

Beyond "Vulnerable Populations": A Unified Understanding of Vulnerability From A Socio-Ecological Perspective

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Vulnerable Populations

groups at heightened risk of disproportionate harm and exploitation in society

[Coleman 2009; Hough 2018; Šajn 2021]



additional attention and care

Since the Code of Nuremberg...

Human-subject research

Humanitarian programs

Legal frameworks

Usable security & privacy (S&P)
[Bellini et al. 2024; Warford et al. 2022]

Relies on a Population-Specific Approach

- (1) Identify certain populations as **vulnerable**
- (2) Develop population-specific knowledge and propose countermeasures accordingly (often through a list of risk factors)



*How does an ordinary person like Luthor nearly
defeat the Man of Steel?*

— Ryan Calo

Challenges Faced by the Population-Specific Approach

User diversity
within the target
population

The complex social
reality of
vulnerability

Perpetuation of
othering

Think of older adults...

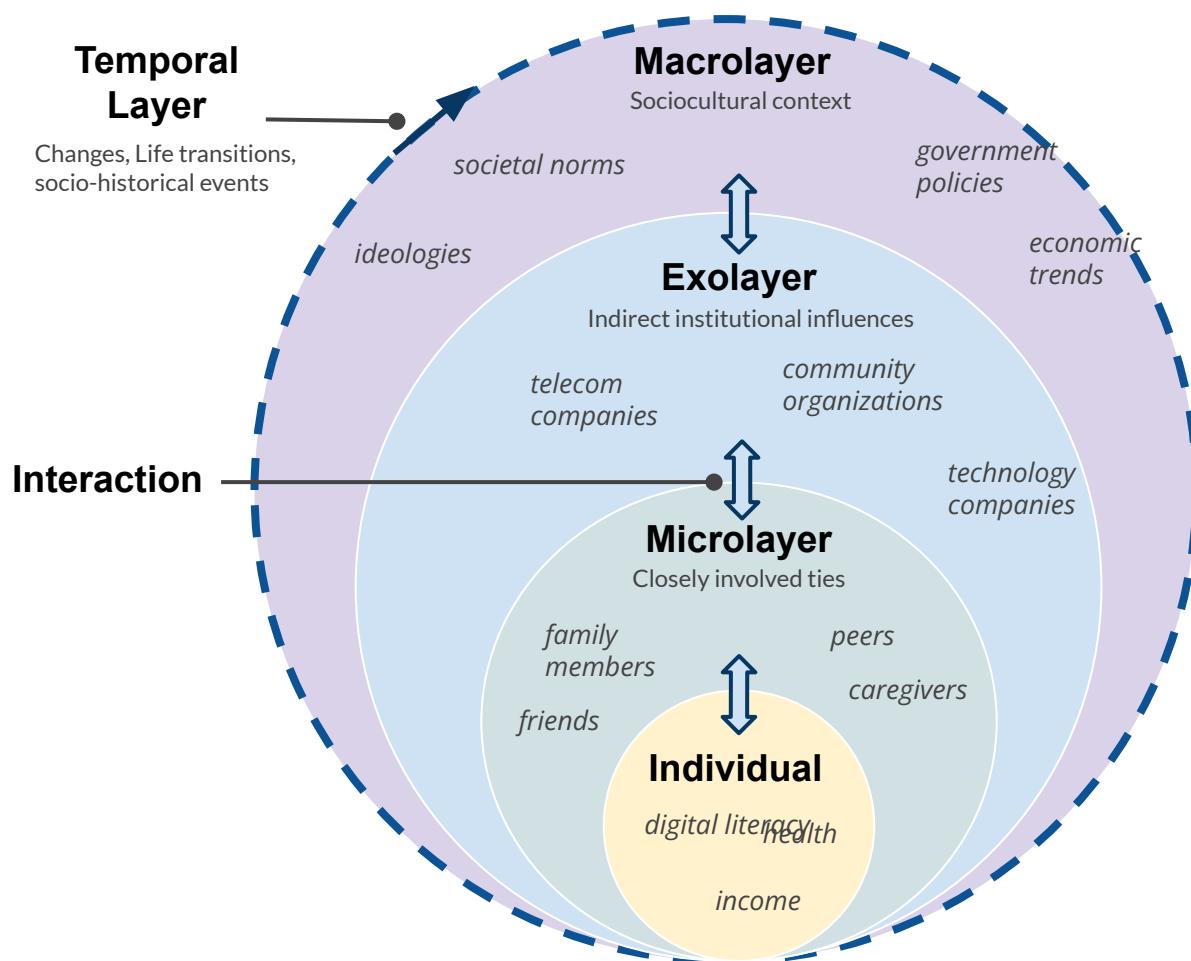
- “more susceptible to fraud” [Garg 2012]
- “particularly vulnerable to certain risks and experience difficulties in mitigating them” [Frik 2019]

How can we better theorize vulnerability to open up more potential of the concept?

Ecological Systems Theory (EST)

Proposed by Uriel Bronfenbrenner to explain how human development is influenced by nested environmental systems over time

Layers, not labels
[Luna 2009; Luna 2019]

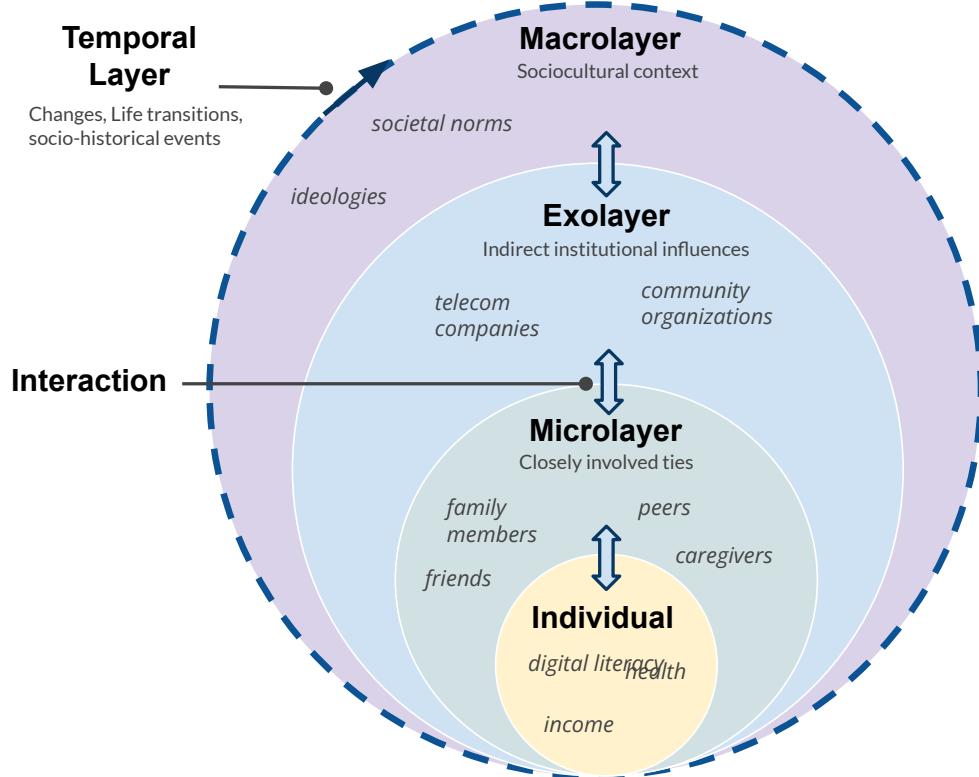


How can we apply the lens into our research and design work?

It's explanatory

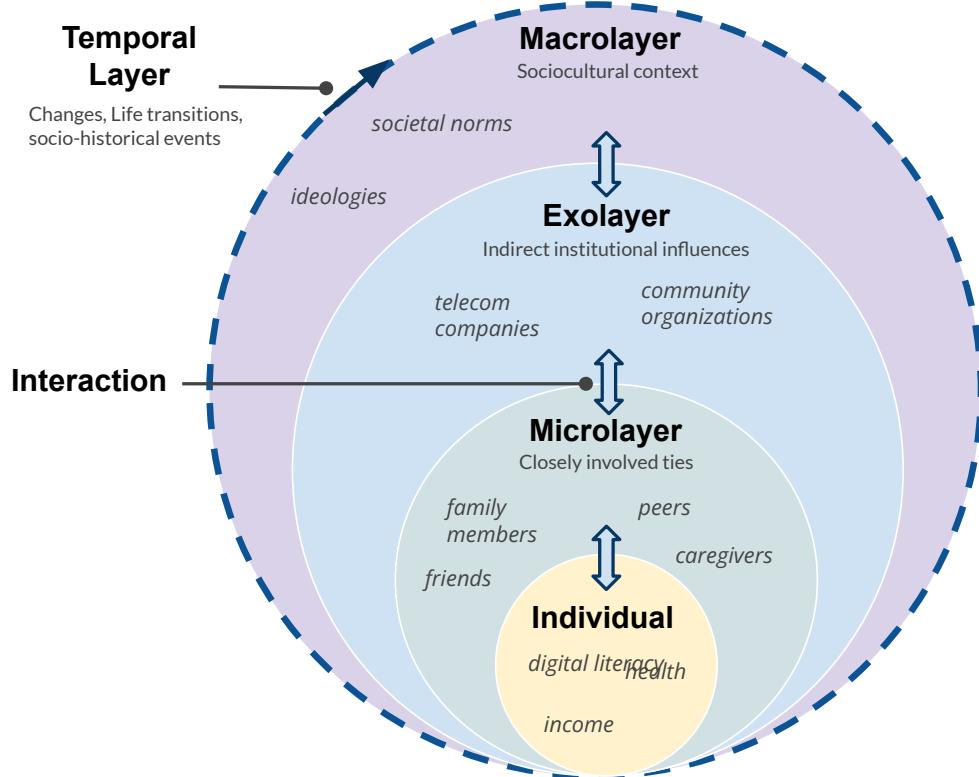
- A unified framework to overcome the challenges faced by the population-specific approach

- ✓ User diversity
- ✓ Complexity of vulnerability
- ✗ Risk of Stigmatization



It's generative

- Unpacking the Layered System
- Unpacking Vulnerability in Time
- Designing Across Layers



Moving Forward...

- Imagine **cross-domain and community** alliance and collaboration
- Be more sensitive to **politics** in relation to *vulnerability*
 - Power in grouping and naming
 - Power in design or intervention
 - Which layers? What orientations?
 - Is vulnerability always undesirable? [Wu 2023]
 - Power from the higher-level structures, e.g., funding agencies

Is it possible to move beyond pre-defined categories and capture human diversity?

Takeaways

- A *socio-ecological* view of vulnerability contrasting with accumulating population-specific knowledge
- Potential of *cross-domain and community* alliance
- Invite dialogue on *politics* in relation to *vulnerability*



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Thanks!
Questions?