Dynamics of resiliency in human systems

Key factors and key players

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Abstract—**For an operative organization, certain prerequisites must be met. Presence of resilience capabilities and an enabling environment does not provide a sufficient context for the emergence of resilience. Dynamics of organizational resiliency's process are multiple. Considering resilience as " a person's or group's ability to project himself into the future despite destabilizing events, conditions of tough life, sometimes severe trauma" underlines the importance of individual and of environment in which they evolve. The couple *"individual – environment"* can be observed at the micro, meso and macro level. It is the same for organizational resilience.**

Resilience can be seen in different forms: as a capacity for resistance, reconstruction or innovation. The resiliency's process it built into time. It allows to extract elements of a collection of events, and connect these to emergence of sense. The basic tool is the link. These dynamic is similar to the development of sense at individual and collective level. The process is performed by an actor, *"a resiliency tutor"*and / or stakeholder's group. Exercised in many ways it is assigned to somebody, or somebody appropriates this role. However it can be exercised unintentionally. Anyway, just like first mentioned, they are link's weavers and bearers of meaning. They play a key role in organizations dealing with destabilizing events. It belongs to the organization to take the initiative to introduce a dynamic of *"resilience"*. This role may also be provided by a service, a group of people, or a resilience cell. Let us not forget that members can find an internal support and / or external support to the organization.

Key words: organizational resilience, key players, resiliency tutor, key factors, toxic handler.

I.   DYNAMICS

Generally the concept of "dynamic" is associated with forces and motion. In fact this belongs to a the part of mechanics which studies the relationship between the forces and motion they produce. It combines the static which studies the equilibrium of bodies at rest and studies the kinetic movement.

Dynamics is a branch of physics (specifically classical mechanics) concerned with the study of forces and torques and their effect on motion, as opposed to *kinematics*, which studies the motion of objects without reference to its causes. Isaac Newton defined the fundamental physical laws which govern dynamics in physics.

The forces may be classified into two broad categories: the contact forces (friction, thrust, etc.). and the force fields (gravity, magnetic field, etc..) [1].

In the current language, the concept of dynamics is associated with the concept of vitality as opposed to apathy. The term is also associated with energy and efficiency. As opposed to static, it is manifested by motion, observable behaviors. Whether in physics or psychology we are talking about dynamics in the plural form because they are multiple. Originally, 'resilience' is a term in physics. Resilience expresses the ratio of the kinetic absorbed energy necessary to produce the rupture of a metal on the surface of the broken section. "Resilience, expressed in joules per cm² characterizes the impact resistance. (Le Petit Robert, édition 2009). In common language, the definition can be

summarized in a few words: "resilience or the art of bounce back." The study of resilience leads us to wonder in what there are intakes for systemics?

II. RESILIENCE: WHAT DOES IT MEAN ?

The concept of resilience is found in several disciplines: physics, metallurgy, computer science, ecology, finance, psychology, etc …In the psychology, resilience is the ability to live, to grow, overcoming the traumatic shocks of adversity.

Resilience is a more complex "phenomenon". B. Cyrulnik defines resilience as "the ability to succeed to live and develop in an acceptable manner in spite of stress or adversity that normally has a serious negative outcome risk."

Subsequently, a transversal definition will be adopted (Vanistaendel, Lecomte and Cyrulnik among others): "Resilience is the ability of a person or a group to project into the future despite destabilizing events, tough life conditions, sometimes severe trauma. This is the definition that we will take as a reference, because it passes from the isolated individual to the notion of group and community. The importance of the individual's interactions with the surrounding environment are thereby highlighted [2].

The issue that gave rise to the premises of resilience was to know what the particularities of an individual, its relational and psycho environment and his life story could take part in the state of lower resistance to nuisances and aggressions. This is how we rose from the study of vulnerability to that of resilience.

Two ideas, based on a single, have given rise to the concept of resilience: the one hand the concept of "coping" or "cope with", which corresponds to the idea of facing and adjusting ; on the other hand the notion of "invulnerability".

The coping is accompanied among some with stress, or burn out with some. Burnout sends a signal not only to the individual but also to the system.

The term "psychological spring" has been used frequently in the Quebec literature to translate the term resilience. In this sense it refers to the ability of a person, a group, a team to function well despite unfavorable circumstances.

According to Pierre d'Huy, "Resilience is the ability not to resist as a single block against all odds, but to be structured so that crisis or shock, even and especially those who are totally unpredictable , can be supported by the organization, and even to strengthen it. "

Reliability and resilience of organizations have been studied by Karl Weick. He has contributed to the understanding of the concept of reliability in different ways: firstly, maintaining a theoretical thread in all his works, and by refining the concept of reliability through the elaboration of relay concepts such as resilience, collective awareness, hedful interactions and mindfulness. Karl Weick, studying the breakdown of sense in organizations, formulates some reflexions about structures that promote resilience. Group size, allowing exchanges and uninterrupted interactions, reduces vulnerability of the group confronted with turmoil [3].

Apart from avoidance processes favoring stability or return to equilibrium, there are other more appropriate processes for moving towards a new equilibrium or towards innovation. The first one are studied by open "equilibrium" systems. The second group or remote systems of equilibrium are studied by Ilya Prigogine who introduce the notion of bifurcation.

The evocation or reference to a construction of an entirely different nature results from a bifurcation and akin to a mutation by changing with logic level. Internal or external shock can be an opportunity to see the emergence of a new order, a total transformation, a kind of rupture.

It is in the incessant flow of individual experiences that identity is concerned. It is as if each change is affecting the equilibrium of identity.

The crisis of individual identity is more difficult to cope and overcome. One may ask if behind this multiplication of identity crises, it is not the "principle of identity itself that disappears, which is in crisis" asks Philippe Zarifian. He added that such a move necessarily lead to reverse exacerbations, identity tensions. But above all it generates a trouble and anguish for certain type of individual, it is difficult to live without a collective reference to which identify .

We must recognize that individuals and organizations are engaged in major and unknown changes of which they often ignore the outlines. This phenomenon is amplified by globalization. New organizational designs will take over the current and new paradigms will emerge. Organizations and individuals are faced with lot of upheavals. They generate disequilibria, breaks and losses reference at the organizational and individual levels.

Resilience is part of the time: it does not fit to a state but at a evolving process. In fact, resilience is not similar to the linearization of actions but activates the capacity to adapt as quickly as possible and as easily as possible to the entire organization in situations of turbulences and shocks.

The recent acceptance of resilience is based on the idea that, after a disturbance, the system does not find in all cases a return to equilibrium. Resistance coexists with multiple adjustments and changes. Resilience is the property of a system, adapting its structure to change, however, retains the same path after a disturbance.

In connection with the work developed by the research laboratory CIRERO it became necessary to introduce a distinction in terms of resilience relative to the moment of a destabilizing event. CIRERO differentiate resilience 1 from resilience 2. In summary, the resilience of type 1 expresses the person's ability to mobilize necessary energies to regain a state of equilibrium prior to the shock within acceptable limits. The present and the past are the time perspectives. The resilience of type 2 expresses the person's ability to mobilize required energies to get through the crisis and find a new balance out in rupture with the previous situation. The time perspective is the present and the future.

The resilience of type 1 and type 2 should not be treated as the process of homeostasis to make the adjustments needed to maintaining the equilibrium. In fact, resilience precedes the process of homeostasis or mutation. Resilience is the ability to release energy required to initiate the process of change 1 or change 2 identified by the Paolo Alto school [4]. In this sense, resilience is a necessary condition to the processes of change. A resilient feeling of efficacy allows people to achieve extraordinary things through productive use of their skills in the face of difficult challenges.

Exploring ways to activate for crossing successive phases of resilience from the shock up to rebound from the deconstruction to reconstruction and especially at favorable conditions and key players. Some ways are in consonance with a precautionary approach to turbulence and upheaval.

III. KEY FACTORS FOR RESILIENCE EMERGENCE

A. The deployment of collective consciousness

Recall that in situations of turbulences, relationships, links, sense, identity, individual and collective consciousness are severely tested.

The collective consciousness as a set of beliefs and shared within the organization behavior is rooted in the culture of the organization. E. Schein defines organizational culture as "the set of assumptions that a group has invented, discovered or developed in getting to cope with its problems of external adaptation and internal integration, and that have operate well enough to be considered valid and therefore to be taught to new arrivals as the right way to think, perceive and feel face to problems [5].

It works as a strength and appears as a federative component in periods of instability or threat. It conveys beliefs and values. To ensure that these are really federating and carrying meaning, it is important to find them into what weaves the daily lives of individuals and teams.

The set of behaviors adopted recurrently by members of the organization can be observed in the functioning of the organization, as if these operating modes fell within the prescribed. This is what allows us to consider them as standards. The role of these standards is not simply to limit or prohibit, but also to guide and provide a range of behaviors facing a situation. Several members or groups can bring their point of view and doing. The culture is made up by a variety of sources. It is a collective outcome and represents the intangible capital of the organization. It is recommended to observe what is happening with this "capital" in situations of turbulence [6].

The deployment of the collective consciousness evolves together with the way in which relationships are established and how the group behaves facing events and upheavals. What happens to the "links" and "meaning" in such circumstances? It is useful to consider the types of relationships between an individual and his organization, how to overcome the condition in which evolve the organization and the emergence of the collective consciousness.

The collective consciousness takes place in the interactions between members of the system. During this process operates a collective reduction of perceived equivocity of a situation. An activity allowing members of the system to establish priorities and preferences for actions to be initiated. For Weick, Sutcliff and Obstlefd, a highly reliable organization can review its own routines whenever it is faced with new or unexpected events. In these organizations, individuals have cognitive structures particularly suitable for hazardous environments. These organizations promote the emergence of a collective consciousness that leads individuals to develop sharped discrimination skills facilitating research and the correction of errors before incidents turns into disasters. This collective consciousness relies on a series of cognitive processes to manage unexpected events and avoid bankruptcy of critical systems. Whole the theoretical construction of Weick on the reliability then consists in identifying favorable conditions to develop these behaviors [7].

The setting up of a collective consciousness must occur before a crisis. Why? During the crisis, the organization is in a state of emergencies and it is via the establishment of a resilience cell that it is manageable. Let us resume hereafter favorable conditions to the emergence of resilience and the contribution of feedback on experiences.

B. Favorable conditions to the emergence of resilience.

Amongst favorable conditions for the emergence of resilience let us retain: [8]

- Boost confidence and empathy;

- Build upon successes;

- Specify general guidelines, goals and objectives;

- Define and clarify missions, tasks, roles and functions;

- Accept expressions of emotions;

- Make explicit the operating rules and review them;

- Provide space and time to talk and exchange;

- Accept and learn from mistakes;

- Explain and clarify the meaning and nonsenses;

- Develop interactions based on emotional intelligence;

- Activate the flow of internal and external informations;

- Learn to work with sequences of stability and change;

- Recognize differences of the members as a resource;

- Promote the empowerment of people and departments.

C. The feedback on experiences

A crisis is a very difficult period in which all the skills of the organization are mobilized and tested. The organization must use this experience to bounce back and improve its organization. It must maximize learning from its experience for other times and other problems. That is why it must provide means and time for a experience feedback, which will allow it to:

- Understand the origin and evolution of the crisis;

- Identify gaps procedures for crisis management;

- Identify shortcomings in the organization (safety, traceability, computer, information ...).

IV.   KEY PLAYERS IN A RESILIENCE PROCESS

A. The transverse cell

The unit brings together people of different entities, will take stock of what is happening across the organization, how change and organizational transformations are experienced, what are the indicators of a emerging crisis, where is located the crisis [9].

B. The resilience tutor

The term "tutor" is revealing. What comes firstly to mind is the specific context of the youth protection, parental authority, adoption. The mission of tutor, tutoring, is akin to a kind of structured environment, a structured frame.

Tutoring is a formative relationship between someone responsible for the transmission of knowledge to another person (or a small group of people) for a defined period of adaptation. Tutoring is like a kind of accompaniment more or less structured. The focus can be put on the content, the relationship or on both dimensions. In some way he operates as a model. Roles are close but take different forms [10].

TABLE I   The types of organizational supports

Types	Roles
The godfather	puts trainee's, colleagues in relation to a "meaningful" person for a defined period of adaptation.
The mentor	helps employees to get support from his peers, as part of its course or apprehension of its function. The mentoring can increase the relational dimension, the content or take into account these two dimensions. The mentor serves as a model

The tutor	puts the employee in connection with a colleague designated to the appropriation of the function
The coach	accompanies a person or a group of people, in a specific professional or personal context, to gradually achieve the goal starting from their internal resources.

The word "tutor" associated with "resilience", leads to a somewhat simplistic look restricting the resilience tutor to a supporting role. To defeat this temptation, it is useful to take into account the dynamics of resilience's pathways. Those, even if they are unique, have shown us that they cover in fact multiple processes at work which vary depending on situations, context, environment, the entourage and the life course. It is not into isolation that the process operates.

The person is not resilient alone. In his entourage near or distant, a gesture, an expression, one word, a support, a look, a behavior are all ways to "maintain" a link operating as "guardian of resilience." It is as though link, conscious or unconscious, allowed to regain "lost meshes" of the knit, to use the expression of Boris Cyrulnik. It is through the link that a person emerges, is being built, exists, weaves its individual and collective identity.

The resilience tutor is a person considered "signifying" by the one who is going through a traumatic situation. Boris Cyrulnik underlines the importance of resilience tutor about resilience factors: "Firstly comes the meeting with a signifying person." Among the tutors of resilience, we distinguish appointed tutors or de facto tutors, the spontaneous, chosen and well known, potentials tutors. They do not appear in the charts but belong to the organiztion's assets. They operate as link's weavers and bearers of meaning; they play a key role in organizations dealing with transformations and even crisis.

All that has allowed to reconnect the social link helped redrafted the image that had injured of himself. Among the tutors of resilience, we distinguish different resilience tutors. They may be appointed, spontaneous, selected, unkwon or potential. They play a key role in the resilience process.

TABLE II   Resilience tutors

Types	Roles
Designated or de facto	professionals, among which are the tutors of the organization, professional of psychosocial services from childhood and education, community services or family
Spontaneous	relatives circle of family or relational, professional entourage
Selected	professionals in coaching, coaches, therapists, support groups
Unkwon	tutors who, by their behavior, ignore
Potential	people who exercise a supervisory function, teachers, etc.. : each one contains germs and experiences of resilience

The word "tutor" associated with the "resilience", leads to a bit simplistic look some limiting resilience tutor to a supporting role. To foil this temptation, it is useful to take into account the dynamics of path resilience.

The resilience path , even if it is unique, has shown us that it covers in fact multiple processes at work. It varies according to the situations, the context, the environment and the life paths.

The main features of the tutors of resilience, listed by Jacques Lecomte, find their source in the testimony of resilient people The table below lists those essential elements [11].

He formulates a warning which is "transforming spontaneous code of conduct for the use of" super-tutor of resilience 'attitudes. However, no technique will replace the sincerity and simplicity. Let us beware of a shift from a descriptive to a prescriptive use.

These features are not all together in the same person; they can be disseminated within a team, department or organization. The team can also be learning instead of "resilience tutors" to confront destabilizing situations where caring attitude prevails against the setting aside of the team members. It is to observe the process of protection and

construction at work and interaction between "organizational change and individual transformation." transform spontaneous code of conduct for the use of "super-tutor attitudes resilience.

The team can also be a place of learning about "resilience guardians" to confront destabilizing situations where caring attitude prevails against the sidelining of the team members. It comes to observed protection or construction processes at work and interactions between "organizational change and individual transformation".

TABLE III   Resilience tutor's profile

Types	Roles
Role of facilitator	Leaves the other the freedom to speak or be silent at his own pace. Considers primarily the positive aspects of the person. Facilitates self-esteem, value in terms of others. Facilitates altruism in others. Allows find links. Makes it possible to discover sens. Oscillates between protection and reconstruction.
Active behaviors	Demonstrates patience. Respects the path of resilience of others. Maintains trust despite apparent failures. Actively listening. Emotional Intelligence (EQ).
Facilitators attitudes	Discreet, reserved, modest. Showing empathy. Compassion, benevolence Refrain from evaluative expressions and injunctions

The appointed resilience tutor is not necessarily the effective tutor. It is not necessarily the result of a built; he can emerge from random encounters in professional or private area. The role of tutor may be exercised without any demand or designation. Within an organization there are individuals who contribute to the emergence of favorable resilience conditions. In a way, he contributes to the autopoiesis of the organization since he contributes to the production or transformation of others while continuing to participate in its own production.

C.   The resilience cell

The resilience cell, in case of an accident situation, has the mission to evaluate the damage, to take immediate measures to protect people and affected facilities. They shall also inform the management and local authorities, to ensure the communication and determine a strategy to return to a normal situation [12].

The resilience cell is an emergency organization of all department managers to identify problems, deploy a backup plan and return as soon as possible to a normal situation.

The active participation of a resilience cell is necessary to:

- Define the issues involved and the strategy to implement;

- Anticipate scenarios for short and medium term;

- Organize and coordinate actions;

- Select consultants for (lawyers, engineers ...);

- Maintain team effectiveness over time;

- Refocus tasks;

- Reassure, calm or energize its participants;

- Serve as a "memory" cell.

D.   The Co-developpement resiliency group CDRG

The co-development resiliency group is derived from a group of professional codevelopment developed by Canadians Adrien Payette and Claude Champagne. "The group of professional co-development is a training approach that focuses on the group and the interactions between the participants to support the achievement of the basic objective: improve professional practice".[13].

As part of our approach dedicated to organizational resilience, we favor perturbing, destabilizing and threatening situations faced by individuals and teams. The possibilities of a co-development resilience group are multiple. The CDRG is a "laboratory" creating favorable conditions for the emergence of resilience factors. Several resilience factors identified in the studies and research of R.Poletti and B.Dobs, N. Garmezy, S. Vanistendael, M.Rutter, S. Wollin, B.Cyrulnick, J. Lecomte and K. Weick are at work.

These groups are supported on the following principles:

- The group is a learning community;

- The practice has knowledge that science does not produce;

- The exchange with others about his experiences gives access to specific learning;

- The subjectivity and objectivity have each their place when it comes to dealing with a situation;

- Working on professional identity is central to "co-develop";

- Take some distance with regard to professional practice is learning to act;

- The sharing of experiences as well as individual and collective reflection accelerators are a learning community;

- Co-development is based on a relationship of trust, cooperation, respect, confidentiality and commitment among members.

E.   The « toxic handler »

Some features in the workplace are recognized as contributing to the emergence of various emotional suffering, as a tensioned work environment, the context of reorganization, work overload, etc.. Employees may also be facing layoffs, or abrupt shifts in the organization. There are in some organizations people trying to manage the suffering caused by such measures. They are the mediators between senior management and employees, they are called "toxic handlers". Their contribution to the welfare of the organization, however, remains still misunderstood, and often bit appreciated at its true value. These saviors of the organization are involved at several levels in order to avoid a deterioration of work climate and amplification of difficult relations. They want to inform and make them aware of the existence of a phenomenon and the means to prevent it[14].

The toxic handlers have a long history, as far as the suffering exists in organizations. It is only last few years that two trends intensified this need. The continued disruption of an organization during its expansion or downsizing generates restructuring necessary and is important for the evolution and survival of the organization. These can sometimes create feelings of confusion, fear and anger among employees. Compression of personnel is another trend that increases the need rely on toxic handlers. A company laying off employees causes feelings of anxiety among the remaining staff wondering who will be the next to go. So, the toxic handlers calms minds and redirects the energy of these people at work.

V.   CONCLUSIONS AND PERSPECTIVES

- Resilience or rather resiliencies are resolutely dynamic. Force and motion are present in the process of resilience.

- It is as if resilience is part of a field of forces. Resilience is rooted in the interactions of the organization.

- The link and interactions , sensemaking and, feedback are basic ingredients of resilience.

- Resilience can be found at different levels within the organization: the micro, meso and macro levels.

- Resilience appears as a resource based on multiple contexts not only stabilization but also evolution and innovation.

- The exploration of key players and key factors have provide us benchmarks to organizational development of resilience.

- Unknown, unexplored, ignored, misunderstood, resilience emerges as a resource to cope with turbulences and crisis situations.

- Resilience is a key to confront contexts were equilibrium becomes to cope with rupture.

- Are we prepared to work out of our security systems or are we like amputees to confront destabilizing situations?

- In such context how develop the capacity of resilience useful for each organization ?

- Trajectories to develop those capacities of resilience acts as an activator.

- Is resilience an unexpected share capital or not used efficiently until now ?.

- Does development of resiliencies, not contributing to a paradigm shift for the future of our organizations?

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