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Stress and decision: The role of experience

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ABSTRACT
Based on real cases, this communication aims to answer to the following research question: what can be the impact of stress on the decision taken by an expert? We assess that in our specific context, experience determines the level of stress. And due to the fact that our actors are driven by well-being, this stress will be positive.

Keywords

1. INTRODUCTION
Switzerland is a very nice country with plenty of wonderful mountain. Nevertheless, more than 100 alpinists die every year and nearly 2500 are rescued. 2010, December 12th, a free-rider on a snowboard – searching for sensations – has fallen from 30min off-piste skiing in the Canton of Glaris. He was 33 years old and he has not survived. He was performing an extreme ride and he had surely taken a bad decision. Was he under stress because he could not commit the raid as he wanted? Or was it rather a state of intense excitement, pleasure, in this exercise which is his passion? What role did or could have played the stress in the process? This is the context of this communication.

We aim to highlight relations between the stress and the performance of team leaders facing an extreme situation such as polar or high mountain expeditions. We base our work on two conceptual frameworks.

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First, *appraisal* theory from Lazarus (Lazarus, 2000, Lazarus, 2006, Lazarus, 2003, Lazarus, 2001, Lazarus et Folkman, 1984, Lazarus et Smith, 1988) provides us to better understand how to handle the concept of stress. Second, Naturalistic Decision Making (Kahneman et Klein, 2009, Klein, 1998) help us to deal with decision making processes followed by expert in natural settings. More precisely, we will try to answer to the following research question: **what can be the impact of stress on the decision taken by an expert?** This question is of managerial and academic interest. First, the goal is to provide real advices for people who could be confronted with high stakes situation. Second, we want to see how two streams of research can be mutually enriched.

Firstly, we describe what we consider as an **extreme situation**. Traditional management situation can be defined as follow: "when participants join together and have to accomplish in a determined period a collective action leading to a result which going to be assessed by an external person." J. Girin (1990: 142). A management situation is extreme when it presents three characteristics: time sensitivity, uncertainty and risky (Lièvre et Gauthier, 2009). Time sensitivity means that such a situation is disruptive. Uncertainty is a very well-known concept but here, we are facing a radical uncertainty because it is impossible to be ready for unforeseeable events. In this way, teams have to develop high resiliency capacities (Weick 1993, Weick et Sutcliffe, 2007). The level of risks is high and their effects are often dramatic.

Regarding our methodology, we are performing case studies (Yin, 2003). For the polar expedition, data was collected concurrently with the course of the expedition as part of a *participating observation* (Rix-Lièvre et Lièvre, 2010). It can be classified according to two categories: 1) a researcher's on board logbook, 2) simulated recall interviews on the personal experience of each team member (Rix-Lièvre et Lièvre, 2008). For the high mountain expedition, we have based our analysis on a film produced

by a high specialized guide and on a long interview – debriefing– with the team leader of this expedition (Rix-Lièvre et Lièvre, 2009).

2. THEORETICAL FRAMEWORK

We based our work on two theoretical streams that appear to be compatible (Hannah et al., 2009) but that are rarely used together in academic articles. The first approach focuses on the characterization of stress from *appraisal* on human behavior while the second explains how decision makers act in a real situation.

2.1 Appraisal and stress

We base our work on the approach of Lazarus and his concept of appraisal. The concept of appraisal was explained in the Lazarus's framework *cognitive-motivational-relational* theory (2001). It refers to an appraisal of the significance of the environment (objects and/or events) for personal well-being. Appraising is an intuitive, instantaneous, largely unconscious process, inseparable from the aspects perceived here and now in situation, operating on tacit knowledge basis about ourselves and our environment. The perspective is clearly relational: the appraisal of the events is what directs behavior—not the events themselves. The essential point, for Lazarus, is whether or not circumstances are relevant to personal values and to the existential impact of the goals he pursues (*primary appraising*), and on the other he (re)acts in conformity with this appraisal (*secondary appraising*). He affirms the relational nature of the two forms of appraisal: the relevance of a situation and adaptive activity in situation. The goal or project commitment determines, according to Lazarus, the extent of personal mobilization for a gain or loss: *what is at stake for the person?* This commitment is the main criterion of appraisal. Commitment determines, for instance, what a loss is, what importance it has, and what must be done to prevent it (Lazarus and Smith, 1988).

This perspective is useful for clarifying the issue of the appetitive or aversive values conferred on the elements in the environment on which the action takes effect (Coquery, 1991). (1985):*"Certain forms of contact and interactions are preferred to others, certain are sought for and even required (…), others are avoided and apparently harmful"* (Nuttin, 1985,p.15). Consequently, the subject and the world do not form two autonomous pre-existing entities subsequently coming together: *"the basic unit, from the beginning, is the functional network of the relations themselves (…). Outside this functional unit neither individual nor world exists"* (Ibid, 103).

Our analysis suggests that: the individual and the world should be thought of in relational terms; within this relational framework permanent appraisal is at work—it is activated not by the events themselves, but depends on their significance for the individual in the light of his well-being. Appraisal must be referred to preferential relations individual has established. These relations are established with the world from which action is not separable. The action is characterized by a behavioral dynamic and direction towards certain events evaluated as favorable and away from certain others appearing as harmful.

Therefore, the stress cannot be conceived as intrinsic to a type of environment and/or activity. It is not an aggression from outside. We can define the concept of stress as a negative emotional state resulting from the appraisal process, the latter establishing the inability to cope with the situation in spite of a stake and a significant commitment. As Lazarus mentions, stress has an impact on decision processes (Lazarus, 2000). However, the perception of a gap in a situation marked by a strong personal stake impulses action by orienting the commitment to the achievement of performance essential to the actor's well-being. The latter is driving.

2.2 Naturalistic decision making

Decision making is a process containing at least two steps: problem finding and problem solving. Two main approaches to decision making can be found. The first one is focused on the entire process and tries to conceptualize this process. The decision is the result of a rational choice between alternatives although this rationality can be bounded (Simon, 1997). This approach is useful to explain problem resolution and results in building guidelines that can help novice decision makers. At the end of the 80's, a team of researchers led by G. Klein decided to follow an original path to study decision maker (Klein, 1998, Klein and al., 1993, Lipshitz and al., 2006, Zsambok and Klein, 1997). They just observed the way decision makers behave in natural settings. That is what we do with leaders facing an extreme situation such as polar or high mountain expeditions. Such situation has all the characteristics of the environment in which the NDM movement is interested in (Orasanu and Connolly, 1993).

This naturalistic or observational methodology, which contrasts with experimental and quasi-experimental methodologies (Lipshitz and al., 2005), has led to a relevant result: in context, an expert decision maker facing a complex, urgent and risky situation does not choose between options to decide. His decision is the result of a recognition primed process. This new result appears to be very important to decision support, since it means that support is more effective at the very beginning of a decision process rather than at the end by proposing many options (Lebraty and Pastorelli-Nègre, 2004). Therefore, in

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the way the individual builds his situation with regard to what matters to him, the process of *appraisal* may appear discriminatory in the recognition primed process.

3. CONCRETE CASE STUDIES

We want to display two cases which contain paradox on the subject of the report stress and performance in the field of polar expeditions and mountaineering, as framework of a research program management in extreme situations (Aubry, Lievre, Hobbs, 2010). First paradox, two individuals placed in the same context may behave differently. Second paradox, two people living the same pleasure from a situation may assess the risk differently. We think that we can use the work of Lazarus mentioned previously to give an interpretation in terms of sensitivity and to explain these paradox.

3.1 One Tent: Two approaches

When the issue of the type of tent to be used on the Greenland has appeared, the team member with polar experience listed those features essential for a good tent: a four-season dome tent, with two apses[1]. He had one 2-place tent and Gerard borrowed a 3-place one. The solution was not ideal, but one that everyone could accept. In Greenland, the team began to pitch their first camp. Gerard joked, "So, how does this tent go up, then!" He unfolded it while two teammates dug in a snowdrift to find a place for the tent. He called on the 4th team member to ask for advice with the pitching. They then realized the tent was a three-season tent with two doors but only one apse. Gerard admitted he had not had the time to try putting up the borrowed tent ahead of time. With the help of a teammate, he put the tent up next to its definitive place while another went on digging in the drift, then went to the crest to find the route for the next day, while the others finished pitching camp.

For Gerard, the tent did not have the features required at the start, but it did have two entrances. The weather was fine and not very cold, so it would do. Having helped put up the tent, he allowed the others to pitch camp, dig in the drift, make a snow wall, and get water, while he climbed up the crest so as not to lose time and explore the next day's route. When interviewed about this event, he explained that he had a bad back, and for this reason could not pitch the tent or dig, so he decided to best use his time to explore and plan the route for the following day. For Dominique, putting the tent up for the first time in the expedition was important. The test had to be pitched well. Gerard had made a mistake about the tent as it only had one apse: it was a pity to let the snow into the tent—a consequence of having no second apse.. At the debriefing interview, Dominique explained this episode as an accumulation of errors: pitching the tent in a snowdrift exposed to the wind, having a tent without an apse to stop the snow from getting in, not knowing how to get organized collectively to pitch camp (i.e., not knowing who is responsible for what), etc.

Thus, certain elements seemed to be requirements for Dominique: the time and energy spent digging, protecting the tent, and pitching the camp were activities that tended to avert an undesired state of things, to satisfy his well-being. Gerard, for his part, was preoccupied by progression. Pitching the camp was not very important for Gerard as his attention was directed towards the following day's journey and his energy was spent on going forward. The concept of appraisal is essential to understand the actions of individuals and seize what they tend towards a particular performance in terms of what matters to the individual. Even if it wasn't the good tent, Gérard felt no stress: it is not so important. For Dominique, there is something to lose: his well-being. He perceived a gap between the situation and his expectancies. He mobilized himself in order to protect the tent and well pitch the camp. We can make the hypothesis that if the weather had been worst, his actions had not been sufficient to deal with this tent problem and he would have been stressed.

3.2 One situation: Two perceptions

Spring 2009, a team of alpinist tries to reach 8000m Manaslu summit in the Himalaya chain.

The guide, Joel, is highly experienced particularly of the Himalaya and develops a double ascent and progress technique. This technique aims to develop exploration rather than realizing an exploit. The idea is to live a human collective experience. On the last day, 7 remain from the beginning of this venture. They are at a high of 7500m. They fell in perfect shape and they are sure that is going to be a success. At 400m from the top, the guide decides to go back without any advance notice. He has assessed that weather situation may degenerate. During the descent, team members are totally disappointed like Luc. He was dreaming for this ascent since many years. He thought that he was so close…400m… He wants to reach the top and can't do so since the guide ordered to return: he is unable to achieve his goal and that generates stress. Luc had a lot of experiences in Europe, but none in Himalaya. In that way he can be considered as a novice. Otherwise, the guide is an expert. Thus, the assessment of a gap also depends on the expertise of the actor. Luc did not perceive the situation as dangerous. We can say that a person perceives a gap if he is in a situation he has experienced. The gap is not seen by a novice. Thus it could lead to non-adapted and can generate stress because novice does not understand the decision that has been taken.

4. DISCUSSION CONCLUSION

Stress results from the perception of a gap between the situation and the decision maker expectancies and capabilities. Several cases have been studied:

[1]The apses are projections of the double roof forming a sort of lock between the exterior and the interior of the tent; a lock where equipment can be stowed and protected from bad weather.

1) Gérard: nothing is at stake and there is no stress. But we have studied a specific situation: polar expedition or high mountains hiking. People involved participate freely to these projects and can choose their responsibilities. It could different for a mandatory job. This could be a stress factor because he/she can't achieve himself/herself in his work.

2) Dominique: what is at stake is his well-being, there is a gap between his perception and his expectancies but he can cope to the situation, deal with the problem and reduce the gap between his perception and his expectancies. Back to classical model, it could be identified to a positive stress;

3) Luc: what is important is to reach the top. He is unable to achieve it without the guide. That generates stress. This stress is even more important because he has not enough experience to perceive a gap and a danger.

To conclude, we can propose that an extreme situation is not necessarily a stressful one. However, a perception of a gap between situation and expectancies which could lead to a positive stress, is very important because it is necessary to begin an adaptation process. At least, stress is an important indicator of a lack of capacities to cope with the situation. In this way, we consider as Kahneman & Klein (2009) that expertise is determinant.

5. REFERENCES

Bogan, V. & Just, D. (2009), What drives merger decision making behavior? Don't seek, don't find, and don't change your mind. *Journal of Economic Behavior & Organization*, Vol. 72, n° 3, 930-43.

Bril, B., Rein, R., Nonaka, T., Wenban-Smith, F. & Dietrich, G. (2010), The Role of Expertise in Tool Use: Skill Differences in Functional Action Adaptations to Task Constraints. *Journal of Experimental Psychology: Human Perception and Performance*, Vol. 36, n° 4, 825-39.

Coquery, J. M. (1991), Motivation. Dans H. Bloch, R. Chemama & H. Gallo (Eds.) *Grand dictionnaire de la psychologie:* 480-82. Paris: Larousse.

Girin, J. (1990), L'analyse empirique des situations de gestion. Dans A. C. Martinet (Ed.) *Epistémologies et sciences de gestion:* 141-82. Paris: Economica.

Hannah, S. T., Uhl-Bien, M., Avolio, B. J. & Cavarretta, F. L. (2009), A framework for examining leadership in extreme contexts. *The Leadership Quarterly*, Vol. 20, n° 6, 897-919.

Ho, C. H. (2001), Some phenomena of problem decomposition strategy for design thinking: differences between novices and experts. Vol. 22, n° 1, 27-45.

Hung, S. Y. (2003), Expert versus novice use of the executive support systems: An empirical study. Vol. 40, n° 3, 177-89.

Kahneman, D. & Klein, G. (2009), Conditions for intuitive expertise: A failure to disagree. *American Psychologist*, Vol. 64, n° 6, 515-26.

Klein, G. (1998), *Sources of Power How People Make Decisions.* Cambridge: MIT Press.

Klein, G., Orasanu, J., Calderwood, R. & Zsambok, C. E. (1993), *Decision Making in Action.* Ablex Publishing Company.

Lazarus, R. S. (2000), Toward Better Research on Stress and Coping. *American Psychologist*, Vol. 55, n° 6, 665-73.

Lazarus, R. S. (2001), Relationnel Meaning and Discrete Emotions: Theory, methods, research. Dans K. S. Scherer, A. Schorr & T. Jonhstone (Eds.) *Appraisal Processes in Emotion:* 37-67. Oxford/New York: Oxford University Press.

Lazarus, R. S. (2003), Does the Positive Psychology Movement Have Legs? *Psychological Inquiry*, Vol. 14, n° 2, 93.

Lazarus, R. S. (2006), Emotions and Interpersonal Relationships: Toward a Person-Centered Conceptualization of Emotions and Coping. *Journal of Personality*, Vol. 74, n° 1, 9-46.

Lazarus, R. S. & Folkman, S. (1984), *Stress, appraisal, and coping.* New York: Springer.

Lazarus, R. S. & Smith, G. A. (1988), Knowledge and appraisal in the cognition-emotion relationship. *Cognition and Emotion*, Vol. 2, n° 4, 281-300.

Lebraty, J. F. & Pastorelli-Nègre, I. (2004), Biais cognitifs : quel statut dans la prise de décision assitée ? Vol. 9, n° 3, 87-116.

Lièvre, P. & Gauthier, A. (2009), Les registres de la logistique des situations extrêmes : des expéditions polaires aux services d'incendie et de secours. *Revue Management et Avenir*, Vol. 4, n° 24, 196-216.

Lipshitz, R., Klein, G. & Carroll, J. S. (2006), Introduction to the Special Issue. Naturalistic Decision Making and Organizational Decision Making: Exploring the Intersections. *Organization Studies*, Vol. 27, n° 7, 917-23.

Lipshitz, R., Montgomery, H. & Brehmer, B. (2005), There is more to seeing than meets the eyeball: The art and science of observation. *How professionals make decisions.:* 365-78. Mahwah, NJ US: Lawrence Erlbaum Associates Publishers.

Nuttin, J. (1985), *Théorie de la motivation humaine*. Paris: PUF.

Rivolier, J. (1998), Stress et situations extrêmes. *Bulletin de psychologie*, Vol. 51, n° 3, 717-18.

Rix-Lièvre, G. & Lièvre, P. (2008), Towards a codification of practical knowledge. *Knowledge Management: Research and Practice*, Vol. 6, n°, 225-32.

Rix-Lièvre, G. & Lièvre, P. (2009), Self-Confrontation Method. In A. J. Mills, G. Durepos & E. Wieben (Eds.) *Encyclopedia Of Case Study Research:* 847-49. Sage.

Rix-Lièvre, G. & Lièvre, P. (2010), An innovative observatory of project of polar expeditions: the organizing's question. *Project Management Journal*, Vol. 41, n° 3, 91-98.

Simon, H. A. (1997), *Administrative Behavior: A Study of Decision-Making Processes in Administrative Organizations.* Free Press.

Walker, G. H., Stanton, N. A., Salmon, P. M., Jenkins, D. P., Rafferty, L. & Ladva, D. (2010), Same or different? Generalising from novices to experts in military command and control studies. *International Journal of Industrial Ergonomics,* Vol. 40, n° 5, 473-83.

Weick , K. E. (1993), The collapse of sensemaking in organizations: The Mann Gulch disaster. *Administrative Science Quaterly*, Vol. 38, n° 4, 628-53.

Weick, K. E. & Sutcliffe, K. M. (2007), *Managing the unexpected : resilient performance in an age of uncertainty.* San Francisco: Jossey-Bass.

Yin, R. K. (2003), *Case study research : design and methods.* Thousand Oaks, California: Sage Publications.

Zsambok, C. & Klein, G. (1997), *Naturalistic Decision Making.* Hillsdale: Lawrence Erlbaum Associates Publishers.