Emergency Management Futures

Using Causal Layered Analysis to Make Paradigms in

Emergency Management Visible

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There is a need for the field of emergency/disaster management to shift from managing disasters, to managing current and future risks and resilience-building as core targets to be reached by 2030. This is an evolutionary paradigm shift. Disasters frequently exacerbate social inequalities and existing power dynamics, and exposure and vulnerability are on the increase. Paradigm shifts are a conceptual transformation, and can be viewed as a prototype for revolutionary reorientation. This paper presents an emergency management paradigm analysis based on primary data collected by those working in emergency management. This paper outlines the following: 1) four archetypal patterns with systemic anomalies; 2) levels of uncertainty and postnormal potentiality as a system diagnostic to highlight emerging policy issues; 3) an understanding the anticipatory narrative, futures literacy and mental model; and 4) a potential pathway for a transformed paradigm.

Crisis & Opportunity - Evolutionary Paradigm Shift

*“Crisis can loosen the stereotypes and provide the data necessary for a fundamental paradigm shift. Sometimes the shape of the new paradigm is foreshadowed in the structure that extraordinary research has given to the anomaly” – Thomas Kuhn*

Crisis can provide an opportunity to understand the parts of the system that are no longer working, these insights are necessary in order to break from tradition, and move towards a paradigm shift. Evolutionary transformation challenges our thinking, especially from a scientific perspective and displaces the conceptual mental model through which one views the world [Kuhn, 1970].

In order for change to occur, emergency management will need to become conscious of the anomalies of the current paradigm, and use it as a learning opportunity for growth. This also requires a deeper awareness and understanding of the profession’s relationship to the present, and how decisions based on the familiar past restrict the evolution of the profession’s future. Reorientation and mental model displacement are necessary steps between ways of seeing the current and emerging paradigm. This ability to have “two-ways of seeing” is critical for emergency/disaster management  professionals if committed to shifting the current paradigm.

# **Paradigm Analysis Methodology**

Thomas Kuhn, who wrote about the great paradigm shifts in science, recommends the importance of being able to point at the anomalies and failures in the old paradigm, and to keep speaking and acting with assurance from the new one [Meadows, 2008]. All this suggests that in order for change to occur, one must understand the current paradigm they operate within, and acknowledge its dissatisfaction, challenges and restrictions in order to allow an opening for evolution to take place.

In this futures research project, CLA provided an opportunity to view the emergency management paradigm as a whole, both the external and internal perspectives. The external part of CLA was explored using systems thinking to allow for a deeper understanding of system patterns, anomalies and breakdowns. In addition, the different levels of uncertainty the system carries into the future was also explored. This overall level of understanding is necessary in order to diagnose the system, and confront levels of uncertainty and ignorance in order to identify opportunities for future resilience. The internal perspective of the CLA also deeply explored the anticipatory narrative, level of futures literacy and mental model to understand the mental model that drives the current system.

This research project collected primary data from 33 survey participants that work within emergency/disaster management and/or military operations. Participant demographic includes:

* 64% live/work in Canada and 36% live/work internationally (countries include: United States, United Kingdom, Netherlands, North Macedonia, Qatar and Australia)
* 48% female and 52% male
* 94% identified themselves as working at a professional level status
* 70% with 11+ years of experience
* 70% age 40+
* Range of sectors: public, private, non-profit, military, academic and others
* Emergency management speciality focus identified as: management, operations, logistics, preparedness, recovery/resilience, communications and humanitarian activities.

Survey data was coded and mapped to the CLA framework across the four levels of the paradigm: litany, systemic causes, discourse/worldview, and the myth/metaphor. Qualitative coding of primary data was performed at different levels, with the foundation being in-vivo/grounded theory coding (elemental method) to capture relevant cultural categories and to prioritize and honor the participant’s voice . For the external view of the paradigm exploring system conflicts, versus coding (affective method) was used as a diagnostic to identify tensions and conflicting power issues. Research findings with further validated with evidence from The International Panel on Climate Change (IPCC) report were available. For the internal view of the paradigm exploring the worldview and myth/metaphors, additional narrative coding (literary/language methods), domain & taxonomic coding (procedural method) and values coding (affective method) were applied.

The ability to map coded data to the CLA framework assisted in understanding how the emergency management paradigm operates from multiple perspectives, as well as the ability to make visible, acknowledge and understand the challenges and perspectives, allowing an opening to identify opportunities for system evolution.

# **The Emergency Management Paradigm**

*“The greatest danger in times of turbulence is not the turbulence; it is to act with yesterday’s logic”*

 *– Peter Drucker*

## Basic Image of a Turbulent Future

This research project leveraged questions based on the Polak game to capture the basic property of research participants “image of the future” [Hayward, P. Candy, S. 2017] . All participants (100%) indicated a high degree of influence and optimism towards future change, with an essence of pessimism in the current context and how the situation is evolving and becoming worse over time. Additional detail was captured to understand the orientation and narrative. The narrative is one of turbulence:

*“Emergency managers perceive a turbulent future with constant systemic change, and sources of instability potentially leading to chaos. Current systems need to adapt to ensure balance and sustainability. Actionable change is needed to create a more sustainable and regenerative future, and time is running out”.*

This narrative provides an basic perspective of the current paradigm, and identifies important new principles and values of the emerging paradigm – balance, sustainability and regeneration. It also highlights the importance of the ability to navigate turbulence, and identify actionable change to balance the system.

## System Archetypes – Traps & Opportunities

## *“We can’t impose our will on a system. We can listen to what the system tells us, and discover how its properties and our values can work together to bring forth something much better than could ever be produced by our will alone” – Donella H. Meadows*

The following four system archetypes were identified based on the pattern of anomalies. These archetypes also function as ‘system traps’ that need to be released in order for the system to evolve. Identifying system anomalies assists to understand relevant patterns of the current paradigm, and highlights opportunities to shape the new paradigm through deeper examination of system leverage points.

### Shifting the Burden – Addiction to Short-term & Quick Solutions

This first system archetype occurs at the litany level of the CLA. The litany is the uncontested reality of the current system and reflects the repetitive problems and patterns of the system. This archetype highlights the system anomaly of an “addiction” to quick short-term solutions, this causes the system to be gridlocked in crisis response with a fragility to evolve to fit with the external environment. When an emergency event occurs, the burden is shifted to emergency managers, the interveners in the system to address the disruption, stabilize the system, support a quick recovery, and restore the system back into balance (status-quo). The underlying system vulnerabilities are not fundamentally addressed. The rising dependency on crisis management solutions has allowed the crisis response sub-system goal to dominate the overarching goal of the entire emergency management cycle and broader system. This pattern suggests a malfunctioning of the emergency management cycle, which can result in erosion of the risk management side of the cycle and sub-optimization of the overall system.

Action: System balance is required due malfunction of the emergency management cycle. In keeping with system principles of resilience, there is an opportunity to intervene with the system leverage point self-organization to evolve the emergency management hierarchy to function to assist the lower sub-systems and evolve from the bottom-up. The second leverage point to influence system change is re-examine the system’s goals to direct towards managing risk and building resilience. This includes support and proactive investment for long-term restructuring to address system vulnerabilities and build resilience. The IPPC Report states that societal choices and actions implemented in the next decade determine the extent to which medium- and long-term pathways will deliver higher or lower climate resilient development (high confidence)[IPCC, 2022 SPM.D.5]. Consideration also needs to be given to the strength of the crisis response stock, to ensure it is resourced and designed to balance disruption and impacts in an evolving and uncertain environment.

### Fixes that Fail – Policy Resistance and Bounded Mental Model

This second system archetype highlights the system anomaly of “policy resistance” and a bounded mental model with a limited perception of risk that does not reflect the dynamic changing external environment. Risk assessments use a hazard lens with a linear and deterministic approach to quantify the most probable risk; it is a narrow and surface level view to understand systemic risk and vulnerability. This risk assessment approach deals with uncertainty by using methods of resistance, i.e. worst case scenarios. The resilience goal is to recover quickly [Walker, 2010] or ‘bounce back’ after an emergency event with a response capacity to address the most likely and probable risks.

This can constrain risk management activities, potentially leading to assessment discrepancies and inadequate anticipatory behaviours. This pattern reduces the ability to address underlying vulnerabilities, and can elevate chronic system vulnerability over the longer-term. Significant efforts go into understanding hazards however, understanding of the other facets such as social and ecological vulnerability, the human cost in lost lives, health impacts, livelihoods, and the impact of hazards on the very poorest people is not yet a regular component of the risk equation [Mizutori, 2019]. This is a significant gap in understanding systemic risk.

The IPCC reports further confirms that climate change impacts and risks are becoming increasingly complex and more difficult to manage. Multiple climate hazards and interactions can result in compounding overall risk and risks cascading across sectors and regions [IPCC 2022, SPM.B.5]. Future exposure to climatic hazards is also increasing globally due to socio-economic development trends including migration, growing inequality and urbanization (high confidence) [IPCC 2022, SPM.B.2.5]. Many initiatives prioritize immediate and near term climate risk reduction, which reduces the opportunity for transformational adaptation (high confidence)[IPCC 2022, SPM.C.1].

Traditional methods have an inability to grapple with the long-term's multiplicity of plausible futures [Walker, 2010] and short-termism could create blind spots and limit integrated efforts to mitigate risks [Franco, 2020]. Risk assessments function as the rules of the system that informs decision-making, and are powerful leverage points for change to shift behaviours. It’s important to examine the feedback loops within the system, to understand the bounded rationality behind them, and explore options to harmonize the goals of other stakeholders in the system while moving the system forward [Meadows 2008]. The Fixes-that-Fail archetype teaches us the importance of examining our mental models and testing them against reality.

Action: Intervene and influence change using the system’s goals leverage point to harmonizing goals. The most effective way of dealing with policy resistance is to find a way of aligning the various goals of the subsystems, usually by providing an overarching goal that allows all actors to break out of their bounded rationality [Meadows, 2008]. One potential overarching goal is to move towards an understanding of the dynamic and systemic nature of risk, with an anticipatory lens to identify system change, disruption and opportunities for new adaptive anticipatory behaviours. Models that can only describe single-system vulnerabilities for complex risk scenarios do not assist decision makers to understand and prepare for systemic risks [Gordon; Williams, 2020]. This highlights an opportunity to evolve the risk model and move towards an understanding of dynamic and systemic risk by examining system feedback loops, cascading risks and cumulative impacts. In addition, futures literacy can be layered on using an anticipatory lens to engage with emergence. This can include identifying emerging issues, weak signals of system change and potential disruption. This additional lens may reveal opportunities for new adaptive anticipatory behaviours. Consideration needs to be given to the “knowledge stock” of collective intelligence and risk data, to ensure it’s more inclusive and reflects the drivers and underlying root causes of vulnerability and risk.

### Growth & Underinvestment – Capacity to Keep Pace with System Change

This third system archetype highlights the system anomaly of reinforcing growth and underinvestment to keep pace with system change, demands and needs. This can result in a stretched system, and can potentially erode emergency management performance standards.

* Social (R1): the growing action is the increasing complexity, exposure and vulnerability of people and assets, which leads to the increasing need for longer-term strategies to mitigate, reduce vulnerability, and build coping capacity to prevent emergency events from becoming disasters. This growing action requires system balance in the short-term to address the “acute” emergency issues with unaddressed and growing chronic system vulnerabilities.
* Organizational Capacity (B1): limitation in crisis response capacity can make it challenging to balance the system in the short-term, and mobilize lessons learned. In addition, the lack of longer-term investment in resources for disaster risk reduction/management and resilience building further creates a discrepancy in the system’s performance as social vulnerabilities continue to grow.

This research project also identified a disconnect in organizational learning, situated between capturing lessons learned and mobilizing insights to inform future preparedness and planning activities between emergency cycles. This situation can lead to a learning and knowledge discrepancy, which can create a situation of reactive learning. In reactive learning, actions are re-enacted habits that end up reinforcing pre-established mental models, which keeps mindsets fixed to the current paradigm and not on system transformation.

Action: Intervene and influence system change by mobilizing insights from lessons learned to evolve system goals to support capital planning and investments to maintain critical emergency management system stocks, and avoid a decline in response performance standards in the short and longer-term. System self-organization to add, change or evolve system structure can align with Investment decisions anchored to reduce system vulnerabilities, consider external signals of change and future risks just over the horizon. Building emergency management organizational capacity is an important knowledge stock to ensure future capabilities to support risk management and resilience activities. Other important physical stocks include maintaining critical infrastructure (e.g. hospitals, transportation systems and electricity and power generators). Generally these structures need to continue to operate with maximum efficiency, and situations that can potentially strain its capacity need to be prevented. More awareness regarding natural capital and collaborative partnerships is required to leverage this system stock to support disaster risk reduction.

### Tragedy of the Commons – Escalation of Vulnerability in Cities & Communities

This fourth system archetype highlights the system anomaly of escalation or growth in a commonly shared environment – cities and communities. Unlimited patterns of growth have the potential to erode an environment. This tragedy arises from missing or delayed feedback on the growth patterns creating system blind spots, which can result in a lack of adequate resources available to manage these growth patterns. This can elevate vulnerability and lead to erosion beyond the ability to recover, potentially leading to loss of sustainability. Patterns of growth in this archetype include a complexity of elements within the following social and environmental reinforcing loops (R1/R2):

* Social (R1): growing urbanization, aging population, social/economic disruptions escalating community vulnerability and the widening gap in system feedback/data. The IPCC report confirms that vulnerability is higher in locations with poverty, governance challenges and limited access to basic services and resources, violent conflict and high levels of climate-sensitive livelihoods (high confidence) [IPCC 2022, SPM.B.2.4]; and
* Environmental (R2): industry overexploitation of resources, use of common sinks to dump pollution and growing hazard exposure, extreme weather events and longer recovery time between events. Since the IPCC AR5 there is increasing evidence that degradation and destruction of ecosystems by humans increases the vulnerability of people (high confidence). Loss of ecosystems and their services has cascading and long-term impacts on people globally, especially for Indigenous Peoples and local communities who are directly dependent on ecosystems, to meet basic needs (high confidence) [IPCC 2022SPM.B.2.1].

Action: There is an opportunity to influence change by evolving the system’s goal leverage point towards building social capacity and local system resilience through a participatory process that supports decision-making and reduces risks. An anticipatory commons governance framework with active citizen/community participation maybe be an option to collect local system feedback, and leverage local knowledge to co-create solutions for resilience. Anticipatory governance provides an opportunity to tap into diversity, harness the intelligence and wisdom of its citizens, and provide opportunities for citizens to be agents of change by charting intelligent directions for their community [Ramos, 2016]. In disaster recovery planning, diversity and community representation that facilitates equal participation, information access, and policy implementation across communities is important for good governance [Fraser et al., 2020]. The IPCC report confirms that adaptation planning and implementation that do not consider adverse outcomes for different groups can lead to maladaptation, increasing exposure to risks, marginalising people from certain socio-economic or livelihood groups, and exacerbating inequity (high confidence) [IPCC 2022, SPM.C.4.3]. System self-organization to amplify coordination and communication at the local level, and support investment to empower citizen action may assist to alleviate issues of maladaptation.

## Patterns of Power, Conflicts and Contradictions across the Archetypes

A review of the four archetypal patterns reveals a strong common historical pattern of power dynamics across the system, this holds the system in its current position. Identifying conflicting power issues among stakeholders is an important diagnostic for initiating and facilitating positive social change [Saldana, 2013]. This highlights the importance of the following questions:

1) Who has power over the rules?

2) What power holds patterns in place?

3) What is the pattern of hierarchy and power?

**Figure 1**

*Common Historical Patterns of Power across the Four Archetypes*



As shown in Figure 1, while these power structures provide a level of stability, it can also lead to system rigidity with a fragility to adapt in response to the changing needs in the external environment. This has implications for emergency/disaster management, and their ability to be strategically fit moving into the future. This pattern leads to behaviors that contradict and/or restrict broader system resilience goals. An evolutionary paradigm shift requires an openness to explore a new transformative vision, and a reorientation of the way the profession sees its role and function in the future.

The four system archetypes highlight the following conflicts that need to be transcended for change and transformation:

* Reactive vs. proactive funding, ability to break out of system gridlock and evolve structure, disconnect between political, policy, funding and emergency response cycles;
* Mental model/perception of risk. Hazard risk lens (deterministic/reductionist approach) with missing systemic information flow. There is a need to expand legislated requirements to include disaster risk reduction and resilience building;
* Awareness of the need and willingness to invest in risk reduction and resilience building activities in response to growing system risks; and
* Lack of information at local level vs. monitoring/awareness to justify resource allocation.

In addition, these four archetypal patterns identify system contradictions to future resilience, with actions holding the emergency management structure in the past, these include:

* Addiction to short-term crisis management solutions and command and control approach, response pillar dominating emergency management cycle, lack of investment in reducing risk and building future resilience over the longer-term;
* Surface level understanding of risk vs. holistic, and a low level expectation of resilience (e.g. recovery vs. adaptive strategy). Does not appear to prioritize disaster risk reduction, mitigation and building resilience to address system vulnerabilities over the long-term;
* Continuous crisis response actions to “acute” emergencies is very expensive and unsustainable over the longer term both from a resource and financial perspective; and
* Short-term economic priority over environment and social risks, can lead to erosion beyond regeneration, with long-term resilience and sustainability implications.

## Postnormal Policy Forecast

### To understand the levels of uncertainty emergency management carries into the future and potentiality for system turbulence, a postnormal policy forecast was performed as part of the CLA systems analysis.

### Levels of Uncertainty: Black Elephants, Swans & Jellyfish

The role of Emergency Managers requires them to function in highly complex and turbulent situations where chaos can potentially emerge. The ability to understand and navigate this landscape is essential.

Several futurists have wrote about Postnormal Times (PNT), systems and transitions. Ziauddin Sardar defines this concept and describes the present as an *“in-between period where old orthodoxies are dying, new ones have yet to be born, and very few things seem to make sense”.* This definition resonates with how one may define and experience system transition during a paradigm shift. PNT is an era where complexity, chaos and contradictions become the dominant themes, and uncertainty and ignorance increase drastically [Sardar, 2017]. It demands that we get away from linearity and focus our attention on the interconnections amongst complexity, chaos, and contradictions. [Sardar, Sweeney, 2016]. Systems with institutions and structures that are highly complex and networked can potentially go post-normal anytime. By making these turbulent patterns visible, it facilitates a conversation on opportunities to move the system towards balance, stability and potentially transform the system.

Based on the work of Ziauddin Sardar and John A. Sweeney, questions from the Three Tomorrows of Postnormal Times framework were explored in this research project. Analysis was completed to understand the levels of uncertainty emergency management carries into the future, and the potential for post-normalcy. This is reflected by the metaphors of the black elephants, black swans and black jellyfish.

Black Elephants (Surface Uncertainty)

Many tipping point issues that relate to power and control dynamics in emergency management were identified, themes include: leadership and culture, colonial legacies and patterns, global power and the global south, and human centered issues. The IPCC report confirms these findings and states that present development challenges causing high vulnerability, are influenced by historical and ongoing patterns of inequity such as colonialism, especially for many Indigenous Peoples and local communities (high confidence) [IPCC 2022, SPM.B.2.4]. The uncertainty around these issues can be managed if there is an openness to reveal and discuss solutions. Figure 2 below highlights key themes and issues that need to be urgently addressed.

**Figure 2**

*Tipping Point Issues – Power & Control Dynamics*

|  |  |
| --- | --- |
| **Leadership & Culture** | Continued hiring of command and control type leaders |
| **Colonial Legacies & Patterns** | Dominant Culture Values: command and control frameworks, professional approaches that exhibit colonial patterns (i.e. legislated government control, paternalistic forms of engagement and forced evacuation), structural dependency and entanglement in colonial relationships, procedural vulnerability deepened with disasters |
| **Global Power & Global South** | Long traumatic history of global powers and treatment of (largely) global south countries, known as the  "white saviour" complex |
| **Human Centered Issues** | Human rights, humanitarian and emergency relief issues; systemic racism and increased vulnerability of racial and ethnic minorities; disparity in disaster preparedness and long standing inequalities in disaster response policies, gender-sensitive approaches to disaster risk management  |

Black Swans (Shallow Uncertainty)

Black Jellyfish represent how normal situations and events become postnormal, and mutation by becoming interconnected, networked, complex and contradictory. In this sense, Black Jellyfish resonate deeply with Molitor's seminal work on emerging issues analysis, envisioning Black Jellyfish as decidedly ‘catalytic events’ that herald unthought possibilities[Sardar, Sweeney, 2016].

The potential for both positive and negative black swan extreme outliers were revealed. In practice, working with black swan boundaries of space are perceptual, relative to the context, and of those making the inquiry. Interestingly, positive black swan statements highlight unimagined opportunities that align with characteristics expected when envisioning future resilience. These statements also suggest that the political will to drive meaningful change, and opportunities for dedicated resources, investment and integration are perceived to be outside the realm of possibility in emergency management. In contrast, the negative black swan statements have attached potentiality of risks, additional models of inquiry are needed to understand these situations.

**Figure 3**

*Unimagined Opportunities & Potentiality of Risks*

|  |  |
| --- | --- |
| **Positive Black Swan**(Opportunities) | Examples include: acceptance of climate risk, jurisdictional responsibility and investment, dedicated positions, support and funding for emergency management activities, working on resilience from all angles, green economy, community development and more women in emergency management leadership positions |
| **Negative Black Swan**(Risks) | Examples include: nuclear annihilation, military in public security incidents, armed conflict on Canadian soil, emergency management moving back to military administration, and famine south of 60 in Canada |

Black Jellyfish (Deep Uncertainty)

Participant responses identified examples of situations/trends that have the potential to scale rapidly, generate positive system feedback and lead to systemic instability. Attention is needed to understand and address the root causes of these issues, and assess the ability of current paradigm to manage these situations. Proactive adaptation may include actions to diminish and amplify system leverage points in order to move the system towards balance and stability, with opportunities for adaptation that lead to system transformation.

**Figure 4**

*Trends, Potential Scale & Systemic Instability*

|  |  |
| --- | --- |
| **Social** | Systemic racism, social unrest, infectious disease outbreaks/pandemic, evacuations involving children |
| **Environment**  | Food security, fast moving extreme weather events, critical infrastructure failure, solar activity and impact to satellites/grids |
| **Infrastructure**  | Prolonged failure of power and impact to infrastructure |
| **Political** | Political tensions, populism, conflicts/threats and domestic unrest |
| **Terrorism** | Complex coordinated attacks, technological terrorism |

## Worldview

The internal perspective is an important element within a paradigm. This is the worldview that is built around mental models, culture, values and deeper assumptions. Awareness of mental models is critical to understanding the perspectives that support and drive the existing paradigm.  Unexamined deeply entrenched mental models can create inertia, despite strong systemic insights. In this study additional steps were taken to understand the emergency management mental model, and anticipatory lens towards the future.

### Anticipatory Narrative

According to research participants, the ability to anticipate change and shifts in the broader external environment was identified by 100% of participants to be important to very important in emergency/disaster management.

The emergency management anticipatory narrative consists of four structural properties that reveal mindsets and practical behaviours:

* a scientific mindset of data focusing on prediction and risk;
* a systems mindset focused on sense-making and situational awareness;
* need to support decision-making for investment and impact (resource optimization); and
* need to ensure fit-for-purpose (organizational capacity).

It’s important to highlight that the anticipatory mindset and relationship towards the future is reactive and focused on prediction. This is rooted in scientific evidence to identify risk, and propose interventions to control and/or minimize impact.In emergency management anticipatory skills appear to be used at the operational level to enhance situational awareness, support decision-making and investments to optimize planning, and minimize impact during emergency events and in the near-term.

Action: There is an opportunity to expand the anticipatory lens to support investment in future organizational capacity and capabilities moving into the future. Anticipatory activities (beyond 3-5 year horizon) can assist to understand emergence, disruption and potential future opportunities to adapt, self-organize and reimagine role and structures to ensure operationally fit-for-purpose, and to keep pace with external system changes.

### Futures Literacy

The emergency management profession tends to work at an operational and tactical level. Emergency managers are system intervenors during times of emergencies, and work to stabilize the system in the short-term and maintain status quo. Their anticipatory knowledge structure sit within the preparedness and planning domains of UNESCO’s Futures Literacy Framework, focused on organizing human agency for today. Their anticipatory process in focused around a taxonomy of risk, from an internal, external and network perspective; understanding dominant system trends to identify risks or threats; and exploration of mature mainstream issues.

Opportunities for growth, adaptation and investment to build future resilience at the strategic level is typically not explored; and working with uncertainty is not routinely part of the operational/planning cycle. According to research participants, 88% identified using strategic thinking to sense and make-sense of emergence. This reveals a shift in thinking and orientation within the profession towards a holistic approach, that overlaps between future literacy knowledge systems to understand emergence in order to navigate an organization within a changing environment.

Spiritual awareness is becoming part of a new world paradigm of what is real, and what is important, with leaders becoming more conscious, self-aware and reflective. This type of awareness can lead to clarity of intent [Inayatullah, n.d.]. Wisdom of this nature in emergency/disaster management is emerging with the growing recognition of Indigenous knowledge and local community wisdom. Indigenous knowledge (First Nations, Inuit, and Metis) is strongly linked to the natural world and as a complex ecosystem of relationships. Balance and holistic harmony are essential tenets of this knowledge and cultural practices; and embedded is a belief in both adaptability and change that promotes balance and harmony [Kaminski, 2013]. This aligns with the IPCC report which recommends inclusive planning initiatives informed by cultural values, Indigenous knowledge, local knowledge, and scientific knowledge to help prevent maladaptation (high confidence) [IPCC 2022, SPM.C.4.3].

Action: There is an opportunity to bridge anticipatory knowledge systems and introduce new capabilities to support anticipation in the short and longer-term. This includes methods focused on anticipation for emergence such as strategic foresight, strategic thinking, systemic/holistic thinking, Indigenous knowledge and decolonizing futures to support anticipatory adaptive capacity, as well as transformational adaptation.

**Figure 5**

*Anticipatory Knowledge Systems and Multiple Points of Evidence*



### Mental Model & Cultural Identity

There is a conflict in the way the emergency management community thinks (long-term/proactive) and behaves (short-term/reactive). This conflict may be due to their role and function in existing organizational structures. The identity of emergency management is rooted in a paramilitary/first responder cultural lens, structure, tactics and training. Within this cultural identity, thinking and behaviour is generally short-term with strong tactical response activities at its core.

The profession can benefit from a cultural shift from traditional command and control (which is important during crisis), to a more strategic inclusive approach before, during and after emergency events. This requires the ability to leave the comfort zones of traditional heuristics and shift perception of uncertainty to be a weakness.

At the root of their attitudes and beliefs are three main assumptions accepted to be true for emergency management:

* has a cultural lens, mindset and behaviour that reinforces a response focus;
* emphasis on ICS doctrine and command and control keeps the profession rooted in response activities aimed at predicting and controlling risk; and
* the profession lacks of a unified future vision that represents the diversity of the sector.

Action: More diversity within the profession and inclusive approaches are needed to shift the culture. Opportunities include working with uncertainty and longer-term horizons of disaster risk management as part of resilience building, and toward a unified future vision.

### Myth/Metaphor & Inner Transformation

The myth/metaphor level of the CLA is deeply linked to the stories that reflect our culture and long-term history. When the myth/metaphor is combined with the worldview, and framed within a social context it assists to better understand the litany of problems. Carl Jung identified 12 universal, mythic character archetypes that reside within our collective unconscious. These twelve primary types represent the range of basic human motivations [Neill, 2018].

The emergency manager personality most aligns with the hero and warrior mythical archetype, as one who battles threatening forces for survival and recovery. The hero/warrior is known for their competence, courage and expert mastery, and are motivated by risk and achievement. The axis of a hero’s life is power, and the greatest fear is weakness and vulnerability. As we consider the hero/warrior archetype within the context of increasing emergencies/disasters and human vulnerability, the ability to keep pace and maintain a high level of capability to respond and recover from events is a concern. Potential emotive dimensions of this archetype within the current litany includes risk to mental and emotional health due to stress, fatigue and burnout. Understanding the hero/warrior mythical archetype and their discomfort with uncertainty is highly relevant in the context of the growth and underinvestment system archetype.

As we move towards transforming the future and building a new paradigm of resilience, what is the new metaphor that best captures emergency management’s new story? To transform the future, inner transformation is required. Awareness of the current mental model and the ability to work from the inside-out, this is the starting point to reimagine systems structures towards transformation.

Different perspectives across the CLA levels is outlined in Figure 6 below. Column A is the emergency manager perspective , column B is the current reality and column C explores the transformed future.

**Figure 6**

*Perspectives across the CLA Levels*

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# **Towards System Transformation & Building Future Resilience**

To strategically move in the direction towards building a resilient future, two elements are important:

* A vision of the future - principles and values that guide the direction of the system evolution, with goals, rules and self-organization of system structures, functions and processes; and
* An expanded definition of resilience - a growth mindset beyond the short-term, with mitigation and adaptive strategies that address inequalities and vulnerabilities, with changes that promote system balance and holistic harmony. Anticipatory capabilities that support growing edge of risk management, adaptation towards system transformation.

## Embracing the Balance – Masculine Crisis Warrior & Feminine Protective Caregiver

*“Myths are public dreams, dreams are private myths” – Joseph Campbell*

One possible new myth/metaphor towards a transformed paradigm is the feminine caregiver archetype. This mythical archetype is known for its compassion and generosity, with a goal of helping, protecting and caring for others. It is motivated by stability and control. This maternal protection archetype aligns with risk management activities to heal “chronic” system vulnerabilities, and address inequalities to restore balance and harmony in the system. The focus is on protection, collaboration and empowerment in both the short and long-term, this is consistent with principles and values of resilience and sustainability.

A second relevant archetype is the artist/innovator with a talent for creativity and imagination. These characteristics are important in order to evolve the current culture, and realize a new transformative vision for the future. The artist/innovator archetype can support futures literacy through creative reform, and assist to re-imagine roles and assist with innovative solutions to complex problems.

This transformation journey is an expansion in the current paradigm’s narrative and identity. Social change, awareness of system challenges and biases, with the ability to imagine a different future is needed (Punam et al. 2021). This is consistent with Elise Boulding’s model of “futures imaging social process”, where new images generate new possibilities, and the emergence of new social forms (Punam et al. 2021). This transformative vision will require a different system structure, one that works from the bottom up to serve the needs at local level, and with an ecosystem of collaborative partnerships working together towards an overarching common goal.

The research article *A Feminist Vision for Transformative Change to Disaster Risk Reduction Policies and Practices*, outlines that current DRR policies do not challenge the existing, male-dominated, unequal social and institutional structures (Punam et al. 2021). Literature on gender and disasters are framed into two categories:

* Victim Role - with gendered social conditions as causal to disaster vulnerability; or
* Responder Role – women are seen as the more efficient choice to target interventions because of their gendered experiences and prior knowledge of the environment.

The research further states that transformative ways to address gender concerns successfully do not exist (Punam et al. 2021). This research aligns with the findings in this study regarding the need to urgently address the many tipping point issues that create future uncertainty, and relate to power and control (identified as black elephants). There is an opportunity to challenge existing structures in the current paradigm, and build a new image that addresses structural inequalities, with gendered engagement to amplify voices, and empower decision-making to shape policies and plans. This will require the profession to decolonize their minds, and improve awareness of the colonial legacies in frameworks, structures, procedures and paternalistic forms of engagement that maintain existing power dynamics and inequalities.

When considering the sustainability agenda, the three pillars – social, environment and economic are also relevant to discussions of gender equality. Gendered engagement is a common feature between the Feminist Paradigm of Disaster Risk Reduction and the sustainable development agenda, and aligns with the transformative future paradigm that addresses systemic inequalities and vulnerabilities. It’s interesting to note that this research study identified women in leadership positions within emergency management as positive black swans, meaning perceived to be outside the common worldview. This is an unimagined opportunity that can be leveraged to advance concepts of gendered engagement outlined in the Feminist Paradigm for Disaster Risk Reduction and the sustainable development agenda to empower gendered decision-making at all levels and across the paradigm.

This transformative pathway requires one to step into the unknown, and it takes the courage and strength of a warrior to begin this journey. And as the warrior’s sword transforms from a tool for battle into a symbol for truth, knowledge and discernment is needed to cut away and break with tradition, and let go of old practices that are no longer relevant. This is a new level of consciousness and thinking, a space where one can step away from reacting to the environment, and focus attention to a new vision, potential ideas and opportunities for action as part of a transition strategy. The pathway to a transformed paradigm requires a willingness to learn and explore. This means shifting away from reactive learning and re-enacted habits that reinforce existing mental models, and to consciously learn and acquire new knowledge to proactively shift perspective and behaviours moving into the future.

## Waves of Change

This research project seeks to advance discussions on a paradigm shift in emergency/disaster management. To achieve system transformation, greater awareness and recognition of system anomalies of the current paradigm is needed, and choosing to embrace opportunities for transformative change. This requires a willingness to create space, have proactive conversations and consciously explore opportunities to achieve long-term fundamental solutions. This includes discussions regarding cultural shifts and evolution of governance and system structures to allow for more diversity and inclusion across stakeholders. These new conversations to support waves of change can be layered in a tiered structure.

TIER 1 – Present State: Addressing Systemic Vulnerabilities and Inequalities

This tier focuses on building a stronger and deeper understanding from a systems perspective through awareness of interconnections, information flows, identifying anomalies and root cause issues. There is an opportunity to integrate various forms of knowledge, wisdom and information, including exchanging inter-organizational information across resilience professionals from various sectors towards common goals. Attention should be given to addressing systemic vulnerabilities and structural inequalities. Participatory governance structures that support collaboration and local empowerment can provide value. New insights can assist to identify opportunities to let go of old ways of thinking, and create space for adaptation with new future ideas.

TIER 2 – Short Term: Adaptive Capacity and Organizing Agency

This tier focuses on adaptive capacity and organizing agency to operate within a changing environment. This requires anticipatory and adaptive capabilities to understand system changes, potential disruption and opportunities to re-configure while maintaining critical functions. The use of strategic foresight and using plausible future scenarios can assist to challenging thinking and develop adaptive robust strategies to inform decision-making about resources and investments. As part of an anticipatory governance structure, insights can inform opportunities to learn and strategically evolve system structures to support organizational capacity moving into the future.

TIER 3 – Long Term: Transformation and Reconceptualizing Agency for Change

This tier focuses on transformation and reconceptualizing human agency for future investment and fundamental change. Futures thinking and strategic foresight can assist to creatively reimagine and transform models and structures that generate new value, unlocking new opportunities for growth and efficiency. This approach challenges organizations to re-think their vision and examine their assumptions of how they will continue to generate value in a changing environment. This aligns with anticipatory innovation governance approaches to support proactive policies.

*“Our moral responsibility is not to stop the future, but to shape it. To channel our destiny in humane directions and to ease the trauma of transition” – Alvin Toffler*

# **CONCLUSION**

In summary, there is an opportunity for the field of emergency/disaster management to move towards a new paradigm of risk management and building resilience. To overcome resistance to change requires the ability to expand the current perspective, and conceive of two opposites paradigms simultaneously – the current paradigm with its anomalies, and a vision of a transformed paradigm that is a revolutionary reorientation.

Remaining in a state of gridlock with fragility to evolve system structures, is a choice of not adapting to driving forces and changes in the external environment. This adaptation breakdown contributes to the risk of growing vulnerability and systemic turbulence, which may build beyond the ability to recover. This can potentially lead to system chaos, where the system is overwhelmed by change and is forced to transform rapidly or face potential areas of collapse.

The first step to change and transformation requires a shift in mindsets to develop the cognitive agility to switch back and forth between “ways of seeing”. This allows movement from reactive thinking and actions, to consciously proactive thinking. The addition of new skills sets provides the capability to identify actions to address system anomalies, and reimagine new potential and possibilities to transform structures to support long-term fundamental solutions.

The turning point to harness leadership and consciously transform our paradigm towards building a resilient and sustainable future is now.

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**Endnotes**

1. Donna is the Founder/Chief Strategist at Purple Compass, Canada. She designs and facilitates workshops and intensive exercises to build foresight & design leadership capabilities. She can be reached by email at: donna@purplecompass.ca [↑](#endnote-ref-1)
2. This chapter is based on the futures research project from Dupont, D (2020). Anticipation in Emergency Management: Shifting from Crisis Response to Shaping Future Resilience. This chapter includes updated information from IPCC, 2022*: Climate Change 2022: Mitigation of Climate Change*, and Punam, Y., et al. (2021) A feminist vision for transformative change to disaster risk reduction policies and practices. The full report is open-access and available to download at OCAD University’s Open Research Repository at this [link](http://openresearch.ocadu.ca/id/eprint/3182/#:~:text=Anticipation%20in%20Emergency%20Management%3A%20Shifting%20from%20Crisis%20Response%20to%20Shaping%20Future%20Resilience,-Tools&text=Abstract%3A,to%20be%20reached%20by%202030.) [↑](#endnote-ref-2)