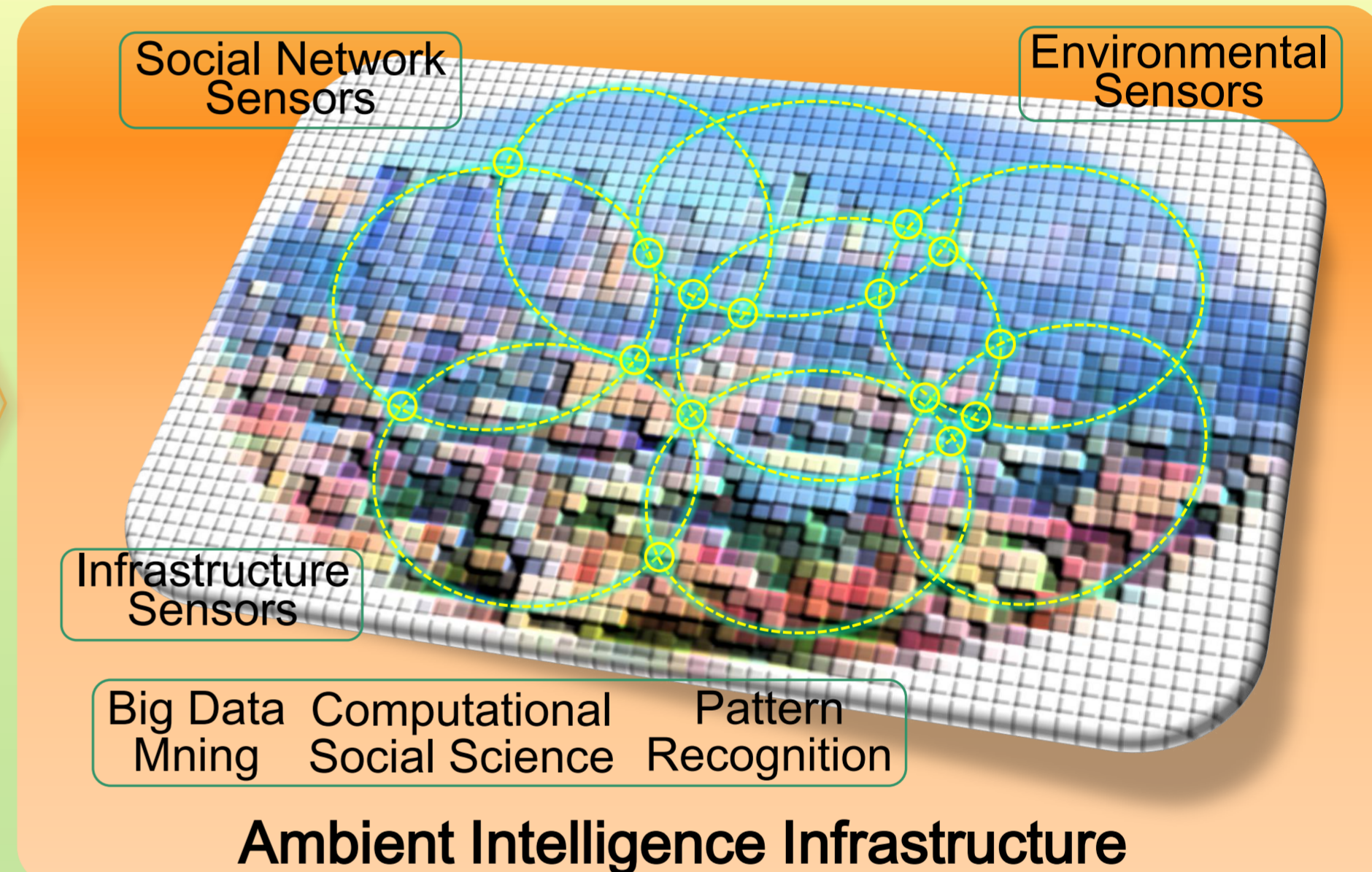
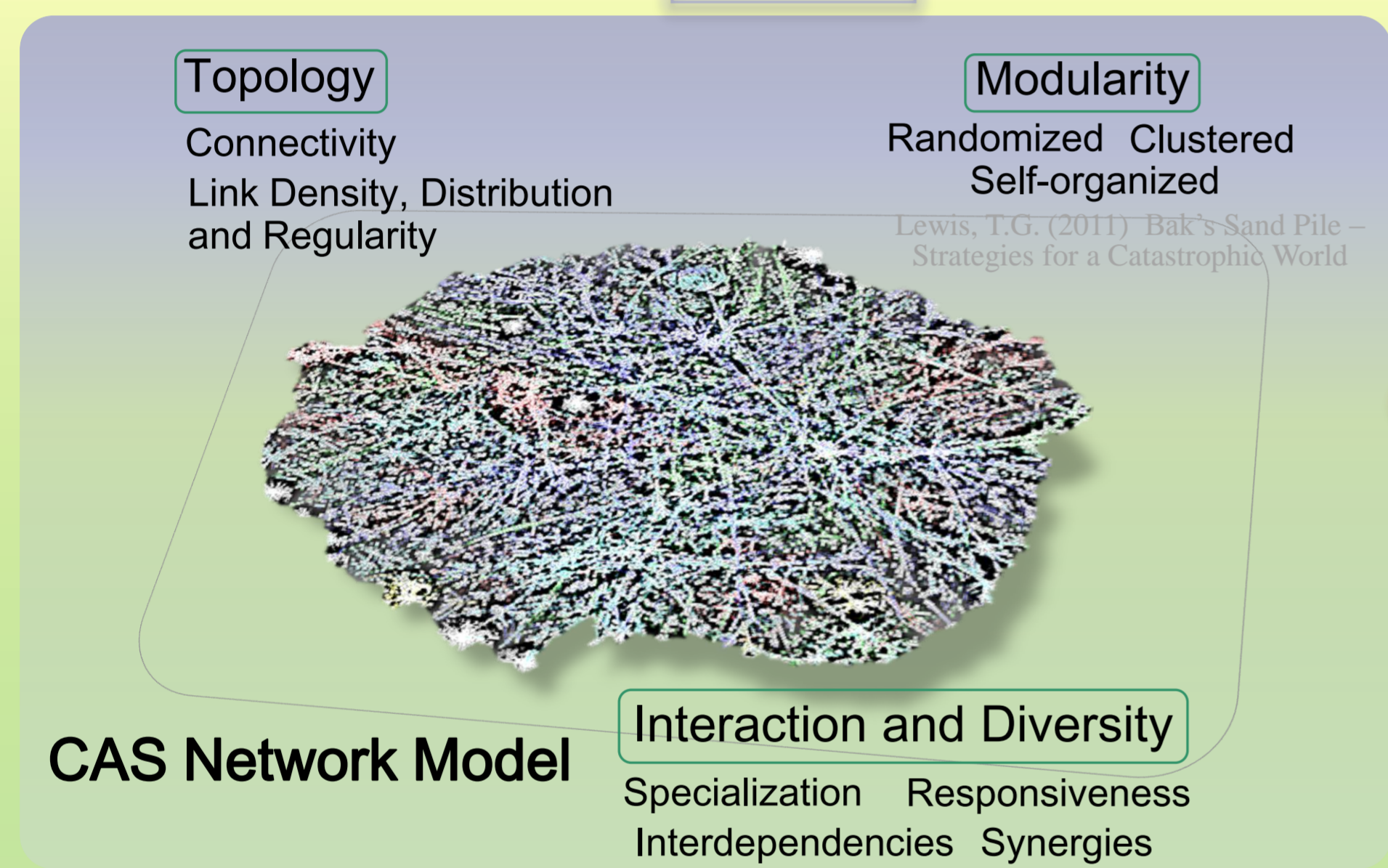
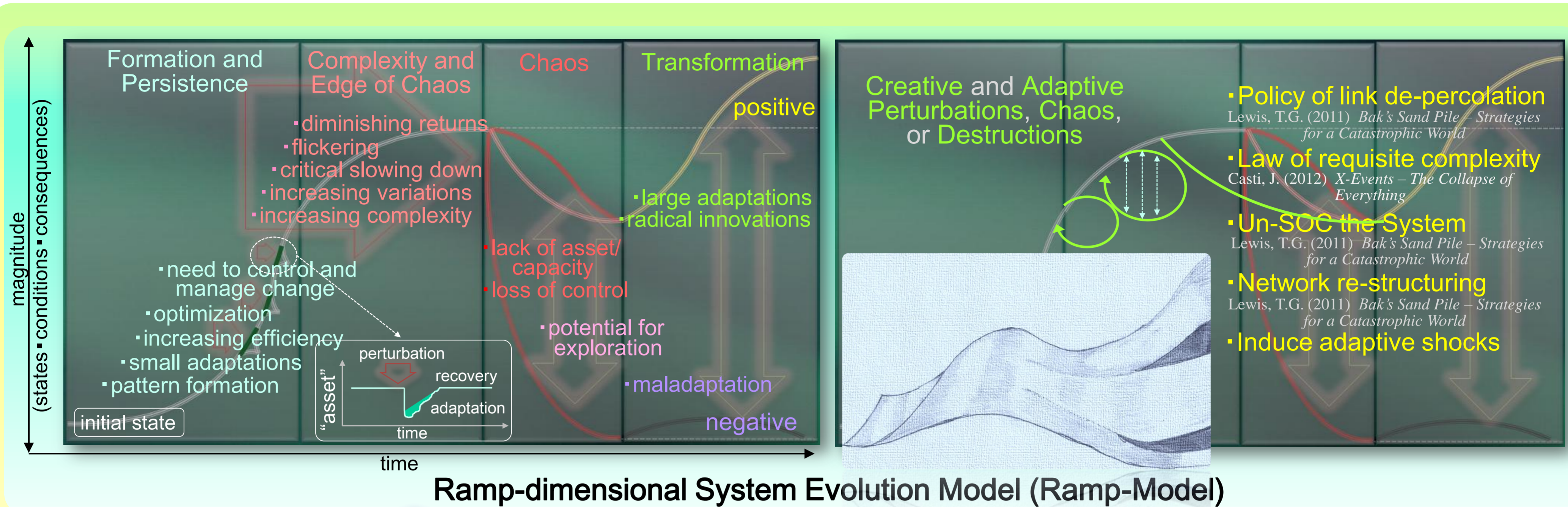


Adaptive Landscape Model of an Intelligent Complex System

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Abstract. This research aims to employ an adaptive landscape model of an intelligent complex adaptive system (aiCAS) framework that can intrinsically demonstrate production of adaptive and transformative capacities to provide innovative strategies for the sustainability of a socio-ecological urban system. The aiCAS is supposed to learn, adapt and invent novel forms of interventions, even in situations where extreme perturbations are present. Also salient to the aiCAS is to intelligently find instances where a small intervention can actually produce impactful desired changes.



Intelligent Complex Adaptive System (aiCAS) Framework

Research Objectives

1. To identify factors (predictive) that can lead to changing adaptive landscapes that drive continual evolution;
2. To develop a model of how signal (e.g., energy) flows in the system that builds and/or maintains the adaptive landscape;
3. To develop a theory of lever point in CAS, and lever point interventions;
4. To develop a theory on the openness and modularity in CAS, and their trade-offs;
5. To develop a network-centric model where the above objectives can be (i) observed or (ii) made observable, (iii) implemented, (iv) manipulated, and (v) evaluated; and
6. To develop an AI system that efficiently captures and effectively embodies the above objectives.

- Redesign the system for adaptive response
- Prepare for change
- Reduce risk of unwanted transition
- Promote desired transition

