ARCHITECTS, CLIMATE CHANGE & RESILIENCE: BRIDGING GAPS BETWEEN RESEARCH + PRACTICE

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MACAL
2021-2023

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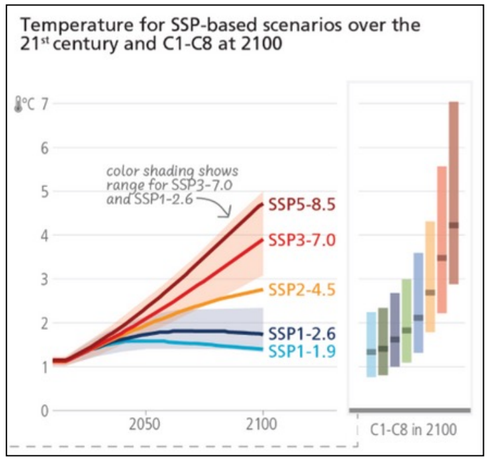
Problem

CLIMATE CHANGE CITIES

ARCHITECTS RESILIENCE



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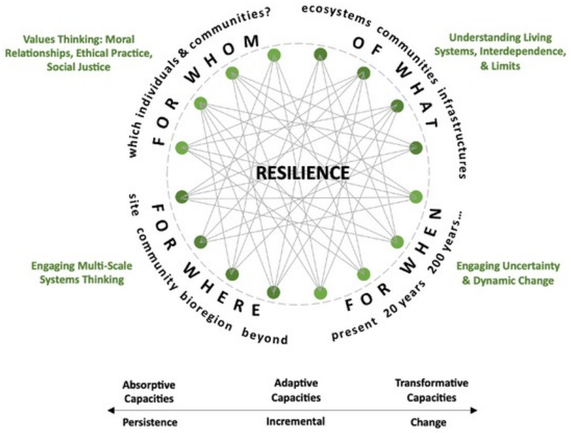
Literature Review

- Climate Change & Architecture: Professional Responsibilities, Opportunities & Challenges
- Climate Change & Cities: The Case for Resilience
- Resilience Thinking: Origins, Definitions, & Conceptual Tensions
- Resilience: Prospective Learning From Indigenous Worldviews & Science
- Resilience: A Review of Built Environment Practice Frameworks
- Initial Conceptual Framework for Resilience Thinking

Conceptual Framework
Resilience Thinking (initial)



Resilience for whom, what, where, and when is adapted with permission from "Defining urban resilience: A review," by Meerow et al., (2016). Copyright 2016 by Elsevier. Resilience capacities (absorptive, adaptive and transformative) are adapted with permission from "Transformational Adaptation: What it is, Why it Matters and What is Needed," by Lonsdale et al. (2015).Copyright 2015 by UKCIP.

Findings

Climate Change Understanding

Resilience Understanding

A Spectrum of Capacities

ABSORPTIVE	ADAPTIVE	TRANSFORMATIVE
Stability	Flexibility	Systems Change
Persistence	Incremental	Regenerative

Physical Systems | **Ecological Systems** | **Social Systems**

varied in depth
understanding shaped practice
a process and an outcome **RESILIENCE** **UNDERSTANDING** Place-based design
correlated with depth of climate change understanding
regenerative design practitioners
not yet embedded in practice

Methodology

A Qualitative Study

Data Capture

- 11 semi-structured interviews
- Canadian architects, diverse cohort
- Advanced practitioners in green building or regenerative design with a demonstrated focus on climate-responsive design

Research Question

How do architects with expertise in green building and regenerative design envision urban built environment resilience in the face of persistent and intensifying climate change?

Data Analysis

- Six-step inductive thematic analysis (Braun & Clarke, 2006)
- Distinguish the themes and patterns of meaning in the data to discern insights relative to the study (Maguire & Delahunt, 2017).

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Discussion

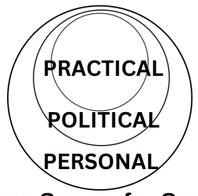
Comparative review of the scholarly literature, study findings, and green building frameworks.

Understandings of Resilience

- Both the literature and the study identified conceptual tensions in and varied understandings of resilience. Green building practice frameworks differ significantly in their resilience focus and currently prioritize mitigation.

SCHOLARLY LITERATURE	PRACTICE FRAMEWORKS
Social-ecological systems	Physical systems of buildings
Transformative & adaptive capacity	Adaptive & absorptive capacity
Dynamic states, bouncing forward	Stable states, bouncing back
Social justice, empowerment	Emergency preparedness
Multi-scalar thinking (spatial & temporal)	Uni-scalar thinking (site & near term)

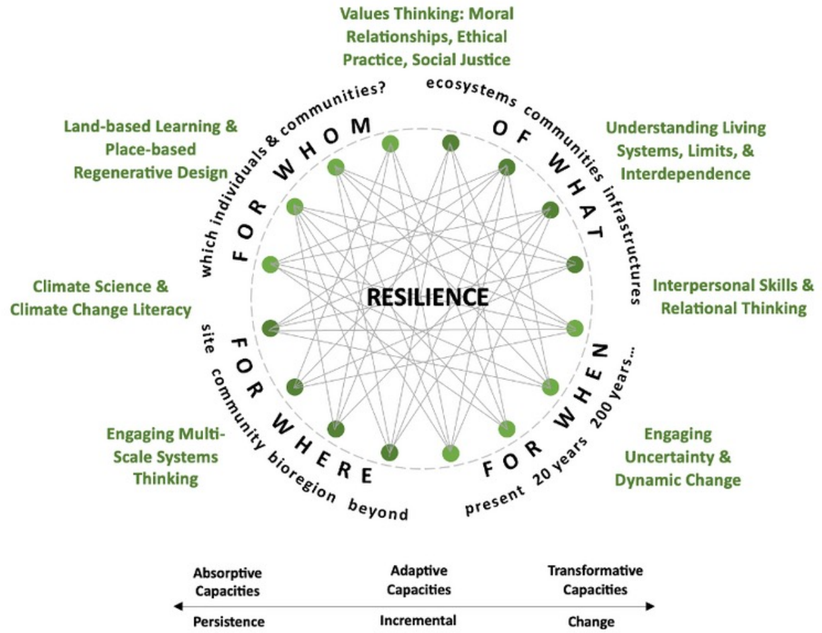
- The literature and participants identified a moral imperative for climate action leadership.
- Mindsets and values were identified as a primary enabler and barrier to change.
- The skills architects most need are interpersonal over practical reflecting social change leverage points.



Three Speres for Social Transformation
Adapted from O'Brien (2018)

Conclusion

Resilience Thinking Conceptual Framework



Conclusion

Study Findings

Climate science literacy promotes effective climate action, participant literacy is varied, they identify that they need greater climate science literacy to be effective in practice.

Green building frameworks lag scholarly literature in their definition of resilience and demonstrate incongruence with climate science, and social-ecological system dynamics.

Participants are varied in their understandings of resilience highlighting a need to strengthen resilience literacy.

Regenerative design training and Indigenous knowledge may offer important pathways to transformative resilience in the face of large and enduring climate change.

The literature and participants are congruent on the key enablers of resilience including personal skills over technical skills, and a 'Moral Responsibility' and ethical professional responsibility to design for climate change.

Limitations + Future Research

- Starting point
  - Not generalizable, basis to inform quantitative instrument, validation of the conceptual framework
- Worldview
  - Inherent limitations in my worldview, Indigenous worldviews
- Holistic thinking
  - Resilience & low-carbon cities, holistic health
  - Need to apply to allied design professionals similarly

References

- Berry, P., & Schnitter, B. (2022). Health of Canadians in a changing climate: Advancing our knowledge for action. Government of Canada. https://changingclimate.ca/site/assets/uploads/sites/5/2022/02/CCHA-REPORT-EN.pdf
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. Qualitative Research in Psychology, 3(2), 77–101. https://doi.org/10.1191/1478088706qp063oa
- Creswell, J. W., & Guetterman, T. C. (2019). Educational research: Planning, conducting, and evaluating quantitative and qualitative research (6th ed.). Pearson.
- Intergovernmental Panel on Climate Change. (2021). Summary for Policymakers. In Climate change 2021: The physical science basis. Contribution of working group I to the sixth assessment report of the Intergovernmental Panel on Climate Change. Press. https://www.ipcc.ch/report/ar6/wg1/chapter/summary-for-policymakers/
- Intergovernmental Panel on Climate Change. (2023-a). IPCC, 2023, Summary for Policy Makers. In Climate change 2023: Synthesis report. Contribution of working groups I, II and III to the sixth assessment report of the Intergovernmental Panel on Climate Change, 1-34.. IPCC, Geneva, Switzerland. doi:10.59327/IPCC/AR6-9789291647/001
- Lonsdale, P., Pringle, P., & Turner, B. (2015). Transformative adaptation: What it is, why it matters and what is needed. UK Climate Impacts Programme, University of Oxford. https://www.ukcip.org.uk/wp-content/PDFs/UKCIP-transformational-adaptation-final.pdf
- Maguire, M., & Delahunt, B. (2017). Doing a thematic analysis: A practical, step-by-step guide for learning and teaching scholars. All Ireland Journal of Teaching and Learning in Higher Education (AISHE-J), 8(3), 3351-3359 and 33510-33510. http://ojs.aishe.org/index.php/aishe-j/article/view/335
- Marlow, E. C., Chmutina, K., & Dainty, A. (2022). Interpreting sustainability and resilience in the built environment. Journal of Disaster Resilience in the Built Environment. https://doi.org/10.1108/IJDRBE-07-2021-0076
- Meerow, S., Newell, J. P., & Stults, M. (2016). Defining urban resilience: A review. Landscape and Urban Planning, 147, 38-49. https://doi.org/10.1016/j.landurbplan.2015.11.011
- O'Brien, K. (2018). Is the 1.5oC target possible? Exploring the three spheres of transformation. Science Direct, 31, 153-160.https://doi.org/10.1016/j.cosust.2018.04.010
- Vale, L. J. (2014). The politics of resilient cities: Whose resilience and whose city?, Building Research & Information, 42(2), 191- 201. https://doi.org/10.1080/09613218.2014.850602
- Whyte, K. (2018). Critical Investigations of resilience: A brief introduction to Indigenous environmental studies & sciences. Copyright 2018 by the American Academy of Arts and Sciences. doi: 10.1162/DAED_a_00497