practice, including crisis and disaster management [1], resilience engineering [2,3], businesses [4], ecological systems [5], climate change adaptation [6] and public administration [7]. Different meanings are attached to these and to related concepts. For example, a major difference is whether a long or short time perspective is adopted. In the long time perspectives, the focus is often on capacities of socio-ecological systems to adapt to gradual change [8-10]. In the short time perspective, the focus is often on the ability of organizations to adapt to sudden, unexpected events where there no suitable plans and procedures to be followed [11,12]. The present paper concerns the short time perspective where adaptations can be seen as a "modification at any level (individual, social, and/or organizational) of plans, schedules, human behavior, skills, knowledge, goals, use of resources, tasks, roles, ways and means of coordination, relations, norms, etc., as a reaction to adversity" [11]. Adaptations are the manifestation of adaptive capacity which is the "potential for adjusting patterns of activities to handle future changes" [2]. This paper focuses on how these concepts can be applied to the context of public sector agencies providing vital services to society.

A common tool to increase public agencies' capacities to prepare for and respond to crises is Risk and Vulnerability Assessments (RVAs). Since many years, performance of RVAs is a requirement for many public sector organizations in Sweden (e.g. Swedish ordinance SFS 2022:524). RVA concerns identifying hazards and specifying scenarios, estimating likelihoods, analyzing vulnerabilities with respect to identified hazards and estimating negative consequences would the scenario occur. However, an increasing number of voices have been raised concerning limitations of relying on traditional scenario-based assessments in creating organizations with capacities to face both events that can be foreseen but also those that come as surprises [13, 14]. Resilience-based approaches and business continuity management [15] are examples of approaches that have been increasingly used to build capacity in an organization to continue functioning irrespective of what threat it faces.

The authors' long-term research interest is to develop methods for how adaptive capacity can be assessed. We have previously performed extensive research on the topic of RVA for municipalities, see e.g. [16-17], where a need to extend traditional RVA-approaches to also address adaptive capacity have been identified. A precondition to develop methods for assessing adaptive capacity is conceptual clarity. As argued by Parsons et al. related to resilience indices: "the conceptual framework justifies the dimensions of what the index is intended to measure… the conceptual framework is an important step in constructing a resilience assessment because it positions the assessment in the context of the field of disaster resilience…" [18]. The same can be claimed of methods for assessing adaptive capacity where the conceptual maturity is generally low [19], partly due to the literature on adaptive capacity coming from a range of different disciplines [20]. Minucci [21] further argues that "a systemic framework to assess the adaptive capacity is lacking … Adaptive capacity is mostly seen as a 'black box,' the process through which adaptive capacity is operationalized is not articulated" [21].

The aim of this paper is to suggest a framework for how adaptations and adaptive capacity can be conceptualized. The paper starts by providing an overview of previous work on conceptualizing adaptations and adaptive capacity. In this overview, the framework proposed by Vert et al. [11] was identified as particularly useful. For this reason, suggestions will be presented regarding how this framework can be extended, based on insights from other conceptualizations. The extended framework is then demonstrated by using empirical data collected from preparedness and response activities before and during the COVID-19 crisis in the municipality of Malmö, southern Sweden.

2. CONCEPTUAL FRAMEWORKS IN THE LITERATURE

Several conceptual frameworks were identified from two previously conducted literature reviews; one on methods to assess adaptive capacity [22] and one on factors that impede or enable adaptive capacity [23]. Together, these two reviews are believed to cover an enough wealth of the relevant literature.

2.1. Overview of conceptual frameworks

The CARE model described by Anderson et al. [24] and Sanford et al. [25] conceptualizes adaptations as adjustments necessary to deal with inevitable misalignments between Work-As-Done (actual demands) and Work-As-Imagined (planned capacities). Misalignments can e.g. be related to Equipment, Staffing and Communication and adaptations can e.g. be related to Extra-role performance and Resource re-distribution. Another model is provided by Lyng et al. [26] who address adaptation and innovation. Lyng et al. [26] differ between proactive/long-term and reactive/short-term solutions. The short-term adaptations are typically quick fixes carried out at low system levels. While crucial at the time of an incident to keep the system operational, these short-sighted, fire-fighting solutions may mask vulnerabilities in the system if not reported and acted upon at higher system levels.

Burke et al. [27] and Malakis and Kontogiannis [28] present two different input-output models of adaptation. At the core of the model of Burke et al. [27] is four processes that are carried out as part of an adaptation: 1) Situation assessment, 2) Plan formulation, 3) Plan execution, and 4) Team learning. The model suggested by Malakis and Kontogiannis [28], on the other hand, describes six team processes to understand adaptation: 1) Steering or goal-setting, 2) Sensemaking and mental Models, 3) Common Operating Picture or shared mental model, 4) Coordination and transfer of control, 5) Managing changes, and 6) Planning-Doing-Checking cycle.

Furthermore, Rankin et al. [29] suggest a framework to analyze adaptations in everyday work situations. The main elements are 1) Strategies, referring to the actions carried out as an anticipation of or as a response to event, i.e. the adaptation itself, 2) Objectives, describing what is intended to achieve, 3) Forces and situational conditions, corresponding to the context where the adaptation takes place, 4) Resources and enabling conditions, describing necessary conditions for successfully implementing the strategy, 5) Resilience abilities, a classification of type of resilience capacity, and 6) Sharp-end and blunt-end interactions, describing how different system levels interact.

Woods [2,12] has developed a framework that addresses adaptive capacity for events where multiple cycles of changes affect a system. The capacity to continue to adapt over multiple cycles of change is referred to as sustained adaptability, which is a higher-level, more long-term adaptive capacity. Key to achieve sustained adaptation is initiative, which is the ability and willingness of units to adapt planned activities that are no longer suitable and do this on their own, and reciprocity which refers to a commitment between two units of mutual assistance where one supports the other without direct self-benefits.

Vert et al. [11] propose a conceptual frameworks involving adaptations and adaptive capacity intended to put adaptation and adaptive capacity in the broader scope of resilience and resistance as the two main strategies to achieve desired performance levels in expected and unexpended events. This framework was identified as particularly useful for the present paper. The main reason is that it explicitly addresses both adaptation and planning as strategies to ensure desired performance levels depending where event characteristics affect the importance of each strategy. This focus is suitable for us since our intention is to develop ways to integrate traditional RVA with assessment of adaptive capacity.

2.2. In-depth review of Vert et al.'s framework

The framework proposed by Vert et al. [11] displays resilience and resistance as constituting two complementary strategies for a system to maintain its desired performance level. Resistance is comprised by the system actors using pre-existing buffers and/or following plans and procedures whereas resilience is comprised by system actors implementing adaptations – defined as "any unplanned modification of the system as a reaction to potential or actual adversity" [11]. The possibility and suitability of following pre-developed plans and procedures versus implementing adaptations, depends on the characteristics of the event exposing a system. For planned events, where both the nature and the timing of the event are known on beforehand, it is possible to follow pre-developed plans and procedures – i.e. resistance is enough. For unexpected events, where neither the nature nor the timing of the event are known, a system must rely on adaptations, i.e. resilience is necessary. Finally, for unplanned events that are expected, i.e. where the nature is known but not the timing, a mix of resistance and resilience strategies can be employed to maintain a desired performance level.

Another key dimension in the overarching framework is whether actions to uphold a desired performance level are taken before or after the occurrence of an adverse event. Actions taken before adverse events occur are labelled anticipation which is based on the system making predictions of future conditions and acting accordingly. Actions taken during or after adverse events occur are referred to as response, which is based on identification of actual conditions. The dimension of anticipation versus response is combined with the dimension of adaptation versus following procedures. Hence, four types of actions are possible: 1) Procedural anticipation: actions on beforehand that are planned and follow plans developed well ahead of the event, 2) Adaptive anticipation: actions on beforehand that are not planned but that is judged to prevent or delay the event or to mitigate its consequences, 3) Procedural responding: actions after an event occurrence that follow plans and procedures that have been developed well ahead of the event, and 4) Adaptive responding: actions taken after an event occurrence that constitute an adaptation, i.e. that do not follow a pre-developed plan. For unexpected events, no anticipation is possible, nor can plans be developed, which means an organization can only apply the strategy of adaptive responding for such events.

3. EXTENSION OF VERT'S FRAMEWORK

In this section, a proposal to extend the framework of Vert et al. [11] will be presented. In our framework, we primarily address the role of adaptations during the acute phases of crises and disasters which means we do not address actions taken on beforehand to mitigate or prevent adverse events, which to some extent is part of Vert et al.'s framework. Below we will describe what aspects of the framework we see potential in further developing and how such extended framework may look like. Either it may concern aspects not addressed in Vert et al.'s framework or it may concern aspects we argue should be adjusted or made more explicit to provide additional clarity to the concepts of adaptations and adaptive capacity.

3.1. Modifying the role of event nature and timing

We suggest a slight modification of how to address event nature and timing in the framework. In Vert et al. [11], two event characteristics are explicitly addressed: Whether the nature is known or not known (expected vs. unexpected) and whether the timing is known or not (planned or unplanned). For expected events, Vert et al. [11], argue that following pre-planned procedures are enough for maintaining desired performance levels, i.e. adaptations are not necessary. However, most often the boundaries between known and unknown nature and timing are blurry. An event may have been identified on beforehand (e.g. in a risk assessment) but the knowledge of its nature is incomplete, e.g. due to complexity or inherent variability. Therefore, even for events that are expected, in the sense that they have been identified on beforehand, pre-developed plans and procedures may be imperfect and require adaptations. In a similar way, knowing the timing of an event is not a binary question of yes and no. The timing may be a matter of likelihood where evidence of an imminent threat, e.g. through monitoring activities, is accumulating making the timing more and more certain until the event finally occurs. As further argued in the area of resilience engineering, performance variability occurs all the time requiring constant adaptations to take place to avoid breakdowns and enable effective work processes [29].

Based on the above discussion, we argue that the nature and timing of very few events can be completely known, especially in the context of concern for this paper. Therefore, the extended framework will not consider completely expected and planned events; but rather it will be based on a distinction between partially unexpected and completely unexpected events. In all these types of events, adaptations of some kind will be necessary. On the other hand, although it is not possible to develop tailor-made plans and procedures for completely unexpected events, plans and procedures developed on beforehand may still be useful. Standard operating procedures, business continuity plans or generic disaster response plans are examples of such activities. Since such generic plans have not been developed explicitly to be suitable for the occurrence of an unexpected event, they probably need to be adapted to suit the situation.

3.2. The role of onset and closure

Speed of onset and closure are two additional event characteristics that we argue is not addressed enough in Vert et al.'s framework. Both characteristics are described in detail in Boin et al. [30] and are characteristics of creeping crises. *Onset* can be fast or slow where the fast onset corresponds to an event that occurs suddenly at a clear point in time, although it may have been predicted. Slow onset corresponds to an event where there is a long incubation period before the event severity peaks. The incubation period may end up in an event "eruption" or it can incrementally grow eventually reaching a maximum. In practice, extended incubation periods often lead to practical difficulties of obtaining stakeholders' attention since the significance of signals of impending crises may be vague and debatable. While onset refers to the beginning of an event, *closure* refers to the ending of an event. In a similar way, closure may be fast or slow. Similar to onset, closure may also be problematic since the attention for slow burning crises may get lost and become a new state of normalcy as time goes by. In such situations, only symptoms are treated while the underlying forces or causes remain, making re-growth possible [30]. A consequence of slow onset and/or slow closure is that the event becomes extended in time which may provide organizations' with "the time to act" [30]. For example, a long incubation period or an extended acute phase makes it possible to create new plans or adapt existing plans to become more useful for the emerging event[1].

3.3. Multiple cycles of adverse events

[1] To be fair, event duration is a characteristic brought up by Vert et al. [11], who distinguish between sudden and long-term events; however, the framework does not explicitly include these dimensions.

The fact that an organization can be exposed to multiple adverse events and challenges over time is addressed in Vert et al. [11] by discussing the importance of learning. Vert et al. [11] define learning as a "process that aims to improve future behavior based on past experience" [11]. According to Vert et al. [11], learning is crucial since it both expands adaptive capacity as well as enables the further development of plans and procedures, so they are more suitable for the re-occurrence of similar events. A related dimension, which is not addressed by Vert et al. [11], is highlighted by Woods [2,12] who argues that a common feature of complex adaptive systems is that they may fail to *sustain* adaptive capacity over multiple cycles of change. Systems that lack sustained adaptability may adapt well in early cycles but "become stale, work at cross purposes, are unable to keep pace with change and cascades – and suffer sudden performance collapses" [12]. A reason may be that learning from experience and consequently adapting to these experiences may create a system with a good fit for re-occurrence of similar events but with increased vulnerability to events that are outside the experiential frame. Additionally, the adaptive capacity may also become exhausted in events characterized by multiple cycles of change, i.e. with slow closure. Hence, in order to create sustained adaptability, explicit efforts "to adapt how the system in question adapts" [12] is also needed. In relation to learning, sustained adaptation can be said to go beyond learning from own experience but rather to continuously increase the flexibility with respect to a broad repertoire of future possibilities, not only those experienced.

3.4. The afterlife of adaptations

Seen from a narrow perspective, an adaptation is comprised by an action taken to deal with an event that has unfolded in an unexpected way. However, to gain a deeper understanding of adaptations and the role of adaptations in fostering resilient systems, adaptations should be seen from a broader systems perspective as well as from a long-term perspective. A number of different aspects may be relevant when approaching adaptations from a broader perspective. First, as Lyng et al. [26] argue, an adaptation may be positive during an unexpected event occurrence, in the sense that it contributes to keeping system performance levels high, but at the same time fails to contribute to system resilience in the longer-run. In fact, adaptations can be a barrier to system improvements. This may happen when a short-term, temporary adaptation (or "quick-fix" as labelled by Lyng et al. [26]) carried out in the sharp end, masks a flaw or vulnerability on higher system levels. Without any post-event reflection and learning leading to organizational change, a similar event reoccurring would require the same short-term adaptation to avoid performance degradations; however, skills or awareness may be lacking at that future point in time or the conditions may be even worse, leading to the adaptation not being carried out or being insufficient to compensate for the system deficiency. Hence, post-event reflection and learning is crucial to consider whether organizational changes can be implemented on higher system levels to relieve the pressure on the sharp end.

Secondly, an adaptation may be carried out because it is seen as a better fit in a situation compared to pre-planned procedures. If the adaptation is a better fit across a broad range of situations it may be reasonable to replace the pre-planned procedure. Hence, new procedural responses could emerge "bottom up" from adaptations in past events which means that an adaptive response over time becomes institutionalized as a procedural response. Again, a systematic learning process to embed the new behavioral repertoire in the organizational memory is needed. This is similar to the argument of Vert et al. [11] that "learning allows a system to transform unknown unknowns events into known unknowns events and may transform known unknowns events into known events…. When a system learns, new procedures or protocols to manage similar situations are established". However, the process as such is not explicitly included in Vert et al.'s framework.

Finally, a particular type of adaptation can be labelled a transformation. A transformation constitutes a radical change of the system not only affecting its adaptive capacity but also the structure and even the goals of the system [26,31]. Transformations capture the idea of "bouncing forward" creating a "new normal", rather than bouncing back to normal [32]. Here, the adaptation taken in response to the event may itself become the transformation as it becomes institutionalized in the system; alternatively, a transformation may be developed in the aftermath of an event if it is recognized that an existing system vulnerability requires a change into a completely new system regime.

3.5. Visualization of the proposed framework

The proposed framework can be visualized as a comprehensive, generic framework that includes all activities that are relevant for dealing with unexpected events. However, since event characteristics may influence the possibility to carry out some of these activities, there are several instantiations of the framework depending on the event type. Event characteristics that are considered here are: 1) knowledge about the event nature (partially unexpected/unexpected), 2) onset (fast/slow) and 3) closure (fast/slow). Since these dimensions are orthogonal, they combine into eight different event types and therefore eight different instantiations of the framework (see Table **1** for how each event type influence the framework).

3.5.1. Generic version of the framework

The generic version of the framework is constructed around two dimensions: one temporal dimension capturing the different phases of the unfolding of an event, and one dimension capturing to what extent a particular activity is oriented around adaptive thinking and procedural thinking, respectively.

In the phase labelled as normal, a range of different types of activities are carried out to ensure that an organization is able to respond successfully to adverse events. On the one extreme, activities may be carried out to improve the ability to adapt to unexpected events (i.e. *adaptive capacity building*), for example by building trust relationships among stakeholders, creating asset literacy, creating polycentric organizational structures or increasing the organizational diversity (see e.g. [23] for an overview of factors that enable adaptive capacity). On the other extreme, developing plans and procedures to deal with expected events (*procedural planning*) may also be carried out. Finally, as mentioned in 3.1, *generic planning* may also take place. Generic planning can here be understood as the development of plans and procedures without reference to specific identified scenarios/events.

The phase “Signals and triggers” concerns the build-up phase before entering an acute phase. As described in 3.2, indications of and knowledge about a future event may be growing in this phase, giving the opportunity and time to adapt existing plans and procedures to better fit for the upcoming situation. This activity is here labelled *adapted procedural planning* to indicate that it still constitutes procedural thinking although efforts to adapt the procedures to the situation at hand is carried out.

The “Acute phase” is characterized by a high time pressures (compared to the “Signal and triggers” phase). Here, a range of activities are taken to maintain desired performance levels. On the one hand, *procedural response* may be conducted, corresponding to the implementation of pre-planned repertoire of actions developed in the procedural planning. Where the knowledge of the nature of the events is high, procedural response dominate; however, also in events whose nature is mainly unknown, procedural response may be carried out. On the other hand, the less planning that exists matching the unfolding event, the more of the actions in the acute phase will correspond to an *adaptive response*. In between these two extremes, the adapted procedural planning from the “Signals and triggers” phase may be carried out in an adapted procedural response; and during extended acute phases, adapted procedural planning may continue in cycles of *adapted procedural planning and response*.

As an acute phase turns into a “cycle of multiple acute phases”, an organizational also need to take actions to ensure *sustained adaptation*, i.e. making sure the adaptive capacity is not eroded over the multiple cycles of change. Woods [2,12] for example identify three common failure modes for complex adaptive systems: decompensation, working at cross purposes and learning breakdown.

Finally, in the aftermath of an acute phase, a system enters a phase of “New normal” which is dependent on what organizational change processes that takes place. Through the *organizational change process*, adaptations may be institutionalized into new procedures (updating procedural planning or generic planning), or system improvements may be achieved reducing the reliance on adaptive response. Finally, transformations into new system regimes may take place, either by institutionalizing a radical adaptive response or by developing a transformation in the New normal phase based on experience of an event.

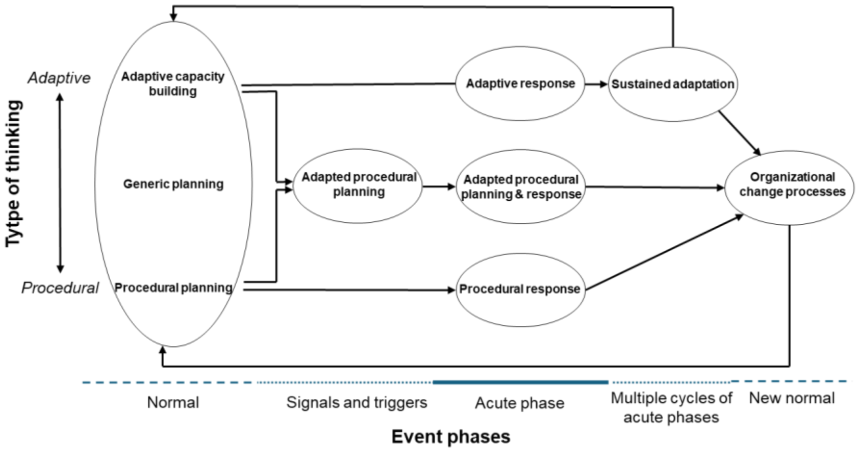

Figure 1. Generic version of the conceptual framework.

3.5.2. Instantiations of the framework depending on event types

In Table 1, the eight event types are presented including their effect the event phases and on the activities in the generic framework. In addition, Figure 2-5 provide instantiations of the framework depending on the event types since the event type will affect what activities that is possible or relevant to carry out.

For fast speed of onset, there is no “Signal and triggers” phase as the event occurs suddenly, whereas for slow onset the “Signal and triggers” phase is assumed to be long. A fast closure means a short “Acute phase” whereas slow closure means a long “Acute phase”. Adapted procedural planning is possible if either onset or closure is slow but not possible if both are fast. For fast closure events, there is no need for sustained adaptation as the system do not experience multiple cycles of change. For an unexpected event, there is no procedural planning since the nature of the event is unknown on beforehand, which in turn means that procedural response is not possible. For slow onset, unexpected events, the “Signal and trigger” phase may mean knowledge about the event is gradually growing which could enable adapted procedural planning during the “Signal and triggers” phase. For partially unexpected events, the difference would be that there might be procedural planning that can be used as a point of departure.

Table 1. The different combinations of event characteristics that influence the appearance of the framework.

Event type	Effects on the event phases	Effects on activities	Shown in Fig.
Partially unexpected, Fast onset, Fast closure	Short signal and trigger phase, Short acute phase	No adapted procedural planning, No adapted procedural response, No sustained adaptation	Fig. 3
Partially unexpected, Fast onset, Slow closure	Short signal and trigger phase, Long acute phase	No adapted procedural planning in signal and trigger phase	Fig. 5
Partially unexpected, Slow onset, Fast closure	Long signal and trigger phase, Short acute phase	No sustained adaptation	Not shown
Partially unexpected, Slow onset, Slow closure	Long signal and trigger phase, Long acute phase	No effect	Fig. 1.
Unexpected, Fast onset, Fast closure	No signal and trigger phase, Short acute phase	No procedural planning and response, No adapted procedural planning and response, No sustained adaptation	Not shown
Unexpected, Fast onset, Slow closure	No signal and trigger phase, Long acute phase	No procedural planning and response, No adapted procedural planning in signal and trigger phase	Fig. 4
Unexpected, Slow onset, Fast closure	Short acute phase	No procedural planning and response, No sustained adaptation	Fig. 2
Unexpected, Slow onset, Slow closure	Long acute phase	No procedural planning and response	Not shown

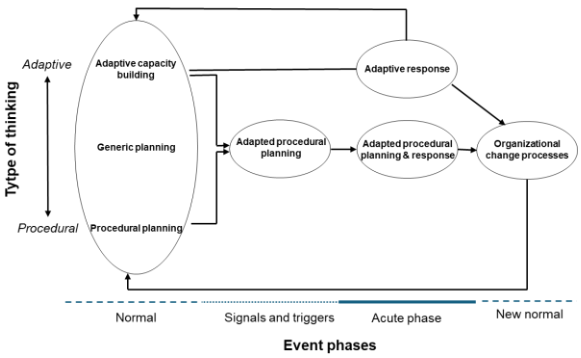

Figure 2. The conceptual framework for "Unexpected, slow onset, fast closure events".

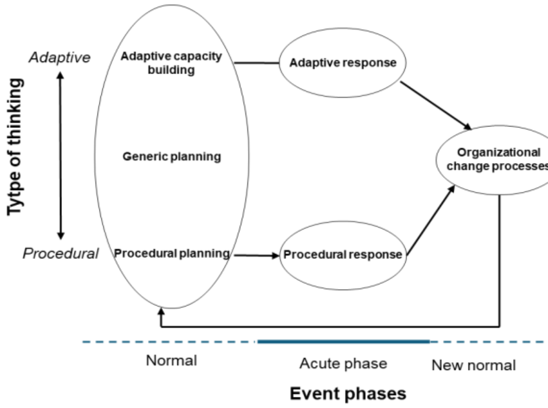

Figure 3. The conceptual framework for "Partially expected, fast onset, fast closure events".

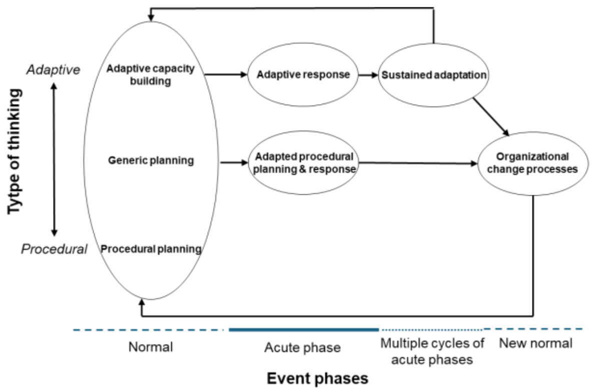

Figure 4. The conceptual framework for "Unexpected, fast onset, slow closure events".

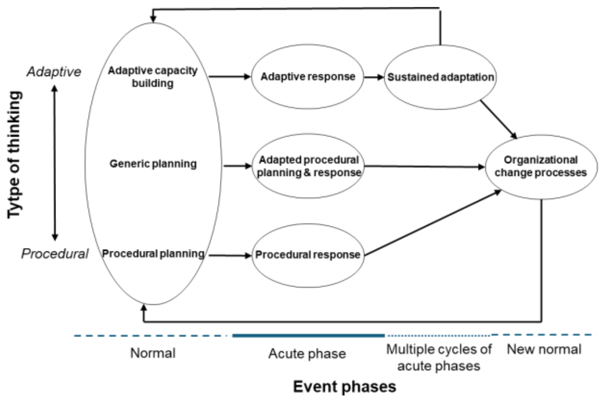

Figure 5. The conceptual framework for "Partially expected, fast onset, slow closure events".

4. DEMONSTRATION OF THE CONCEPTUAL FRAMEWORK

The framework will be very briefly demonstrated based on the empirical study of the COVID-19 crisis response carried out in the municipality of Malmö and reported in [33, 34]. For Malmö a pandemic was not completely unexpected as pandemic outbreaks had been on the agenda prior to the COVID-19 outbreak. However, the knowledge about the nature of the event was very limited. Hence, for Malmö, COVID-19 could be classified as a partially unexpected, slow onset and slow closure event. From this it can also be concluded that the generic version of the framework in Figure 1 is applicable since all activities are relevant to consider for this type of event.

In terms of *procedural planning*, plans and risk assessments had been outlined some 10 years before in the context of the swine flu. However, little of this was remaining in the organizational memory and there were no plans that could just be implemented as a procedural response. On the other hand, generic planning had to some extent been carried out as part of the continuity management processes where *generic plans* to maintain and recover key activities had been developed independent on what disturbance that exposes the municipality. In addition, standard hygiene routines had been developed on beforehand which was applicable to all types of virus diseases. When it comes to *building adaptive capacity*, Malmö municipality had worked consciously and systematically with creating trust relationships among key actors as well as creating a culture of "togetherness" recognizing that these are key enabling factors for adaptive capacity.

In the "Signal and trigger" phase as well as during the "Acute phase", Malmö municipality was able to carry out *adapted procedural planning* and during the acute phase also *adapted procedural response*.

For example, an adapted decision-making structure was outlined and used during the response. During the "Acute phase", both *adapted procedural response* and *adaptive response* were carried out. Examples of adaptive response was to establish a centralized procurement unit focusing on a few critical products. Of course, a range of other types of adaptive responses were also carried out such as transferring many activities to online format and opening school canteens for pupils with online teaching to be able to pick up lunch.

Since COVID-19 came in multiple waves it was also important to sustain the adaptive capacity over time. One positive factor was that the periods of lower intensity made it possible for the staff to regain some momentum. Additionally, actions were taken to prevent some of the failure modes proposed by Woods [2,12]. An example is that so-called decision-in-large was taken to minimize the risk that different units work across purposes. Finally, when it comes to organizational change processes an example is that in the initial phases of COVID-19, an effort was done to increase the bandwidth to allow more employees to work from home. This increase capacity became a permanent change adding to the capability to deal with future crises that put pressure on the bandwidth.

5. CONCLUDING REMARKS

This paper has presented a conceptual framework for adaptation and adaptive capacity mainly developed to be applicable in the context of public agencies providing vital services to society. It departs and extends the work of Vert et al. [11] by drawing on other work such as Woods [2,12] and Lyng et al. [26]. It is an overall framework in the sense that it does not go into details when it comes to the details of processes of adaptation or details of what processes and factors that are crucial for adaptive capacity. Further work should therefore be conducted to go into more details on these processes of adaptation, where work such as that of Burke et al. [27] and Malakis and Kontogiannis [28] can be used as a point departure. Additionally, the works of Furniss et al. [20] and Yu et al. [35] on adaptive capacity can be used as inspiration for this purpose. The next step of our research will also be to make use of the conceptual framework as a basis for developing methods to assess adaptive capacity in a public agency context.

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