Four Lines of Analysis for Civil Security Crisis Simulations: Insights for Training Design

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Abstract Crisis simulation training is a common organizational tool to improve civil security preparedness. Although nowadays its overall benefits can't be denied, the conditions under which these simulations offer improvement opportunities remain often unclear. The aim of this chapter is to derive new lines of analysis from a study conducted in a crisis simulation training program based on two principles: (i) confrontation of the trainees to stressful, complex, dynamic, and verisimilar situations and (ii) testing modalities of action and organization that were not prescribed, or only partially. Ergonomics methods (direct observations, field notes, interviews, and self-confrontation interviews) were used to document and analyze protection, rescue, and care stakeholders, and decision makers' experience and actions during two crisis simulations in operational command posts. The results are developed along four lines: (i) enactment-reenactment, (ii) curriculum-discovery, (iii) perturbation-reassurance, and (iv) trust-mistrust. They allow us to precise the link between (i) typical simulation-based training experiences, (ii) actors' dispositions to crisis management, and (iii) simulation training design principles likely to provide promising learning affordances in authentic settings.

Keywords Simulation · Vocational training · Training design · Crisis management · Civil security

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1 Simulate to Prepare Professionals for Crisis Management

In the field of crisis management, it is generally acknowledged that a crisis is a system disruption (technical, human, or organizational) before it is perceived as an object that can be "managed"—that is, contained, controlled, and little by little overcome by a set of appropriate actions. Reactivity in the face of disruptive events is therefore a crucial dimension of crisis management. We here examine all the factors—in this case, what professionals individually and collectively do—that contribute to bouncing back following a significant disruption. In this context, we take "bouncing back" to mean "recovering a capacity for interpretation and action and the means for projecting into the future" (Flandin et al., 2021).

Improving crisis management skills involves developing the capacity to respond quickly and effectively to disruptions that may well be extraordinary and even critical to life. This capacity to respond is inextricably linked to (i) a capacity to make sense of the situation, which research in the humanities and social sciences has already widely investigated, notably using the concepts of *sensemaking* (e.g., Weick, 1993), *situational awareness* (e.g., Stanton et al., 2001), and *decision-making* (e.g., Klein, 2015), and (ii) an ability to reorganize the available resources and means of action, even finding new ones, which has notably been investigated in studies drawing on the concepts of *adaptability* (e.g., Maynard et al., 2015) and *abduction* (e.g., Pettersen, 2013). Given these factors that make up effective crisis management, it seems clear that managing a crisis cannot be strictly speaking taught, even though in certain fields and with regard to certain well-defined problems, knowledge about effective interventions in crisis situations is available and can be presented in curricular form for training interventions. Samurçay and Rogalski (1998) analyzed the contribution of simulation to training in crisis situations, notably underlining that didactic approaches are limited when the relevance of conceptual variables and the variety of indices available in target situations are reduced. Citing Weick (1993), they referred to the "cosmological episode" in which "the universe no longer appears rational" as the archetype of a crisis before which any curricular approach is powerless (p. 345).

Yet, if crisis management cannot be taught, under what conditions can it nevertheless be made an object of learning and development? This would imply designing simulations not aimed at the transmission of knowledge presumably relevant to target situations, but at developing the capacity to interpret and (re)act in highly stressful, complex, and indeterminate situations (e.g., Bergström et al., 2011; Flandin et al., 2018; Fornette et al., 2015; Kouabenan et al., 2007). For the design of such simulations, it would be necessary to assume the relevance of training methods based on triggering significant experiences (striking, decisive) for civil security professionals. Such experiences bring about an evolution in their culture (understood as everything that they might mobilize at any moment to give meaning to, take decisions about, and act in a situation) and have an impact on their professional situations, especially in crisis management. Essentially, such designs "capitalize" on the opportunities offered by *practice-based learning* (e.g., Billett et al., 2014),

workplace learning (Billett, 2020), and *experiential learning* (e.g., Fenwick, 2003). Simulations in training situations that are close to actual target situations provide these professionals with the opportunity to experience crisis situations in practice and thus to develop their capacity to react and new modalities of interpretation, action, and collective configuration.

Based on our understanding of the research in the field, the objective of programs to train and prepare for crisis situations should be twofold:

1. Enrich the "reservoirs of meaning" (Weick, 1993) by training professionals to apprehend the novel and even the unthinkable. Confronting professionals with new and ill-defined problems in simulation increases the chances that traits of familiarity will appear to them later in a real crisis situation and that they will connect what they are experiencing in the crisis (often at first in an unprecedented and indeterminate way) with their lived experiences in simulation. Traits of familiarity can be very strong: Actors experience the situation as familiar or even identical to others that are part of their culture. They are then able to very quickly remobilize modalities of interpretation and action that have already been positively tested (or "typified," according to Varela et al., 1991). Conversely, traits of familiarity can be very tenuous: Actors then experience feelings of vague resemblance, but this nevertheless prompts a set of provisional hypotheses that can be useful for producing meaning during the course of action. In both cases, enriching the "reservoirs of meaning" is crucial to guard against the "collapse of sensemaking" (Weick, 1993), in which confusion and even stupefaction can be paralyzing for professionals and nullify any possibility of crisis management.

2. Train individual and collective capacities to appropriately reorganize activity (resources, roles, and means of action) in order to produce the adjustments needed to rapidly return to a determined and controlled situation following disruptions of different types, including those that have never been seen and are massive. Notably, this can result in bifurcations in the modalities of operation and cooperation, the invention and adoption of new channels of communication, and the reconfiguration of roles among the professionals. Some of the research conducted in the field of "team training" from a dynamic systems approach (e.g., Gorman et al., 2010) has conceptualized and mobilized disruption as a means for designing simulations. They hypothesize that the reconfigurations of collective activities provoked in crisis simulations tend to materialize in real crisis situations under certain conditions (especially partial similarities or family resemblances between the training conditions and the actual work).

The conditions for meeting these objectives are unevenly contained in crisis management simulations, whether or not they are explicitly pursued by the designers and facilitators. In general, the organizational dimension of implementing these simulations poses a set of problems that limits the learning and development opportunities that have just been described, particularly in the field of civil security.

2 Limitations of Crisis Management Simulations for Civil Security Professionals

Civil security crisis simulations are often designed primarily as operational tests for organizational learning (the targeted transformations relate to the rules and procedures that govern professional work). They are less often designed—and sometimes not at all—for training aimed at transforming the culture and the repertoire of meanings and actions of these professionals (Borodzicz & Van Haperen, 2002). Even when the simulations integrate training objectives, their structure and organization do not seem to encourage learning and development for three main reasons.

The first reason is that when simulations are designed to test and continuously improve procedures and methods—as is often the case in civil security—the scenarios test the relevance of the organization of crisis response itself, its appropriability by the professionals, and/or the ability of these professionals to implement it. This aim is good in itself, but it cannot help professionals learn to intervene in the face of crises that escape the organization of a response. Thus, the aim tends more toward stabilizing organizational routines (Anderson & Adey, 2011), and generally, these routines can be very effective for dealing with difficult events that are not far removed from those already encountered. Yet, they can prove to be rigid and even paralyzing in completely new situations that are far from what has been prefigured and tested beforehand.

The second reason is that as the simulations often fulfill an evaluative, certifying, or policy function, the organizers and participants tend to be reluctant to acknowledge deviations, obvious errors, and failures in response organization. This has two consequences.

The first is that simulations that have been designed within the same framework, with the same scripting, often have scenarios that tend to become uniform. The problem is that this may reify crisis management in the participants' experience, whereas the essence of crisis is intangible, dynamic, uncertain, and evolving: It cannot be reduced or enclosed as an object with well-defined contours. By making crisis a part of routine thinking and action, it may become a "well-structured" problem, which could prove to be of no help, or even counterproductive, during events hitherto unimaginable. This trend thus presents the risk of normalization (Borraz & Gisquet, 2019), which must be guarded against.

In addition, such simulations prompt the tendency to hide errors and adapt to fictitious resolutions of the scripted problems (the participants speculatively agree that the problem has been solved) by eliminating overly complex or undesirable aspects. Most often, a scenario is played out in such a way that it gradually prescribes a positive exit that is more or less independent of the participants' activity. Under these conditions, the exercise is in no way an educational space in which errors and misunderstandings are examined and dealt with, thus constituting a lever for learning and development, but are instead masked (Flandin et al., 2019). Moreover, these simulations are often designed and implemented by professionals who have little experience or skill in training.

The third reason is that crisis management simulations are often costly (in terms of time, money, and skill), which is why in the absence of a formalized offer (which is more likely to be found in the medical field) they are organized infrequently and for limited times (half a day, typically). Moreover, crisis management simulations very rarely integrate notions of disruption, the unforeseen, the never before seen, and the unthinkable—however promising for training—because at a practical level doing so is unfeasible (Flandin et al., 2018). We thus once again encounter the problem of standardized scenarios because of the constraints to design and implementation, to which a certain regulatory rigidity is sometimes added.

According to Wright-Maley (2015), simulation tends to provide developmental opportunities if it is featured by dynamism and outcome variability, making unscripted and unexpected activities possible. This design principle demands and enhances a high degree of human agency (Duchatelet et al., 2019), which should be further investigated to understand how to strengthen the developmental function of simulations.

From this analysis, it seems clear that further research in simulation and civil security, and more generally protection, rescue, and emergency care, has become imperative. We need to better understand how to design simulations that are both efficient with respect to the above-defined objectives and appropriable by the organizations despite the many constraints. Our contribution to addressing this need was an examination of an exemplary simulation program that met the following aims: an interprofessional simulation based on the confrontation with an uncontrolled crisis situation and the organization of a crisis response that is only partially prescribed.

3 Simulate to Bring About and Experience Critical Situations in Training: A Qualitative Study in a Real-Life Context

3.1 Theoretical Background

Consistent with the foregoing analysis, the hypothesis underlying the study presented here is the following: Simulation can be an effective training tool in civil security crisis management if it is designed according to modalities that (i) exploit the properties of autonomy, self-organization, and resilience in human activity, which are particularly evident in cases of overcoming critical situations (e.g., Flandin et al., 2021), and (ii) develop a disposition to act in situations of uncertainty rather than focusing on the acquisition of predefined knowledge (Flandin et al., 2018). This hypothesis is also congruent with an enactive conception of human activity and cognition: Activity is characterized by indeterminate dynamics that cannot be conceptualized as rule following, and cognition is not a representation of a world predetermined by a predetermined mind. Rather, it is the enaction of a world and a consciousness based on the history of their relations—that is, the

history of the actions and experiences lived by the actor (Varela et al., 1991). This hypothesis contrasts with those in which behavior is described as a mechanical reaction to events that would occur uniformly for any actor (Daniellou & Rabardel, 2005; Klein, 2015). It also has strong implications for the understanding and design of performance-promoting environments (e.g., Récopé et al., 2019) and, of course, education and training (e.g., Durand & Poizat, 2015). Therefore, research from this perspective cannot consist only of collecting and analyzing extrinsic data on professional activity, but also requires data "from within" on how actors organize their activity to give it meaning and be able to act taking into account the resources and constraints in play.

This has led to a "design-based" research program in the field of crisis management simulation training. This program consists of examining original and/or remarkable simulation programs with a focus on the participants' training activity, particularly the dynamics of meaning production. The aims are to acquire scientific knowledge and derive sound principles for simulation designs.

The study consisted of first identifying a simulation training program designed, not according to a didactic approach finalized by the acquisition of predefined knowledge, but according to a principle of confronting trainees with a stressful, complex, and dynamic situation and finalized by testing the modalities of action and organization that were not predefined, or only in part. This type of simulation training can be thought of as "development-oriented participation in an interactive system" (Berlin & Carlström, 2015).

3.2   Field for Study

We chose an interprofessional civil security simulation program (professionals working in defense, justice, interior, and health services) to train professionals in chemical, biological, radiological, nuclear, and high-yield explosive (CBRNE) crisis management. The main objective of this program is to test joint intervention procedures (which may imply that the participants override them) and thus to train those working in decision-making (operation management by the local authority), rescue (particularly fire brigades), first aid (particularly emergency medical services), civil order (police and gendarmerie), and defense (army) services to deal with a CBRNE accident or attack. The simulation was designed as a "guided game"—that is, based on a scenario introducing multiple elements and interactions with the facilitators. It was deployed "in the field" for "operational" actions and in the operational command post (OCP) for decision and command actions. Our study focused specifically on crisis simulation for decision-makers and commanders in OCPs, and we studied two occurrences. These simulations were designed as "crisis cells" (a single room equipped with a central table and telecommunications means bringing together a team of a dozen stakeholders playing their own role).

Although minimally theorized by the program's design team, the design principle of a "test" underlying this simulation was consistent with the simulation modalities noted and discussed above. We were particularly interested in determining to what extent the activity encouraged by this program would contribute to the participants' developing new dispositions to act in critical situations.

3.3   Method

The method used to study the simulations articulated an observatory of the context and organizational issues (constraints and effects of training) with an observatory of in situ activity, to which primacy was granted.

3.3.1   Observatory of the Constraints and Effects of Training

This observatory aimed to study the constraints, which were (i) all the elements that participated in delimiting the perimeter of action in which the participants were evolving (type of organization; prescriptions, norms, and rules; habits; spontaneous statements and interactions between the participants; etc.) and the effects, which were (ii) all the elements brought into existence or transformed by the participants' activity (their own activity, that of others, the organization, etc.).

Depending on the authorizations and opportunities for access to practices, documents, and participants, the method combined (i) direct observation of training situations with note-taking, (ii) documentary study of various activity traces (postings on site, working documents, reference documents, circulars, email exchanges, etc.), and (iii) informal exchanges with the participants.

3.3.2   Observatory of Training Activity

The analysis of the participants' activity during the guided games constituted the hardcore of the study. The activity was documented in its observable dimension (participants' behaviors captured in terms of gestures, positioning, movements, attitudes, statements, interactions, etc.) and in an unobservable dimension that was nevertheless accessible to the consciousness of the participants (concerns, intentions, expectations, perceptions, attentions, emotions, knowledge, etc.). This dimension of activity was documented at two levels: (i) reflexive consciousness, which was expressed in ordinary exchanges with the researcher, and (ii) pre-reflexive consciousness, which was expressed under specific conditions of exchanges based on the situational analysis of the actor.

Here again, the method combined (i) direct observation of training situations with note-taking, (ii) deferred observation using photos and video recordings of

various kinds (onboard cameras, wide shots, and 360° format), and (iii) an interview modality that articulated phases of experience description through self-confrontation, and comprehensive and reflexive phases built on the basis of a prior reenactment of the situation. Self-confrontation (Rix-Lièvre & Lièvre, 2009; Theureau, 2003) consisted of retrospectively confronting participants with video recordings of the situations studied, and in particular of their behavior, in order to promote an embodied speech position.

3.3.3 Data Processing

Two occurrences of the program were studied. The data collection is summarized in Table 1.

The processing consisted of identifying the significant elements in the corpus of observation and interview data with regard to the research question, that is, those elements indicating modifications in the participants' disposition to act. We then evaluated the gradients of typicality in these elements. Typicality was assessed by: (i) statements by the participants on the recurring nature of a perceived element (a configuration, a situation, an action, a feeling, a communication, an interpretation, etc.), (ii) the frequency of occurrence of an element in the verbatims and/or the behavior of the same actor, and (iii) the identification of similar documentation in the verbatims and/or behaviors of several participants related to the same element. These elements were then progressively assigned to provisional categories with the aim of ordering them exhaustively. We regularly assessed these categories and their ability to saturate and order the variability of the significant elements: The four lines we present here result from this analysis.

Table 1 Summary of data collection

Simulation	Theme and duration	Type and volume of collected data
Simulation 1	Radiological attack	Informal exchanges
	150 minutes	Note-taking
		Photos (16)
		Video recording (170 minutes)
		Interviews (4 participants, total: 320 minutes)
		Diverse documents
Simulation 2	Chemical attack	Informal exchanges
	150 minutes	Note-taking
		Photos (20)
		Video recording (160 minutes)
		Interviews (4 participants, total: 363 minutes)
		Diverse documents

3.4 Results: Four Lines of Insight on Activity and Its Transformation in Crisis Simulation

The empirical analysis revealed four lines of insight into activity and its transformation in crisis simulation. Each of these lines of analysis shows the tension between categories having the same theme but that are polarized, even opposite at times, with the exception of line 1: enactment–reenactment.

3.4.1 Enactment–Reenactment

Enactment–reenactment concerned the immediate experiences of the participants in the simulated context. Enactment refers to the way in which each participant brought out and experienced real situations in the fictional scenario. Reenactment refers to an experience already lived by a participant that re-emerged and was thus reexperienced by him or her because of a strong proximity and resemblance between a situation currently being experienced in the simulation and a situation previously experienced (at work or in another simulation).

3.4.1.1 Enactment

Through the simulation process, it was possible to bring about situations whose rarity made them uncertain and difficult for the professionals to grasp. It is important here to differentiate between two cases. First, when the situations were somewhat familiar, could be sized up as to their extent, and were foreseeable despite being rare, the simulations allowed the participants to experience them in a concrete and plausible way even though what was at stake was of course fictitious. When these situations were made to occur in the realm of the participants' concrete experience—that is, within their field of attention but also in their bodies—they were able to gain a sense of "what it can be" and "what it can do" to be faced with a civil security crisis. Second, when the situations were largely new and out of the ordinary, the simulations allowed the participants to test their capacities for interpretation and action in highly stressful and uncertain conditions, thus also prompting them to extend their understanding (the domain of possible meanings) and develop the disposition to act in crisis situations (the repertoire of possible and desirable actions). By living out these extraordinary situations in simulation, the participants were also able to experience the feeling of vulnerability that arose from the mismatch between the means for interpretation and available action and the demands of the situation that needed to be managed.

At the end of Simulation 1, the Judicial Police Commissioner commented:

> After the training I thought, "Wow, there were a lot of things we should have known how to do that didn't work the way they should have. Things that we need to review without the other departments. So we organized a morning of additional in-house training to 'bring us up to speed'".

3.4.1.2   Reenactment

When the rare, simulated situations had a "family resemblance" with one or more situations the participants had already experienced (in real intervention or during a previous simulation), the simulations allowed them to re-do the experience in a new way. When the participants experienced reenactment, they mobilized, dramatized, and revitalized events, episodes, and even atmospheres from the past (Daugbjerg et al., 2014). This then contributed to a dual "circulation of experiences": between events that were chronologically distant and between people who were present but were not the same in the past and present situations. Reenacted under different conditions, the meanings initially produced were reworked according to modes of strengthening, weakening, and/or relativizing their validity (Rosch, 1978), a process that tended to enrich the participants' "reservoirs of meaning" (Weick, 1993) and thus their capacity for interpretation.

At the end of simulation 2, the Emergency Operations Commander commented:

> "I realized that I had too much of a tendency to be overbearing in these inter-service situations, even to 'spill over' a little into a scope of action that is not my own. And that this was likely to irritate some colleagues. This is a point of vigilance that emerged for me at the end of the training, and in retrospect it sheds new light on a real crisis management situation that did not go ideally, perhaps in part for this reason."

3.4.2   Curriculum–Discovery

Curriculum–discovery concerned the processes by which the participants benefited from the simulations with regard to the demands of a crisis situation. This benefit occurred because of the entire body of knowledge already established for managing a CBRNE crisis (the curriculum), the utility of which was felt from time to time as problems arose. It also occurred because of the practical confrontation with the demands of the crisis and the activity it typically encouraged from the participants, which resulted in frequent discoveries.

3.4.2.1   Curriculum

The participants were expected to have mastered a body of knowledge on CBRNE crisis management before the simulation program, which was designed to prepare them to put this knowledge into action. In this sense, the simulation program was a high point of the professional curriculum on crisis management situations. Nevertheless, we noted that the participants showed wide differences in their mastery of the "expected" knowledge or rather the knowledge generally accepted as useful for managing CBRNE crises. This difference is usually manifested by the tendency to pose questions to those participants perceived as being likely to know the answer. This sometimes gave rise to forms of "spontaneous tutoring" between

the participants, during which the transmission of knowledge could range from simple information sharing to more in-depth explanations on a topic. Thus, the simulations during the guided games were frequently punctuated by "instructive parentheses" that were both timely and ephemeral: a participant (more experienced on a given topic at instant *t*) filled in a colleague's knowledge gap. This could be related to any number of topics: an acronym, a procedure, a legal question, a geographic, professional or organizational specificity, etc., and was dealt with by a short explanation given in a natural and "fluid" way during the simulation without interrupting the unfolding of the scenario.

During Simulation 2, the young Medical Director asks the more experienced Rescue Commander as an aside:

– *What is the "RCI"?*
– *It's the Rescue Centre for the Involved.*
– *But aren't we supposed to call it the "RCTI"?*
– *That's what we used to say; "RCI" is an acronymic simplification.*
– *Okay! Thanks for your help.*

3.4.2.2   Discovery

Although the simulation was an opportunity to put into action a predefined curriculum, it was also the occasion for many experiences of imitation, learning, or reciprocal adaptation for the participants as they interacted with their counterparts from other professions and services, and therefore other cultures. This "reciprocal acculturation" was not the only means of discovery. Confronting the scenario created multiple opportunities for imagination (formulating and prioritizing explanatory hypotheses on the basis of rare, imprecise, or even potentially false information), invention (inventing new modes of action), and improvisation (finding resources in an environment that was a priori devoid of them in order to be able to act), etc. All this was possible because of the participants' engagement, which had been provoked and sustained by the dynamic nature of the simulation. This sustained engagement was thus accompanied by the "training of attention," which simultaneously encompassed vigilance to the various aspects of the threat, a necessary attention to detail, and attention to oneself and others in the situation—in such a way that the participants developed a special disposition for attentiveness as an aide to crisis management.

At the conclusion of Simulation 1, one firefighter officer comments:

I learned a lot about the needs and concerns of medical rescue colleagues in this type of situation. I also understood why our colleagues from the police department are bothering us with certain procedures related to the investigation.

3.4.3 Disruption–Reassurance

Disruption–reassurance concerned two opposing modes of preparation for crisis management. Disruption consisted of prompting responsiveness by bringing about situations that shook up the participants' expectations in order to test the robustness of their modalities of interpretation, action, and collective configuration, and/or to encourage the development of new modalities. Conversely, reassurance consisted of encouraging the success of the participants through scripting effects, either on an ad hoc basis or overall. The idea was that succeeding together helps the team, even in a simulated context, to increase the feeling of competence and preparation in the face of a major crisis.

3.4.3.1 Disruption

The simulation included "injects," events aimed at iteratively creating disruptions in the course of crisis management. These disruptions could play a simple role of focusing attention and/or concretizing the variability of events that can occur during an actual crisis. They could also play a more decisive role that ranged from calling into question the culture of action or profession to provoking surprise, shock, and dissatisfaction—even to the point of rendering the participants' activity "insufficient" to address the emerging problems. This type of disruption may lead to a major bifurcation in a participant's developmental trajectory. More broadly, disruption can encourage not only the reorganization of actions and resources, but also the imagination of new possibilities for interpretation and action. The configurations of collective activities tested in simulations tend to materialize in real crisis situations when certain conditions are present (particularly partial resemblances or family resemblances between the conditions of training and those of real work).

At the beginning of Simulation 2, the Police Commissioner is missing. The Director of Emergency Operations then entrusts the command of Police and Gendarmerie Operations to the Captain of the Gendarmerie, a responsibility that he has no experience in and that his rank normally does not allow him to take. The beginning of the simulation was very difficult for the captain, who received a great deal of information and requests that he tried to process as best he could. After about 20 minutes, his superior (who was training in another room) comes to replace him so that the command is assured by a qualified officer. This double change in roles experienced by the captain proved to be very disturbing for him, but useful and constructive in allowing him to foreshadow a possible scenario. Indeed, in crisis management, a hazard can make it necessary to substitute roles. This is why it is worthwhile to train in order to achieve the best possible fluidity.

3.4.3.2   Reassurance

Although the simulations were designed to disrupt the participants' activity for the purposes of training, learning, and development, the scripting and debriefing procedures systematically led to a finding of "relative success": The simulation was generally successful (because in a guided game, the problems to be solved are reasonably sized and the facilitators intervene if needed to help the participants to solve them), but points for improvement in crisis management were always identified. One might question this "always happy" ending from the perspective of training evaluation. However, it fulfilled an important function of collective reassurance, helping the participants to see (or believe) that they were ready and capable and would know how to cope in a real situation. This function fueled the feeling of individual and collective competence and to unite these professionals as members of a "winning team."

At the conclusion of Simulation 2, a firefighter comments:

> We still think that if it were to happen, we would not be lost. There are always things to improve, but overall, I think we managed the events well. It's important to feel capable of dealing with this kind of situation, because the risk of something like this happening is real.

3.4.4   Trust–Distrust

Trust–distrust concerned the nature of the social relationships that were established explicitly or implicitly between the participants. Crisis management requires mechanisms to reduce complexity, and knowing how to determine who to count on (trust) and who not to count on (distrust) in a given type of situation is one such mechanism.

3.4.4.1   Trust

We saw that reassurance was based on a sense of individual and collective competence when a simulated crisis was effectively managed. Reassurance thus refers to a feeling of confidence in oneself and others, and it can be diffuse or, on the contrary, it can stem from very specific significant experiences of competence and/or reliability being demonstrated to another participant or to everyone. This was particularly common in interactive episodes in which a participant sought the assistance of a third party perceived on that occasion as relevant and effective. This significant experience tended to be typified (taking on a value that goes beyond the situation in which it was experienced), and it can be expected that it will be echoed in similar situations in the future. This experience of trust thus constituted a resource for action, which can be summed up in the formula "this person/this group of people is reliable in this type of situation."

At the conclusion of Simulation 2, a Gendarmerie Officer commented:

> It's important to know who you can count on when the situation starts to get out of hand. And it's true that with these colleagues, we work together on a daily basis […], we train together in complicated situations like this one, and that creates bonds between us. Bonds of trust that reassure us that we can count on each other.

3.4.4.2   Distrust

Although simulated crisis management is particularly favorable for building benchmarks, especially social and organizational, it should be noted that social benchmarks are not limited to establishing relationships of trust, but also relationships of distrust. Although it seems counterintuitive, relationships of distrust can be resources for action. This meaningful experience also tended to be typified, and it may be expected that it will be echoed in similar situations in the future. The experience of distrust thus constituted a resource for action, which can be summed up in the formula "this person/this group of people is not reliable in this type of situation." Distrust arose mainly from conflicts of objectives, methods, and standards between different services or professionals engaged in the same task. A notable limitation of the simulation, in this regard, is that it provided very little framework for discussion and debate, with action and organization oriented toward solving immediate and urgent problems.

At the end of simulation 2, a Gendarmerie Officer comments:

> It's tricky to say but it's true that there are people or even services with whom we don't get along well, which doesn't facilitate cooperation. We see this in the simulation, but it's not surprising because in reality it happens in the same way with them, that is to say badly. Often we have to deal with them, but if we can do without them, we do it…

4   Conclusion

Civil security crisis simulations, such as we have seen, script and animate situations likely to provoke significant experiences of not only surprise, uncertainty, distrust, and discomfort, but also complicity, solidarity, reassurance, and even pride, depending on the moment and the participants. Without these experiences, CBRNE crisis management would remain virtual and very abstract, and the participants would have to wait until they were actually confronted with a crisis to develop their capacity to deal with it. Thus, the crisis simulation can be a "controlled space for experimentation" (Becerril Ortega et al., 2022) during which participants experience a crisis in a controlled manner. This type of program encourages a form of exploratory activity from which multiple learning and development opportunities can emerge (whether or not linked to the body of knowledge predefined as being relevant), such as those we have described along these four analytical lines.

The dimension of reenactment was added to that of enactment, the interest of which we have explained. Reenactment episodes are re-presentifications of past events (Tutt & Hindmarsh, 2011) in which the present and past coexist on the basis of a resemblance (from the perspective of lived experience), the past being the object of vivification (Nichols, 2008). This immediate relationship between significant past and present experiences can constitute a powerful vector for reconfiguring the relationship maintained between the participant and the significant event at the origin of the process (e.g., Drakos et al., 2021). This reconfiguration can potentially be actualized in all dimensions of the event and can even "migrate" through meaningful sharing among multiple participants. Indeed, in addition to contributing to a form of "sharing in action" between participants, one of the interests of simulation training resides in (i) the possibility of physically experiencing the power "to act" together in a way that exceeds the individual capacity for action of the various participants, and (ii) the creation of a "community of activity" in which inter-service interactions are gradually mingled with ordinary modalities of intervention.

Crisis management simulations constructively exploit collective activity beyond simply familiarizing trainees with collective techniques and procedures (acquisition, stabilization, automation, coordination of the practical actions of the various actors in the field). Although familiarization remains important with regard to the gestures and procedures to be mastered in primary intervention (technical and organizational resources directly available and activatable), the part of crisis intervention that requires sensitivity and its deployment in the collective seems to be an essential aspect of learning and development that occurs in crisis simulation. These simulations encourage in the participants the emergence, testing, and strengthening of dispositions to "see," "perceive," "feel," "act," "imagine," and "interact" in a crisis. This "dispositional" perspective (Muller & Plazaola Giger, 2014) makes it possible to think about and account for the transformations of activity in simulation while maintaining a certain distance from the basic notions of training (techniques, procedures, etc.). Simulation can then be understood as a space not only for training personnel, but also for creating effective collective activity configurations, underpinned by what we call dispositions. The four lines of analysis presented here seem useful for enhancing our understanding of the conditions under which training can encourage the development of dispositions to act in a crisis situation (reorganization of available resources, creation of new resources, rebound capacity, etc.).

We noted the paradox in crisis simulations, which consists in seeking to disrupt the participants' activity to meet training, learning, and development objectives, all the while ensuring that the scripting and the modalities of debriefing create the conditions for a "positive outcome." To this end, we observed that the disruptions and problems to be solved were always reasonably sized and the simulation facilitators always intervened as needed to help the participants resolve them. Nevertheless, simulating disruptive events (outside the known framework, without the possibility of assessing the size of the disruption or its danger, where all seems to escape "understanding") seems to be crucial for preparing professionals to manage real and more extreme crisis situations and not just what some participants have called "ordinary crises." Yet conceptually and operationally, much is still lacking that would

equip facilitators to design and implement ways to exit from more extreme crisis simulations—that is, with disruptions that offer the participants "desirable difficulties" (Bjork, 2013) likely to improve their performance.

Professionals in fields that concern issues of security and threats of crisis face a wide range of challenges: automating first-line actions and procedures (technical and organizational resources that are directly available and activatable) without compromising the ability to adapt to the unforeseen or even the unthinkable (events outside the framework, whose size cannot be assessed); strengthening individual and collective feelings of competence ("if it happens, we'll be able to cope") without creating the illusion of ultimate control ("losing control, that can't happen to us…"); and developing both proactivity, i.e., the ability to maintain a level of safety or halt the escalation of a threat, and reactivity, i.e., the ability to bounce back from critical organizational destabilization. A crisis is an event of powerful intensity that also offers the conditions for major transformations. We contend that crisis management training should exploit the characteristics of the crises for which trainees are preparing (accidents, cyberattacks, terrorist attacks, etc.) as a means of creating the conditions for individual and organizational development. Simulation offers the opportunity for empirical investigation in a research direction that seems highly innovative in this sense: the development of a technology for using perturbation as a tool for training (Flandin et al., 2018; Gorman et al., 2010; Schot et al., 2019). Other innovative and ambitious research programs are needed, particularly to enrich our understanding of the concrete effects of training and training exercises on real-life interventions (in terms of learning and development, repercussions, and the improvement of intervention practices). This would make it possible to establish a compelling link between training design and implementation principles on the one hand, and what is empirically documentable in the field on the other hand.

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