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Valuation and Risk Management: Anticipation and Resilience

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In this paper, I address the question: how can anticipation and resilience be articulated, especially when actors are strongly engaged within one of these strategies? I draw upon a pragmatist perspective that I have constructed in my PhD dissertation (Eydieux, 2017) in order to propose descriptions of how actors can do that in real life.

Classical theories and practitioners of risk management usually agree on two generic strategies for this management. On the one side, anticipation consists in managing risk through a detachment of actors and concrete risky circumstances; for example, by analyzing risk, establishing rules and norms and implementing them. On the other side, resilience consists in managing risk through interactions between actors and concrete risky circumstances; for example, by using sharp technical or managerial skills, or discussing the situations at hand. These two categories help organizational scholars to think the management of work (among other things), and are used by practitioners when they divide work related to safety.

Depending on what we are concerned about, the relation between anticipation and resilience is different. "Politics of safety" are doctrines establishing coherence between risk governance and risk management in operations. Anticipation and resilience are exclusive for each other (Wildavsky, 1988), and must be balanced so that expected and unexpected risk can be managed properly. "Safety in the making" is concerned about how organizational reliability is maintained despite disruptions and complexities of technical systems (Weick & Sutcliffe, 2007). Anticipation and resilience work together and must be developed and managed simultaneously in order to avoid losing both of them. "Safety engineering" aims at designing safe systems. In this context, anticipation is the foundation of resilience, seen as the completion of safety (Hollnagel, 2006).

These perspectives have in common that they imply a difference of nature between anticipation and resilience. Actors in resilience cannot provide certain anticipations, and those in anticipation fix beliefs that are always incomplete for situations yet to come. Anticipation and resilience categories, usually handy, can be an obstacle in some situations. In operations whose activities take only the form of resilience, such as manual work or invisible work, it is difficult to dialog with other operations in order to anticipate and organize interactions (Eydieux, Journé & Tillement, 2017). For risk governance of projects that will surely produce

unexpected events, such as the dismantling of nuclear facilities (IAEA, 2016), it is hard to define how to demonstrate or measure the preparedness for the unexpected.

Methodology

In order to answer the stated question, I study the case of the "technical dialog" that I propose as an ideal type of anticipation and heavy handling activities that I propose as an ideal type of resilience. The technical dialog contributes to the nuclear risk governance in France. During this interorganizational dialog, the Nuclear Safety and Radioprotection Institute (IRSN) assesses the safety demonstration produced by a nuclear operator to get an authorization to dismantle a facility. IRSN questions the gathered proofs and requests more proofs, and the nuclear operator clarifies its beliefs. I collected documents on the elaboration of a safety demonstration and of a safety assessment report (Bowen, 2009), and complemented them with interviews (≈10.000p. total). I analyze the intertextuality of these two corpora (Keenoy & Oswick, 2004), and use narrative analysis to analyze the final documents' content and their production processes.

I also study some heavy handling activities searching for dexterity and skills developed by workers and how they are protected and maintained by managers. As a factory activity, heavy handling is poorly formalized and its organization is "forced in resilience" due to the factory's other activities (using it as a slack). Yet heavy handling is essential for the functioning of the factory, as it is impossible to move work parts without it and because each lift could have catastrophic human and industrial consequences. I proceeded by an organizational ethnography of heavy handling, based on situated observations (Journé, 2012) (12 weeks, ≈2000p. total). I study common typical situations of work and of management, and thus identify several necessary conditions for safety in heavy handling activity.

I finally compare how risks are managed in the technical dialog and heavy handling. I search for the comparisons that are the less inaccurate relating to each field and at the same time the more insightful regarding the articulation of anticipation and resilience in each context (Posnett, 1886).

A Pragmatist Approach Towards Organizations

In order to build a sound analysis while comparing very different fields (Corbin & Strauss, 2015) I propose a minimalist theoretical approach of organizations, presented in figure 1. It is based on two pragmatist notions¹. First is the notion of belief, i.e. habit of action that disposes individuals, groups and organizations to act in some way; which is widely found in the works of Peirce, James, Dewey and Rorty. The second notion is valuation, which is for Dewey (1939) a simultaneous

¹ In order to avoid the pitfall of representationalism implied by some popular terms associated with beliefs, for example "software", I picture the belief notion with a game pad, which disposes players to act in some way within video games circumstances.

judgment of a past action and framing of a future action. I consider it to be the action through which individuals, groups and organizations move from one belief to another. The interrelation of belief and valuation makes an approach through which organizations are viewed as implementations of methods for the conduct of human action. In other words, organizations are to be found in the ways we collect, select, analyze and test our data in order to decide on our conduct. This approach pursues an intellectual shift initiated by management studies, although accepted quite recently (Journé & Raulet-Croset, 2012; Lorino, 2018).

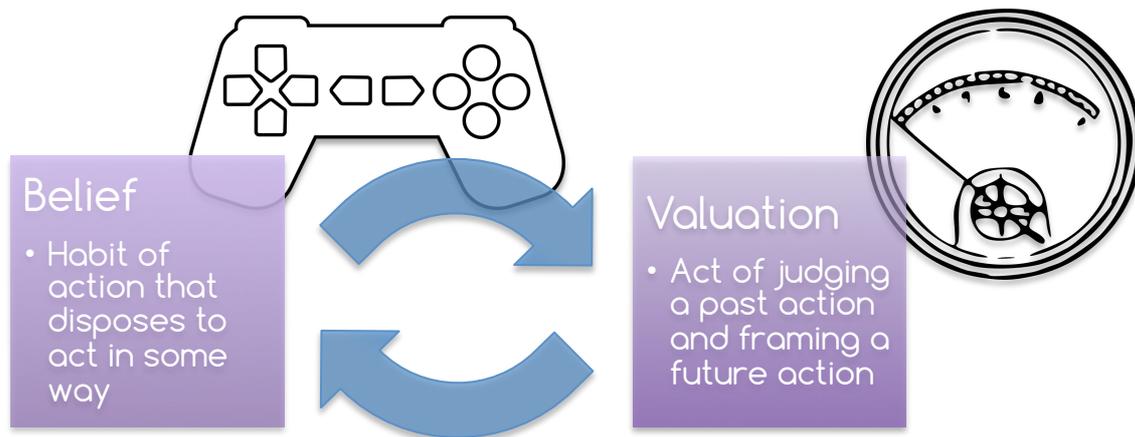


Figure 1: Organizations as methods for the conduct of human action

I identify three modes by which valuation may be realized, based on the methods of the fixation of beliefs by Peirce (1877). Thus, by analyzing how actors elaborate on the value of elements related to risks, I determine whether they're applying valuation by authority (method of authority), valuation by theories (*a priori* method) or valuation by inquiry (method of science). These modes of valuation are also found in James (1896) in the “authority” (p.9-10), the *a priori* rejection of telepathy (p.10-11), and the “intellectual republic” (p.30). They are summarized in table 1. Modes of valuation are applied to each strategy, and to their articulation, from distinct references I develop further.

	Valuation by authority	Valuation by theories	Valuation by inquiry
Anticipation Dewey (1973) on types of governments	Authoritarian government	Extreme radicalism and extreme conservatism	Attitude of inquiry
Resilience Dewey (1934) on types of critics	Judicial criticism	Personal predilection and partisan conventionalism	Helping the direct experience of others
Articulation Rorty (1989, 1998) on solidarity	Strongman	Cultural left	Self-doubt about pain and humiliation

Table 1: Three modes of valuation

Used both for the technical dialog and heavy handling activities, these categories are used to describe how actors elaborate new beliefs and doubts through

valuation, and to distinguish valuations by the level of reflexivity actors engage within their management of risks. My analysis thus shows that the notion of valuation helps to overcome the theoretical dichotomy between anticipation and resilience while recognizing the very practical difference between them. By thinking valuation as elaboration of "ends-in-view" or "mean-ends" (Dewey, 1939), the theory of valuation replaces the dichotomy between anticipation and resilience by a continuum of valuations made in different situations. So that we can find how actors strongly engaged within anticipation or resilience may contribute to the other strategy.

Practical Distinction Between Anticipation and Resilience

While Dewey (1939) would deny the difference of nature between anticipation and resilience - as he denies the difference of nature between means and ends - he would not deny the practical distinction between them, underlying instead that it is very important. People elaborating valuations are often different, along with their relations to the objects of their valuations. Anticipation and resilience are different as they involve different groups, which have different relations to risks.

Governing Risky Situations

In anticipation, like in technical dialog, people manage risks that are materially not here. In the case of the safety demonstration elaboration, I found that the nuclear operator worked with another company in order to assess the feasibility of a process based on rope access technicians. This company suggests setting up dedicated spaces in order to optimize movements of workers: spaces for pedestrians and forklifts on two distinct floors, and a space dedicated to rope access technicians to store their equipment close to the workplace. These suggestions are then included in the safety demonstration by the nuclear operator. The discussion about spaces involving nuclear operator and its partner is an implementation of valuation by theories, as it is based on theoretical considerations about the good organization of work. Integration of these suggestions in the safety demonstration contributes to the building of nuclear operator's authority, and as such is related to "authoritarian government" in Dewey's terms (1973).

In the case of the safety assessment report, I found that nobody has doubt related to skills at the beginning of the assessment. This is during their immersion in the field that Human Factors (HF) experts doubt that safety skills can be maintained, given that a lot of manual work is involved in the dismantling and given the imminent retirements of workers. They write a recommendation including three requests related to the management of skills and professional training. The recommendation included in the assessment report has its wording modified but keeps its initial meaning, so that the doubts of HF experts have become the ones of the IRSN. The elaboration of the recommendation by the HF

experts is closely related to what Dewey (1973) calls “the attitude of inquiry” as it is based on a doubt experienced by governing people about the interests of other groups (Lorino & Mourey, 2013). But then, the introduction of this recommendation in the assessment report is an implementation of valuation by authority as it aims at building IRSN’s authority towards the assessed case.

Having an Experience of Risky Situations

In resilience, like in heavy handling, people manage risks by interacting with them. In my observation of the work of a manager coordinating heavy handling activities of a factory (4 weeks), I see that an important part of his job is dedicated to free up spaces in which heavy handling workers can do their job. One morning we are quite busy, as he has to manage the arrival of two ferrules. Two trucks are coming with them, and a team of welders from the customer is coming to separate the ferrules from the trucks (to which they were temporarily welded for the transport). The coordinating manager finds space for the trucks in the factory by guiding their entrance himself *in situ*. He applies the valuation by inquiry, as his action aim at making clear the perceptions of truck drivers related to the spaces allocated for them. For the welders, the coordinating manager could just call the heavy handling team leader by phone to remember him the importance of saving them space so that they can work properly. Heavy handling workers may indeed occupy spaces the coordinating manager had just freed up. Here he is closer to “partisan conventionalism” (Dewey, 1934) as he recalls his colleague a rule widely known among people working with welders: they need space for their equipment.

In another context of observation, I was following two heavy handling workers, Florent and Gaël. They have to turn over a tubular slab (quite small but heavy). This handling is dangerous as the part has sharp edges that may cut the slings during the lift, making the part swing or fall. During the mooring, they use mats in order to protect the slings from the tubular slab. Florent has a greater experience of heavy handling than Gaël, and he sees he has difficulty installing a mat. He shows him how to do it, as shown in figure 2.

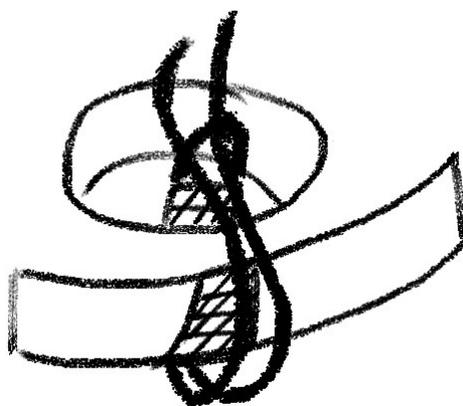


Figure 2: The “right way” of installing a mat in a sling

The problem experienced by Gaël was that he positioned the “U” of the mat the other way around, which made the mat move when the slings were tensed. In this case, Florent applies valuation by theories as he describes a rule widely known in the heavy handling craft. Later, seeing that Gaël still have troubles installing his mat, Florent shows him the trick again. He adds one precision regarding the position of the mat. As shown by figure 3, the mat should be positioned at the center of the sling’s trajectory.



Figure 3: Installing a mat “in the middle” of a sling

Florent here helps Gaël to perceive more clearly this common knowledge of heavy handling, thus he applies valuation by inquiry (Dewey, 1934). Gaël now have a clearer indication about how he can perfect is own action (Chia, 2003).

Articulating Anticipation and Resilience

While he recognizes the practical distinction between anticipation and resilience, Dewey (1939) would deny their difference of nature supposed by risk management literature and practitioners. This is good as this difference is what makes the question I am addressing so puzzling, and what blocks practitioners of the technical dialog (who think they cannot include resilience) and of heavy handling activities (who think they cannot anticipate). To describe how to articulate anticipation and resilience when one is strongly engaged within one of these strategies, I rely upon Rorty’s notion of solidarity and its obstacles.

No Articulation Possible

The first obstacle I identify regarding the articulation of anticipation and resilience is the use of authority for the valuation of risk. It outcomes in the Rorty’s (1998) “strongman”, i.e. the last conceivable solution when systems designed to produce solidarity have failed.

In the compared cases, valuation by authority occurs when the technical dialog is materialized in texts. As these texts do not articulate governed risky situations,

they do not help me identify how the valuations of heavy handling managers and workers may contribute to anticipation. For the same reason, I cannot say that these texts are articulating anticipation and resilience either.

In the presented cases, valuation by authority is only found in the technical dialog; but I also find heavy handling workers and managers who base their valuation of risk on their reputation of good workmen.

Missed Articulation

The second obstacle for the articulation of anticipation and resilience is the use of theories to value risk. This is what Rorty (1998) calls the “cultural left”, that is solidarity theorized to such an extent that it does not dispose people to act with the intention of helping other people.

I find this obstacle in three cases. First is where IRSN’s HF experts inquire and write a recommendation related to safety skills, while Florent explains a rule of the heavy handling craft to Gaël. The communication of common knowledge from Florent does not let me say that the inquiry of HF experts may help resilience. The second case is where the coordinating manager finds space for the truck *in situ*, while the company helping the nuclear operator suggests setting up dedicated spaces. As this company is expressing its concern with spaces from a theoretical ground, I cannot tell if the manager’s inquiry would help anticipation activities of other people. Finally, articulation of anticipation and resilience is missed in the case where the company makes the same suggestion related to space and the coordinating manager recalls to the team leader that welders need space in order to work. The problem is that actors are doing *a priori* valuations in each case, which makes I cannot know if these judgments are truly contributing to the management of risky situations.

Articulation Succeeded

I find the articulation of anticipation and resilience strategies, when one is strongly engaged within one of them, in the case where actors in both fields are applying valuation by inquiry. It is a most direct application of what Rorty (1989) calls “solidarity”: “doubt about [one’s] own sensitivity to the pain and humiliation of others, doubt that present institutional arrangements are adequate to deal with this pain and humiliation, curiosity about possible alternatives” (p.198). Actors thus engage with other people’s experiences of risk management (Shields, 2004).

The one case I found such a convergence of doubts is where IRSN’s HF experts inquire and write a recommendation about safety skills and where Florent helps Gaël to see more clearly the common skill of mats installations. The interaction between the two workmen let me say that the HF experts’ inquiry can help other people to have an experience of risky situations encountered during the dismantling operations. The concern of the HF experts regarding safety skills

makes me say that the sharing of craft skills, as Gaël does with Florent, is an important factor of risk governance (especially for a poorly formalized activity).

Concluding Discussion

The comparisons I have just made induce me to write down one method for the articulation of anticipation and resilience strategies. In my PhD dissertation, I call it “to give slack to the craft”. It consists in, *in an utterance or text describing an activity, **expressing precisely** some elements related to the activity (space, object, tools, raw materials), so that concerned actors can **doubt** the implementation of the described activity.* For example, for the director of a subcontractor company contributing to the writing of a subcontracting contract, aiming at his workmen having sufficient resources to work reliably on a construction site with multiple subcontractors, it would be using the opportunity to negotiate customer engagements to introduce specific elements related to his company’s activity, so that his workmen can claim not being able to do the job without them.

In my PhD dissertation (Eydieux, 2017), I propose that anticipation and resilience, the convergence of doubts from governance and operations, can also be produced by a lack of elements. I call it “to preserve an area of fuzziness”. It is, *in an utterance or text describing an activity, expressing part of it **in an allusive way**, because one is doubting of the exact way of expressing it, so that other people related to the writing can **specify the expression** after having subjected it to their own doubt.* For example, for a person writing a rule related to the conduct of a nuclear power plant wanting to prescribe a safe behavior, it would be using the possibility to indicate occasionally a result to obtain rather than a way to proceed, in order to arouse operators’ initiatives.

These two methods bring points of discussion with current literature about articulation of anticipation and resilience. They both extend the work of Weick & Sutcliffe (2007). With “to give slack to the craft”, I agree with these authors that articulation of anticipation and resilience, with the integration of elements, outcomes in beliefs more coherent with risky situations. “To preserve an area of fuzziness” makes me agree with them about organizational reliability resulting from continuous processes of representation refinements. The same method leads me to contradict Wildavsky (1988) about his idea of actors having to realize some sort of equilibrium between anticipation and resilience. For me, actors just do not express doubts that they think would be too much speculative in order to let other people doubt in a way more coherent with risky situations. Thus, the most important is not so much to balance source of rules, but rather to identify when we are not the best fitted to doubt. Finally, “to give slack to the craft” leads me to relax the theory of Hollnagel (2006) for which actors must perform very detailed analyzes of risky situations in order to be able to handle them. I say it is not necessary to analyze possible events or accidents. What is necessary is to clarify the elements we would need in order to make other people doubt of the viability of operations.

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