Safety theoretical issues: Scientific please, but keep it brief

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ABSTRACT: Pursuing the thesis that *theory is method*, the paper advocates the value of taking the theoretical 'long road'; that is, staying wary for, and actively trying to match ones theoretical effort against formal theoretical principles. Today's research practice appears forced or willingly attuned with quick business. The paper addresses obstacles to the long road, e.g. illusions, double edged swords (and standards, e.g. scientific, yes please; but keep it brief). Acknowledging that we are captives of our own words, the discussion pertains to how we, in our own theoretical efforts addresses formal principles. We argue that a constant dialogue with formal theoretical principles sparked momentum and imagination in our attempt to theoretically accentuate *organizational* resilience by issues like episodic resilience, dispersed decision contexts, prescription vs. practice (Nathanael and Marmaras, 2008), rational facades/organizational impermanence (Weick, 2009), actionable knowledge, communities of practice (Brown and Duguid, 1991), and social emergents (Sawyer, 2005).

1 INTRODUCTION

How do you apply theory in your work? What formal theoretical approach anchors your starting point embarking on a new task?

Inspired by these questions, the paper seeks to address the use of formal theoretical issues in contemporary safety research attempting to grasp a composite of technological, human and organizational elements. Based on the thesis that *theory is method*, the paper aims to advocate the value and need to take the 'long road' in terms of theoretical work. By 'long road' we refer to the attempt of adhering to a set of formal theoretical principles: concept elaboration, conjecture beyond description, traceability, association specification (presented in section 3 below). These principles are argued to serve as crucial generic navigation points in theoretical efforts.

Considering the mandatory 'theoretical review' in most grand scale research projects with funding, one may rightly argue that a lot of research is theoretically driven. Today's well-behaved researchers are annoyingly good at writing scientific summaries and state of the art overviews.

Despite the fact that theoretical reviews are part of the protocol package when research is commenced, it seems reasonable to state that what is produced is rarely pushed beyond expert summaries. At the same time however, models

are produced and paradoxically offered as mini theories with elusive traceability back towards theoretical presumptions and premises. By calling attention to what we call formal theoretical issues, we must create an anchoring point for the discussion. Fundamental questions are: What do we mean by 'science'? What do we mean by 'theory'?

A classical tension that has haunted philosophers of science is the divide between facts (observations) and theory (going beyond observation) (Bem and de-Jong, 1997). This hints at fundamental issues well beyond the scope here. Still, we may use this divide as anchoring or starting point. According to Bem and de-Jong, science can be described as organized common sense; and scientists must move beyond inspection, enumeration, and description of the observed (Bem and de-Jong, 1997). Thus, the scientific effort involves elements of construction (i.e. the use of ideas and imagination, of moving beyond the observable). In other words, the scientific effort involves the use of theory, in various degrees.

De Groot defines theory as *'a system of logically interrelated, specifically non-contradictory, statements, ideas, and concepts relating to an area of reality, formulated in such a way that testable hypotheses can be derived from them'* (De Groot, 1969, in Bem and de-Jong, 1997, p. 15).

In light of the above, theory is the instrument, for the endeavor of work ing with ideas, notions,

and conceptions. By this sober yet very broad conceptualization of 'science' ('organized common sense'), both the significance and the role of theorizing appear vividly: theory is method.

Chalmers (1990) encourages criticism of knowledge claims that are presented 'as if' they represent science in the physical science sense. This is a valid point in its own right. It is however reasonable to argue that a similar 'as if' frequently appear in the contemporary safety scientific context. This relates to technically based (borderline mathematical) knowledge, produced and presented 'as if' generated via e.g. sociology, psychology, philosophy etc.

In any case, our point is to advocate the need and value of taking the 'long road', of connecting the theoretical attempt to formal theoretical principles, as a way of working with theory, and as a way of portraying the effort 'as is'.

1.1   *Aim of the paper*

Pursuing the thesis that theory is method, our intention is to advocate the active application of theory. This does not imply that 'a' theory-method is suggested. Rather, it reflects acknowledgement of working with ideas, the conception that any shortcut in these respects is an actual short-cutting of reasoning and theoretical development.

The paper is structured as follows: In section 2, a case is made for research as a provisional rational project. In section 3 a set of formal theoretical principles is presented. Section 4 addresses presumed treacherous shortcuts to the ideal long road. In section 5, our own theoretical work regarding organizational resilience is described as the prelude for the discussion in section 6.

2   RESEARCH AS A PROVISIONAL RATIONAL PROJECT

The research area to which we want to advocate *theory as method* is organizational resilience. We argue that this area in some ways fundamentally challenges the prevailing *common sense* in safety practice and research. It is thus urgent to ensure that we are not trapped by a notion of "research as organized common sense". *Resilience* as a concept is generally justified by reference to complexity and emergence. These are notions that from the outset challenge traditional scientific assumptions of correlation, causation, "laws", and system regularities. Resilience challenges the very rationality of enforcing compliance to rules and procedures for the sake of safety.

Moreover, in addressing *organizational* resilience in dynamic contexts, it is thus urgent to accommodate the premise of *social* emergence and complexity. This is based mainly on the presumed influence of symbolic interaction (Sawyer, 2005), and how this distinctively differs from "material" or "computational" complexity and emergence. It is thus crucial to pay attention to the distinction (applied in social sciences) between *understanding and explaining* a (possibly emergent) sociotechnical phenomenon.

Hence, we need intellectual orientations that go beyond the rather habitual, ritual discussion of preferences for induction versus deduction in order to reveal stable laws or regularities that repeat across systems. Alvesson and Sköldberg (1994, 2009) offer cues to such an endeavor: They point out a need to complement scientific quests for "truths" (e.g. as in truth by correspondence between theory and "reality") with the attempt of revealing (often tacit) *meaning* to actors involved (researchers included). Furthermore, Alvesson and Sköldberg describe the principle of *abduction* to shed (alternative) light on the relation between theory and empiric "facts".

Abduction begins with an empirical basis (as in induction); however, theoretical preconceptions are not rejected. In this way, abduction is closer to deduction. Analyzing empirical "fact(s)" may indeed be combined with or preceded by previous studies/literature. The application is not mechanical on single cases; but rather as described by Alvesson and Sköldberg *(…) a source of inspiration for the discovery of patterns that bring understanding (…). Theory is (…) poetry in and through facts (…). "Facts" thus serve to occasion the theory, while continually playing the role of critical tuning instrument and fount of new ideas for the theory*" (Alvesson and Sköldberg, 2009, p. 4).

Accordingly, they advocate the value of "idiographic" research on singular cases, and that instead of chasing ever-increasing exactness of methods in order to crystallize "definitive" terms and variables, research need to use "sensitizing" terms and devices that stimulate the sensing of new (emerging) relations, perspectives and world views.

Alvesson and Sköldberg (2009) also points to the similarity between abduction and hermeneutical method (in terms of the role of preunderstanding), e.g. by reference to Eco (1990). Hence, employing abduction as underpinning for the formal theoretical principles (below) the paper attempts to ease a future critical inquiry of our research due to the principle of "critical theory as triple hermeneutics". According to Alvesson and Sköldberg, qualitative research is not a technical project, but an intellectual one with a provisional character, in which the core of rationality is more about reflection than procedure (Alvesson and Sköldberg, 1994).

3 FORMAL THEORETICAL PRINCIPLES

The following are generic underpinnings or formal theoretical 'checkpoints', argued here as being important markers for consideration in any theoretical attempt, including, but not exclusive to, our "provisional" needs for addressing resilience.

- *Concept elaboration.* This basically refers to the need and importance for stringent application and elaboration of each key concept used to build the theory.
- *Conjecture beyond description.* The (obvious) goal of any theoretical effort should be to move beyond current status, and point towards additional possibilities and variations of current state of affairs (either in terms of understanding, bringing in new elements, or in terms of supporting, questioning, refuting or rejecting prevailing ideas). Hence, this checkpoint inherently supports a process of abduction that is triggered by idiographic analysis, explicitly encouraging the use of sensitizing concepts.
- *Traceability.* Effort should be made to show the 'lineage' of the idea(s). Although verification of where a given idea starts is impossible, an honest attempt should be made to point towards key references and sources of inspiration that can retrospectively account for the abductive process.
- *Association specification.* Exactly what does the theory imply in terms of paths of influence, connection, and interaction? Another way to look at this point is that it directs attention to the in-betweens in the theory; the lines and arrows presumed to tie the concepts together.

It should be recognized that these principles are not argued as separate categories to be controlled for, each in their own right. Rather, they are suggested more as a compound of closely linked features that need careful consideration in the effort of working with theory. Hence, by bringing e.g. association specification to the fore, the remaining principles are by default triggered, demanding commentary and assessment.

4 TREACHEROUS SHORTCUTS

By efficient use of various modeling logics we dare to argue that boxes are too often leniently thrown about and scattered, all tied together with a web of strings and arrows indicating relevance and association. Yes, this rendering of current 'theory production' is a vulgarization. Still, apparently not too far from the truth (hopefully, the paper "sensitizes" the reader to see exactly that side of it).

There is of course nothing inherently wrong with model application. In fact, if theory is method (key thesis of this paper), methodological modeling is recognized as part of theory production. Model and theoretical development are thus interchangeable steps on the same 'long road'.

However, the problem strongly presents itself in cases where everything stops with the model. That is, beyond the model/figure/representation there is not much more. The model in such cases, typically presented as a compact kind of conjecture-set, is rather void of theory and explanatory power beyond an externalized language of (e.g.) systems "being able to ...." something.

Despite the fact that the buying end of research advice and counseling probably applaud this efficiency, we should in decency and by decorum recognize this for what it is: a treacherous shortcut. Presuming that there is a scientific ambition in efforts that are promoted as scientific, a question of why remains.

The honest answer to this is probably linked to the business side of contemporary research. Competing to capture the next project, answers and solutions are quickly generated and served. Today's research practice appears as both forced and willing to be attuned to fast business.

Money and politics are beyond the scope of this paper; both issues should nevertheless be recognized as possible 'motivators' in terms of why shortcuts are taken. Not considering possible motivators involved, there are various variations of the 'empty model'; e.g. enormous figure maps of boxes and arrows, flashy statistical fishing trips, and convenient 'magic spell-like' use of concepts in order to appear relevant and up to pace with current explanatory trends. Typical (unfortunate) features are either a lack of explicit conjecture, or in the complete opposite end of things, a cocky presentation without any reservation of validity.

Regardless of variation, the problem is whether the model is 'sold' as a theory in condensed form. This way, such theories are deceptive in that they implicitly hint towards a background set of ideas, premises, and hypotheses that in reality is nowhere to be found. Here we arrive at what we argue represents a treacherous kind of shortcut.

Treacherous because in classical terms, there is no explicit way to identify the set of premises and hypotheses that the model is build from. There is no way to trace the development of the ideas backwards, no way to follow the argumentation, and understand how the theory emerged.

Efficient safety scientists of today seem to suffer from the 'boxology syndrome' (i.e. lenient use of boxes and arrows, as portrayed above), both with and without the use of statistics.

At face value, this may bee seen as benign syndrome, or even a virtue. This is because it responds willingly to the efficiency demand. In honest lighting however, the boxology syndrome caters for an overload of mini theories that seem rather void—of theory.

Adding to this picture is the paradoxical characters that may be described as 'the anti-academic academic', i.e. the scientific researcher that proudly rejects any dealings with theoretical loftiness. We dare hypothesize that this is also a reflection of a paralyzing "numbness" in front of the limited options of pure inductivism versus deductionism, to which a (failing) "qualitiative" procedure is one of the few resorts.

We may now turn to the research effort that in various ways have spurred our attention towards formal theoretical principles. In general terms, this is to explore principles of organizational resilience. By accentuating *organizational*, emphasis is put on concerted and responsive interaction across a diversity of organizational decision contexts.

5 ORGANIZATIONAL RESILIENCE—THE BUILDING OF AN ACTIONABLE THEORY

The following presents our own argumentation on organizational resilience. The rationale here should be recognized as twofold. First, research wise we are in the process of cultivating ideas on organizational resilience. The timing is thus excellent for an interlude; to take one step back and explore the constituents of our own theory—in the making. Second, as the paper advocates the value of taking 'the long road', we are captives of our own words. Put differently, we recognize and accept that our thesis backfires. The intention is to use our own theory as case and scrutinize its solidity in terms of formal theoretical issues.

5.1 *Organizational resilience—step 1*

Størseth et al. (2010) explored how elements of resilience could contribute to early recovery of high risk incidents in the offshore petroleum industry. Based on theoretical studies (e.g. Grøtan et al., 2008), resilience was operationalized as three 'Contributing Success Factors' (CSFs): Risk awareness, Response capacity, and Support, each with their own set of sub-dimensions. See Table 1.

The CSF operationalization was based on the underlying principle that a hallmark of the resilience ideas (as applied on organizations) is interaction and interchange between (organizational) layers, levels and focal points. As the notion of a resilient organization is immersed in both intra- and

Table 1. Hypothesized set of Contributing Success Factors (CSFs) for recovery and prevention of incidents.

CSF1 risk awareness

Risk understanding (CSF1.1): Knowledge to identify something as a risk. Risk understanding is thus the composite of experience and knowledge that risk perceptions are based on.

Anticipation[1] (CSF1.2): Knowledge in terms of what to expect.

Attention[1] (CSF1.3): Knowledge in terms of what to look for.

CSF2 response capacity

Response[1] (CSF2.1): Knowing what to do.

Robustness[2] (CSF2.2): Ability to withstand stress/demands without suffering damage, degradation or loss of function.

Resourcefulness/rapidity[2] (CSF2.3): Capacities to identify problems, prioritize, mobilize resources to avoid or cope with damage or disturbance; and achieve goals.

CSF3 support

Decision support[3] (CSF 3.1): For an organization to be resilient there must be a practice of decision support; e.g. related to production/safety trade-offs, this involves guidance for when to reduce or stop production in order to reduce risk. These kinds of "sacrifice judgments" (when production demands are sacrificed to maintain necessary safety standards) must be supported (Woods and Wreathall, 2003).

Redundancy[2] (CSF3.2): The extents to which elements, systems, and other units of analysis exist that meet functional requirements in the face of disruption, degradation, or loss of functionality. Human resources and organizational redundancy falls into this category.

[1]Based on Hollnagel and Woods, 2006. [2]Based on Tierney, 2003. [3]Based on Woods and Wreathall, 2003.

inter-layer dynamics, the study emphasized the need for the operationalization to allow these "inter-level resilience jumps". Adding to the potential bewilderment, the study put emphasis to the fact that each of the CSFs, in principle could be interpreted as a premise, a function, or a kind of ability.

As a preliminary empirical testing of the CSFs, the study conducted a series of interviews focusing on recovery of high-risk incidents in the offshore petroleum industry. The primary objective of this empirical testing was to explore how the resilience themes could be mapped on to real cases; i.e. how the CSF elements (in various shapes and constellations) could be identified, looking back on incidents that was successfully recovered. The study concludes that the CSF operationalization of resilience appear promising, both for studying what has happened (post hoc analysis), and also in the pre-emptive efforts of exposing risk hubs in new scenarios (e.g. new technology, new ways of

organizing). The CSFs should not be interpreted as a set 'matrix' dictating a set path of influence. They are to be read as a cluster of factors or elements that provide thematic focal points. The CSF cluster is an analytical stance, an approach to specify a range of potential processes and paths of influence. The CSF 'shape' or constellation will, and must vary—along with the context of application.

What is primarily suggested by the CSF operationalization is a process approach, a way of examining how principles of resilience potentially 'play out'. The form side of the approach should thus outweigh the content side of it. This does however not suggest that further examination of the content side is inadequate. In fact, the CSF operationalization have been put to further use in the Resilience based Early Warning Indicator method (REWI), a method for developing early warning indicators based on principles of resilience (see Øien et al., 2010 for details).

The CSFs were developed and forged to respond to what was a specified task of the project *'Building Safety'* (www.sintef.no/buildingsafety): identifying principles for building a resilient organization. This first stab at resilience in the organizational context was primarily concerned by identifying resilience gravity points, i.e. core elements as implied by resilience—and how they could play out and make an organizational difference.

Within the project *'Resilience-based Safety Management and Monitoring'* (ReSMaM) ideas and findings from Building Safety are currently further explored, cultivated, and developed. One of our tasks in these respects is to elaborate on what is actually implied by accentuating *organizational* resilience.

An important objective in Building Safety was to explore central components of resilience and how they could activate and organizationally 'play out'. For ReSMaM, contextualization is an important task to pursue. This involves elaborating on the anatomy of resilience in the organizational context of the offshore petroleum industry.

5.2 *Organizational resilience—step 2*

The ambition in ReSMaM is to specify and incorporate more into the organizational (resilience) scope. This 'moreness' is both related to looking further back into the management side of things, but it also refers to elaborating on how organization in the offshore petroleum industry is very much the necessary orchestration of a multitude of organizations (by use of sub-contractors and so on).

Beginning with the presumption that organizational resilience escapes instant measuring and observation, the opening challenge

for ReSMaM relates to both where and how organizational resilience can be explored, developed, and applied. ReSMaM frames resilience as praxis, as something someone executes. Although resilience is saturated by practice, it is also an organized activity. Regardless of organizing ambition however, the organized activity of resilience will be tempered by the fact that its achievements are not always resultant. They may also be emergent, with no guarantee for success. In order to grasp it, there is a need to look behind the 'rational facade' (Weick, 2009) of organizations. There is a need to question prevalent assumptions of unified actors, harmonized environments and long lines of uninterrupted action. At best, there can perhaps be small, subtle pockets of 'order'. Auditing organizational safety activities in general is extremely difficult (LeCoze, 2005); auditing resilience is even worse (Grøtan, 2011a).

Resilient praxis is organizationally embedded in activities with different purposes; dispersed and possibly even fragmented. How is resilience to be identified on these grounds? What shall we look for?

It is fair to assume that resilience will manifest (only) as episodic adaptations comprising clusters of potentially dispersed activities related to different organizational contexts (with differences in operational constraints, decision modes, decision priorities). Considering the conditions for implementing organizational resilience throughout a diverse and composite organizational reality, it is argued that this rests upon a constructivist premise, akin to the Communities-of-Practice (CoP) argument by Brown and Duguid (1991). That is, rather than to seek comfort in stereotypical conceptions of individuals, groups, roles, and formal institutional arrangements, CoP may be used as the prime unit of analysis. The organizational diversity in which activities are dispersed may be addressed by introducing the concept of organizational stratification. By this line of reasoning, different organizational strata are defined and approached as different CoPs that represent different action and decision contexts (Grøtan, 2011b).

Based on the above, organizational resilience is thus founded upon a productive interaction between multiple strata. Focusing on episodic adaptations require an attention to interactions across these strata, and the basic inventory or constituents of these adaptive episodes may be perceived along the lines of the CSF operationalization (Størseth et al., 2010).

Adding to the above, many of the cross-strata interactions will have an inevitable "prescription versus practice" character. By looking at these interactions in a dialectical manner (Nathaniel and Marmaras, 2008) the dialectical relations can

be perceived as springs of repertoires of resilient action. This should however not lead to the attempt of locking the focus on dialectical relations as the 'fighting' grounds for the development of punctuated, fixed 'new and effective' rules as a compromise between control regulation and autonomous regulation (LeBot, 2010). If so, the springs may dry out. The thesis put forward by ReSMaM (Grøtan, 2011b) is that by aiming for simplification and closure (the rational way from a managerial point of view), insight and opportunity may be lost. Moreover, these dialectical relations may have a nested character; the production of a "prescription" forwarded is based on a "practice" in its own right.

Summing up, ReSMaM accentuates organizational by exploring patterns of interaction both within and across strata, focusing on CoP dynamics and dialectics. The 'first mover' of this approach is the presumption that there is uniqueness to (organizational resilience) patterns; and that they are under constant construction. What is offered is a set of devices that in sum may provide a heuristic or an analytical stance for opening possibilities, identifying patterns, and trying to reinforce or "charge" focal points; all in the effort of exploring organizational resilience as actionable and situated.

6   DISCUSSION AND CONCLUSION

The discussion examines how our theoretical efforts on organizational resilience match our advocated virtue of the long road. To what extent does our work tap into the formal theoretical principles?

6.1   *Organizational resilience—step 1*

The research efforts in 'organizational resilience—step 1' (the Building Safety project) were driven by the assignment of addressing safety opportunities and challenges in petroleum exploration and production in the northern regions. Specifically, the Building Safety project aimed to obtain knowledge for building resilient operational organizations for petroleum production in the northern regions. The crux of the matter was that, held up against this specific context (petroleum exploration/production in the northern regions), both 'organization' and 'resilience' stood out as rather intangible concepts. Although we had some pointers as to how the organization formation would pan out, actual 'organization' formation was not yet decided at this point.

Important questions were e.g. how will the collaboration between on-/offshore look like? To what extent will hired help be part of the plot? What is the technological solution philosophy? How can the concept of resilience be explored and studied, in a way that matches this vague notion of organization?

Grappling with these kinds of questions, we were forced to work out (define, operationalize) both organization and resilience by striking a balance between the highly specific (and unique) context of the organizing venture, and the dimly lit marker lights we had in terms of organization formations.

These issues are permeated by the formal theoretical principles compound. In terms of *concept elaboration*, the questions at the starting line created a necessary detour (long road), in terms of trying to operationalize both 'organization', 'resilience', as well as hypothesizing how resilience could play out in the context at hand. By this latter point, the second principle is triggered: *conjecture beyond description*.

By conferring literature on resilience from various disciplines, the CSFs (as presented above) were hypothesized as resilience based gravity points. Based on existing theory, the attempt to frame resilience as an analytical positioning or approach. Not considering the value of this particular effort (i.e. the CSF cluster), it is reasonable to state that this exemplifies venturing beyond description.

As for *traceability*, a point was made to look at resilience ideas from various sources/disciplines; in these respects traceability was an important approach throughout. As traceability was (a necessary) part of this process (i.e. comparing various ideas concerning resilience), it is hoped that our presumptions, as based and build on the applied theoretical elements remains traceable and identifiable.

In a way, the principle of *association specification* captures the core idea of the CSF logic. A specific attempt with the CSF operationalization was to prepare for a range of possible connections between the resilience components. This was in part related to the presumption that (organizational) resilience, by implication involved associations cutting across levels and layers both within and between formal organizational borderlines. The attempt was to define the CSFs in a way that opened for looking at paths and connections between and across levels and layers. Adding to this was the acknowledgement that the CSF themes could vary in terms of taking on the form of premise, function, or ability. Opening for these latter variations (premise, function, ability) offered an additional observation point to look at how the CSF themes could be associated in various formations.

Summing up, it seems fair to state that 'organizational resilience—step 1' put the formal theoretical principles into consideration. This is

however a given, considering the abstraction level that both 'organization' and 'resilience' had at the onset. Without referring to the level of quality of our own effort, we are in the luxury of hindsight convinced that the grapple with formal theoretical issues has added a propeller; both in terms of creating theoretical momentum, and triggering the imagination.

6.2 *Organizational resilience—step 2*

In 'organizational resilience—step 2', a principal thesis is the importance of incorporating more into the organizational (resilience) scope. This concerns looking 'further back' into the management sides of things, as well as exploring organization 'as is' in the offshore petroleum industry. Core questions for ReSMaM can be recognized as linked to issues akin to paths of influence and interaction; that is, the 'in-betweens' in terms of how various gravity points within and across organizational borders affect each other.

The CSFs (organizational resilience—step 1) were, in terms of abduction, inspired by preceding theoretical work. The theoretical landscape (relating to resilience) may be seen as a source of inspiration that generated a notion of possible underlying patterns (CSF dynamics). The possibilities implied by the CSFs brought our understanding (of resilience) closer to the empirical world; i.e. closer to practice/action.

The CSFs were thus our first "poetry in and through facts". The next sensitizing "fact" that served to occasion the theory (poetry) further (as a critical tuning instrument and fount of new ideas), was a specific case or "narrative" of an organizational unit that was designated for a specific task of maritime area surveillance, that was able to "upload" another part of the operational theatre with critical resources (resourcefulness/rapidity in CSF terms) by direct intervention in logistical schedules. All based on anticipation of a situation that actually emerged later on. This narrative sparked the imagination of a series of possible extensions to the CSF theory, namely (1) the episodic character of resilient, but dispersed adaptations, (2) the embeddedness of action within different decision contexts, and (3) by implication of the common "marine" experience that formed the basis of the very act of anticipation in the narrative, the possibility that communities of practice, rather than formal institutional arrangements, constitute the grounds for the actual stratification of different decision contexts. Moreover, by implication of the latter possibility/choice, the emphasis on the dialectics of prescription versus practice became almost inherent, boosted by the fact that there

existed recent literature on resilience based on exactly that.

In terms of formal theoretical principles, the maritime narrative resonates with *concept elaboration* and *traceability* (inspired by the CSFs). Also, the narrative sparked *conjecture beyond description* in terms of several possibilities (e.g. episodic resilience, dispersed decision contexts, dialectics of prescription versus practice).

The fundamental idea behind the CSFs and their further elaboration was a quest for *actionable* knowledge. We wanted to elaborate resilience on terms that are recognizable (and thus actionable) in the organizational contexts, and felt that the CSF attributes contextualized into CoP based strata, located in a dialectic field, was a viable option in these respects. Here, we enter issues related to *association specification*. This approach also invites the attention to social emergents (Sawyer, 2005) rather than stereotypical cognitive schemes, and it also reflects the clear preference for metaphors of *social* complexity and emergence, rather than metaphors of crystallization of metallic materials, ants and insect swarms, bird flocks, ecological panarchies of adaptive cycles etc.

Moreover, it allowed us to incorporate the premise of the "impermanent" organizations (Weick 2009), and thus challenge the view that if an accident or incident investigation reveals an "imperfect" organization (that is, not compliant with formal rules), the accident/incident is attributed to this failure. We want to challenge this by asking, is the organization actually "working" (in order) when failure do not happen, or is it something else that "keeps it together" (that is, the continual "re-make" of the impermanent organization). This given, it is also more easy to comprehend that improvisation is part of resilience (and risk), and that improvisation is associated with impermanence in terms of sheer boredom (Ciborra, 2002).

6.3 *Conclusion*

Theorizing is the continuous groundwork of scientific endeavor. Our thesis was that theory is method. By using our own theorizing as example we have tried to demonstrate how the task demand a focus on formal theoretical principles; and that this serves as a methodological angle in order to devise and develop our approach towards organizational resilience.

As noted by Bem and de-Jong, one thing is to use imagination and construct daring new theories; another thing is to stay open-minded and open for both revision and refutation (Bem and de-Jong, 1997).

Staying receptive to evidence and argumentation brings additional weight to the importance of working with theory and ideas.

The fundamental task in ReSMaM is to identify patterns of interaction, within and across strata. By doing this, the theoretical landscape is generated by constant moves between formal theoretical issues and specific examples as faced throughout our research. This way, at least on formal grounds, we are intentionally taking the long road, by working with theory—as method.

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