**Notes for Minerva Topic #2: Considering Societal Resilience at Multiple Scales**

**In one or two sentences, what is the call asking?**

Mel- What can we learn from non-Western and/or Indigenous ways of knowing about achieving or (re)achieving homeostasis after shock or significant stressors?

Joseph- What is the role of not commonly studied variables in the context of absorbing and recovering from multiple systemic shocks?

Daniel-

**Notes from the call:**

Mel-

(My thoughts) Implications for the military: military organizations, particularly in deployed and remote contexts, tend to be epicenters for high stress and limited resources. Resilience lies in the members’ ability to cope with shocks, stress, and challenges without professional/specialized support networks. These moments require community (connectedness), radical acceptance of what is (detaching from what should/could/didn’t happen), and roles (who’s going to do what)

Joseph-

* There has to be diversity in the proposal, multiple types of shocks, different societies (the more different to the Western, the better), and has to go beyond the individual level (looking for different/innovative societal structures or networks as the representation).
* Implications for the US: understand local, allies, and partners’ different responses to a shock and how they differ from each other depending on the social characteristics of the communities. With this, we could anticipate how certain shocks can affect differently these key players in the defense ecosystem.
* Daniel-

**Definitions of Resilience:**

The term resilience was first coined, in research terms, by clinical psychologist, Norman Garmezy. He described resilience as “not necessarily impervious to stress. Rather, resilience is designed to reflect the capacity for recovery and maintained adaptive behavior that may follow initial retreat or incapacity upon initiating a stressful event”

**Conservative resilience:**

(Moretti & Marsili, 2019) define conservative resilience as “the use of use of strategies aimed at achieving stability, control, optimization, and "resistance" to shocks and phenomena that may generate changes or transitions”. This definition is framed as an outcome, as adaptive functioning that allows the system to remain unaffected by difficulties (Kaplan, 2002)

**NOTE**: In the case of migration, I think this is the first type of response that the local country has, but when there are huge cultural differences between locals and migrants, it changes to *transformative resilience.* As I think it, when this shock of migrant inflows happens, the system always looks for stability while trying to maintain the original characteristics (less effort). But when the incoming population has considerably different values and needs, the country goes through a systemic renewal because it has no other choice (it needs to change otherwise it will collapse). How fast they switch might be an indicator of how well the country can adapt.

So… what if? We can have a measure of how conservative or transformative is the resilience of a country, or measure how fast a country can “switch”.

**Equitable Resilience:**

“Equitable resilience is that form of resilience which is increasingly likely when resilience practice takes into account issues of social vulnerability and differential access to power, knowledge, and resources; it requires starting from people’s own perception of their position within their human-environmental system, and it accounts for their realities and for their need for a change of circumstance to avoid imbalances of power into the future” [1].” (Matin, 2018).

**Transformative resilience:**

“Transformation is thereby equated with “… the need to pursue policies that relate to power imbalances in society that encourage, create and sustain vulnerabilities”(Bahadur, 2014).

Transformation = nonlinear shifts in the system, extension of adaptation, and revolution. Learning systems are the mechanism for transformative action to take place (Matin, 2018)

**Antifragility:**

“The system is subject to shocks and stressors, but the consequences are relatively small”(Aven, 2015)

Fragility is commonly understood as “easily broken,” “damaged,” or “destroyed”(Aven, 2015)

**Narrative Resilience (Indigenous):**

“Narrative resilience therefore has a communal or collective dimension, maintained by the circulation of stories invested with cultural power and authority, which the individual and groups can use to articulate and assert their identity, affirm core values and attitudes needed to face challenges, and generate creative solutions to new predicaments”(Kirmayer et al., 2011).

**Resilience:**

“Resilience is seen by some as a function of balancing ecological services and human services”[2].

“social and ecological systems (SES), in which resilience is defined as the ability of systems to “… absorb disturbance and reorganize while undergoing change so as to still retain essentially the same function, structure, identity and feedbacks” (Bahadur, 2014)

“It is used to describe the capacity of a system to withstand, prepare for ,recover from, and adapt or transform following hazards (originally quoted from B ́en ́e, Wood, Newsham, & Davies, 2012;Gillespie-Marthaler, Nelson, Baroud, & Abkowitz,2019; Meerow, Newell, & Stults, 2016)”(Logan & Guikema, 2020)

“In biological systems, resilience usually does not involve simply springing back to a previous state but is a dynamic process of adjustment, adaptation, and transformation in response to challenges and demands. In adapting, the organism also usually changes its own environment. In psychology, resilience is commonly framed as an individual trait or process rather than emphasizing its systemic or ecological roots”(Kirmayer et al., 2011).

**Urban resilience:**

“Urban resilience has been defined by Leichenko as “… the ability of a city or urban system to absorb disturbance while retaining identity, structure and key processes”(Bahadur, 2014)

**Social Resilience**: Social resilience is a multilevel construct, defined as communities’ capacity to rebound from crises, involves resistance, recovery, and creativity (Maguire & Hagan, 2007). Some authors define social resilience in three dimensions: 1. Coping capacities, referring to social actors’ ability to overcome adversities; 2. Adaptive capacities, their aptitude to learn from past experiences and adapt to future challenges in daily life; 3. Transformative capacities, their skill in creating institutions that promote individual welfare and sustainable societal strength against future crises (Keck & Sakdapolrak, 2013). This concept is vital for fostering socially sustainable and robust communities, especially given challenges like climate change and urban expansion (Trkulja, 2015). The quality of life is closely tied to social resilience, impacting a community’s capability to navigate uncertainty and adapt to change (Broch, 2013). On an individual level, personal resources such as positive social connections and the ability to endure and recover from stressors contribute to building social resilience (Cacioppo et al., 2011).

**Literature Review (Source, brief synopsis, and notes):**

Mel-

Article: What is equitable resilience?

**Synopsis: Resilience is heavily dependent on individual’s perceptions of their own power in relation to the power structures in their communities. It involves learning how those systems work and how one most navigate those systems in ways that identify their shortfalls while also making room for ways of knowing and practices that have worked in smaller community contexts. Power structures must acknowledge marginalized populations as stakeholders to be able to gain knowledge. Four themes of subjectivities, inclusion, scale, and transformation are discussed as factors (not necessarily measures) that must be analyzed to implement resilience that is deemed equitable.**

Additional Quotes/Notes:

-In understanding resilience, one must also understand how subjectivity in one of two ways (subject to our self-identity or subject to control/dependence from an outside source of power-based on Foucault) intersects with one’s ability to be resilient. “Subjectivities thus influence the processes that individuals, community and society employ to interpret hazards, their relationship with hazards, and the sources of information about hazards”(Matin, 2018). For example, in a personal subjectivity context, if I can only see myself as part of a historically marginalized population, incapable of “fighting” power structures, then my ability to be resilient is limited by my own subjugation.

Article: Reframing Resilience: Equitable Access to Essential Services

**Synopsis: The prevailing methods for assessing resilience mainly focus on examining either community traits or infrastructure functionality. While these approaches are beneficial, they come with limitations in providing practical insights. Notably, they overlook crucial aspects like vital services and how their accessibility is affected during disasters. Apart from necessities like water, power, and communication, people also rely on services like healthcare, education, food, and cultural amenities to restore normalcy after disruptions/shocks. Ensuring fair access to these services and swiftly reinstating that access post-disaster are critical for community resilience. To address these gaps, the article introduces a perspective on community resilience centered around access to essential services. This redefinition allows for a new way of measuring resilience that is both location-specific and actionable.**

Additional Quotes/Notes:

-Two approaches to “operationalizing” resilience: community capacity and infrastructure functionality. In short,

Article: Transformational resilience thinking: putting people, power and politics at the heart of urban climate resilience

Synopsis: **This paper addresses resilience thinking as it relates to climate change in both rural and urban settings. It critiques this approach for lacking sufficient consideration of societal dynamics and power structures, particularly in urban challenges. Using the example of the Asian Cities Climate Change Resilience Network (ACCCRN) initiative focused on enhancing the resilience of urban poor communities, the paper suggests incorporating “transformation” alongside resilience to address these shortcomings. It emphasizes the practicality of coupling these concepts, showcasing how initiatives like ACCCRN integrate aspects of both resilience and transformation. The authors advocate for reimagining resilience to encompass elements from the transformation discourse rather than replacing one concept with another. By merging these ideas, it proposes more effective strategies to combat climate change in marginalized areas.**

Additional Quotes/Notes:

-Resilience is the new term for adaptation

- The field of ecology has the largest influence on the term resilience

Methods:

-Semi-structured interviews, focus groups, participant observation; “Exponential discriminatory snowball sampling was employed for interviews, focus groups and document analysis. This sampling process starts with a small, core set of data sources and uses these to uncover new sources, rejecting those that are not centrally aligned to the research design”(Bahadur, 2014).

Article: Rethinking Resilience from Indigenous Perspectives

**Synopsis: This article introduces resilience from a family and communal standpoint, in Indigenous communities. Resilience, from a psychological lens, has been viewed as a set of individual characteristics that equip a person with the ability to adapt and/or endure adversity. This article approaches resilience as both a social and psychological adaptation and transformation.**

Additional Quotes/Notes:

“Resilience has been associated with individual psychological characteristics including hardiness, flexibility, problem-solving ability, intelligence, sense of humor, and social skills”(Kirmayer et al., 2011)

Specific determinants of health that affect Indigenous populations: “ the impact of the history of colonization with subsequent efforts at extermination, marginalization, or exclusion, and, eventually, state dependency; the effects of residential schools and other regimes of cultural suppression and forced assimilation; experiences of racism and discrimination and the negative portrayal of Aboriginal people in the dominant society; and the importance of relationship to the land or place for individual and communal identity”(Kirmayer et al., 2011)

Mi’kmaq indigenous population of Atlantic Canada, believe that restoring harmony is a large part of resilience. This is achieved through efforts to include forgiveness and reconciliation into their communal practice.

Mohawk Resilience, indigenous population in Quebec, Ontario, uses an approach of resistance and revitalization. Resilience manifests in the community’s resistance to assume the colonizer’s language but understanding that going back to things were before colonization is not possible or likely. Revitalization allows for language and culture to be mechanisms for resilience-using them to incorporate their traditions in health services, education, economic development, and community services.

Métis, indigenous populations who trace their ancestry to First Nations and European (mainly French) colonial ancestors and live in urban settings or peri-urban communities across Canada. They are considered a “hybrid” culture with European cousins, which complicates their culture because it is mixed. Resilience is manifest in self-reliance and resourcefulness to maintain independence. Though they strive for independence, they possess a willingness to use their history of resilience to apply in modern, adaptable ways.

Inuit are indigenous populations in the Arctic shores of North America. They demonstrate resilience through endurance and innate knowledge of the land, through climate change and territorial infringement. They also recognize that hope, a spirituality component, helps to accept situations until they change.

Article: The Concept of Antifragility and its Implications for the Practice of Risk Analysis

**Synopsis: This article discusses antifragility as it relates to risk management. It positions vulnerability and resilience as consequences to stressors. This article delves into the idea that the opposite of “fragile” isn’t just being robust or resilient; it’s actually something that benefits from being mishandled or handled carelessly. It uses examples from Nassim Nicholas Taleb (credited with coining the term antifragility) to analyze this concept of "antifragile," specifically looking at how it relates to common risk management principles. It suggests that some level of uncertainty and risk is necessary to foster improvements and achieve high performance in the future.**

Additional Quotes/Notes:

-Both vulnerability and resilience are “consequences” of stress to a system

-Different types of stressors (uncertainties, variation, and risk at rather moderate levels) expose different vulnerabilities or resiliencies. It does not mean the entire system or body is fragile.

- “…an antifragile system does not produce severe negative consequences, only positive.”

Example given in the article (summary): a body may not be resilient with different types of viruses, but that doesn’t mean it’s fragile. Examining the types of stress to the body versus overall health is a better measure of fragility.

Measuring fragility:

“To measure the degree of antifragility, “risk” needs to be described (key elements are: consequences of various stressors related to both positive and negative performance, uncertainty judgments, background knowledge)”

Joseph-

**Environmental Justice:**

(Bullard, 1994) as referenced in (Mohai et al., 2009) defined environmental justice as the principle that “all people and communities are entitled to equal protection of environmental and public health laws and regulations.”(Bullard, 1994) as referenced in defined environmental justice as the principle that all people and communities are entitled to equal protection of environmental and public health laws and regulations.”

* (Mohai et al., 2009) Also mentioned that there is a “chicken and egg”-style debate on whether the polluting facilities were placed first and then the vulnerable communities moved nearby because of cheaper prices, or the facilities actually were placed after the vulnerable communities existed previously. The author was more inclined to the second one based on evidence of several studies.
* (Ringquist, 2005) conducted a meta-analysis of 49 quantitative studies of potential environmental risk disparities among racial and ethnic minorities and the poor concluded that “there is **ubiquitous** **evidence** of environmental inequities based upon race” and that “existing research **does not** support the contention that similar inequities exist with respect to economic class.”
* More recently, (Hajat et al., 2015) did a review on the environmental inequality literature by evaluating studies related to inequality by socioeconomic status (as opposed to race/ethnicity) and by doing it globally. They mentioned that:
  + accounting for the spatial structure of the air pollution data is key while choosing analytical approaches.
  + very few studies have examined changes in inequality over time (**good for selling our proposal, doing over-time studies**).
  + Using only one measure for socioeconomic status is not recommended at all. And with multiple measures tends to be correlation, dimension reduction technique (e.g. PCA) address it. TLDR: These indexes are still not a blunt yes. (**here, we need to go beyond statistical analysis, and moving toward a more complex of addressing social and cultural differences, as the call says**)

Daniel-

**Methodologies:**

Leidy provided sources that focused on the measurement of social resilience. To not be repetitive, I will only include here more in-detail description of studies whose methods in our expertise or that at least we are capable of doing.

* **My perspective:** The majority of the methods are using a survey to measure resilience. While this is useful because you actually ask the people, we need to think how to overcome that in scenarios where we do not have that possibility. Is it possible to have an estimation of resilience based on social media? Or newspapers? Considering that these sources give us details of how they feel, what they go through, but also give qualitative indicators.
* A lot of surveys (see Leidy’s document), but there was one that was really complete:  
  (Cénat et al., 2021) presents the Transcultural-Community Resilience Scale (T-CRS), its underlying factorial structure and transcultural validity with a multilingual (English, French, Creole, Kinyarwanda), multinational (DR Congo, Haiti, Rwanda, Togo) and multicultural sample. They used exploratory and Confirmatory Factor Analyses, Cronbach alpha, coefficient H and the McDonald’s Omega, and bivariate regression. They based their measurement on the definition of community resilience as “capacity of a community to avail itself of resources that can facilitate the resilience of its members”. **This is something that we are able to do, in my opinion the spice might not be about the survey itself, but what we want to capture: type of resilience, or a new approach to understanding it as we are doing with the human dignity component.**
* (ye et al., 2022) reviewed how Urban Digital Twins (UDTs) can be beneficial for increasingly vulnerable coastal communities, focusing on community resilience and adaptation planning. **As mentioned in the first bullet point, address whether a digital twin of a community can be useful to measure resilience confronts the conventional approaches. We can create this digital twin based on information of the people, location, and opinions from social media.**
* (Yabe et al., 2022) advocates for a paradigm shift in the literature, proposing data-driven, dynamic complex systems models. (Melendez et al., 2022) also remarks promising research future in computational methods to model community resilience. This article was focused on “static and dynamic computational models, including probabilistic modeling in uncertain environments, rating models for community resilience assessment, optimization-based modeling for resilient community design, game theory, agent-based, and probabilistic dynamical modeling”

**Ideas for how we should implement literature into an idea:**

Mel- A deeper examination of the role of acceptance as a critical component of resilience. Though primarily psychological, it is physically debilitating when people focus on how things “could” or “should” be versus accepting what is. Despite inequalities and the need to combat those inequalities, one must be able to navigate in the systems that already exist. This is radical acceptance.

Joseph-

Daniel-

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