Transdisciplinary Organizing Principles for Human Activity in Earth Systems Research

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Grand Challenges in Global Sustainability Research

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Earth Systems Human Activity Research

This presentation draws on transdisciplinary research conducted through the International Center for Everybody's Child at Hofstra University

The research focuses on the increasing exposure of children worldwide to catastrophic events, armed conflict, extreme poverty and public health emergencies.

In Situ

The research explores “in situ” the impact of the supercomplexity of the interconnections between climate change, the ecological crisis, the global economic crisis, armed conflict, public health emergencies and extreme poverty on the lives of children.

Transdisciplinary Research

- The research requires the consideration of complementary and contradictory paradigms and metatheories, which are philosophically grounded in different views of science with different histories and traditions.
- The research draws on both qualitative and quantitative studies in the social sciences and physical sciences, medical and psychiatric research on trauma, and most recently economics.
- The research is framed by the readings in the philosophy of science and literary criticism.

Working in the Cracks between Paradigms, Disciplines and Professions

- The work necessitates re-examining the interconnections between the social, cultural, psychological, biological, and physical sciences so that new questions can be asked, new understandings gained, and actions taken.
- Thus, the work takes place in the cracks, between paradigms, disciplines and professions, attending to both quantitative and qualitative research.

The Study of Language as a Social Practice Provides a Portal for Analysis

- My interest in language is between language and meaning – in the gap between the words that are spoken and the person who speaks, between the writing and the written.
- My intent is to use language analysis as a portal to explore research across disciplines and professions on the complex dynamic relationships between the social and physical world.

A Critical Factor for Global Sustainability Efforts

- The structure, form, and function of any global sustainability efforts will be highly dependent on the ability of all those who participate to take into consideration the multi-disciplinary and multi-professional challenges of working with participants who hold different views of science and, quite possibly, humanity.

Supercomplexities of Interrelationships

- Attention will be given not only to the supercomplexity of the interrelationships between atmospheric and ecosystem stressors and human activity,
- but *also* the supercomplexity of the interrelationships between the paradigms and metatheories that frame the physical and social sciences.

The Research Creates Small Challenges

- Meta worries about metatheories;
- Problems that arise from working in complementary and contradictory paradigms;
- Concerns about reductionism and expansionism;
- Questions about the complexity and fragmentation of research studies;
- Worries about fragmentation and systemic risk.

The Models Caveat

- Models are not real systems;
- Models are useful for understanding small systems but not for huge systems – lots of things can change quickly;
- Models are useful fictions that are highly dependent on scale and complexity;
- Models are vulnerable to too many kicks – lots of things can change very quickly (the "who knew" phenomenon);
- Models can provide useful information – including warnings -- but not answers;
- Models can be wrong in many ways, but right in some ways that are useful;
- Models combined with other models provides compelling evidence.

Small Challenges

- Concerns about the positionality of researchers;
- Issues about participation and collaboration in sustainability research across disciplines and professions;
- Questions of communication across discourse communities using different social semiotic systems.

We Forget the Importance of Language at Our Peril

- “Words,” Iris Murdoch writes, “are the most subtle symbols which we possess and our human fabric depends on them. The living and radical nature of language is something which we forget at our peril.”

The Grand Challenge of Communication

- As discussions take place on the Grand Challenges in global sustainability research it is of critical importance that attention is given to the communicative practices of scientists and members of other professions – doctors, lawyers, economists -- policy makers and the media.

The Tragedy of Communicative Failure

- Murdoch writes, "We learn through attending to contexts," and "we can only understand others if we can to some extent share their contexts." She then states, "Often we cannot."
- Scientists can do the research that they are eminently qualified to carry out – but how do they communicate the information?
- It is not up to the public to figure it out.

The Social Dimension

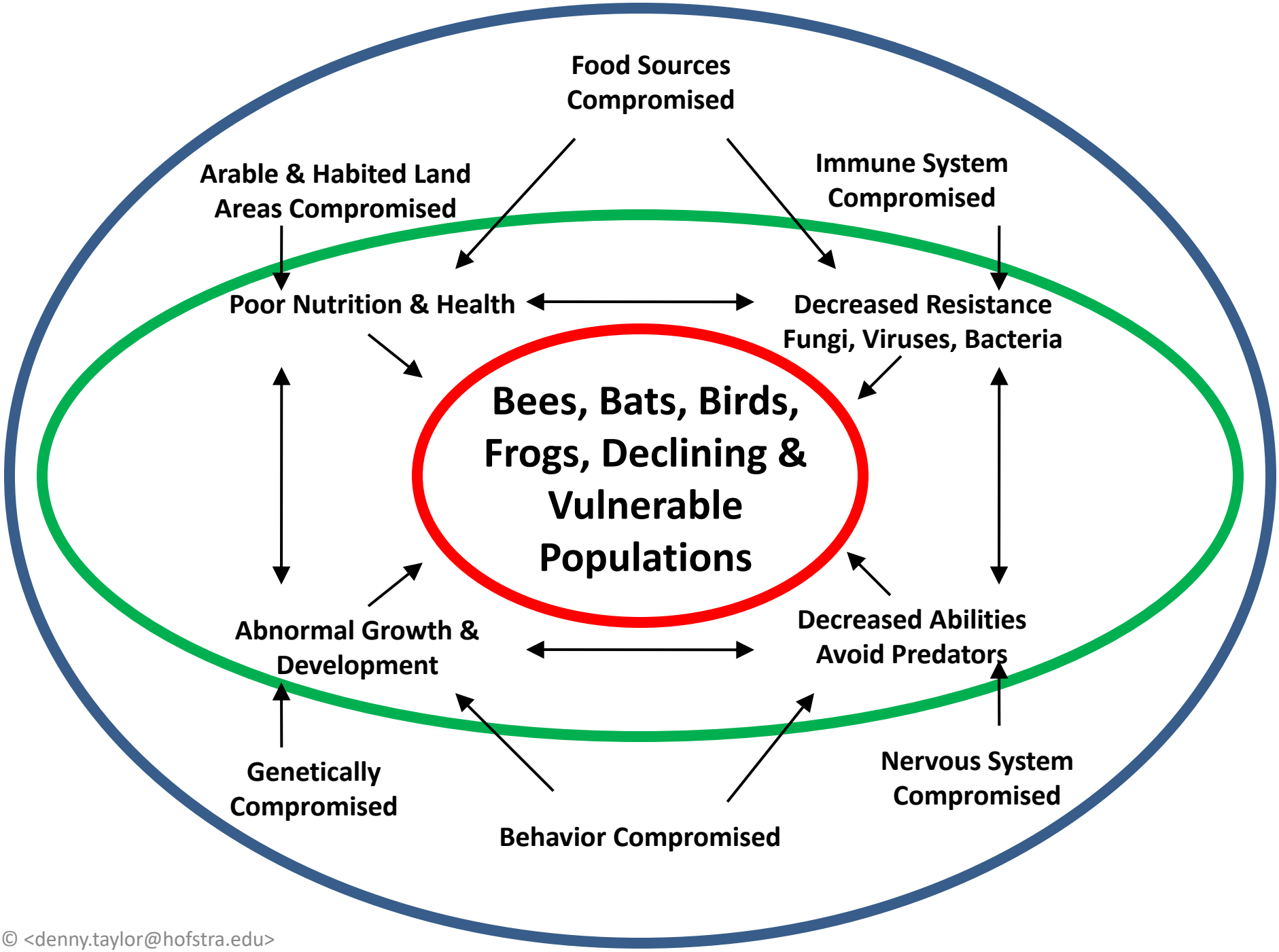
- Human activity is highly dependent on social semiotic systems – to which people belong and that are constitutive of their everyday lives.
- All knowledge is contested – even when life begins and when life ends.

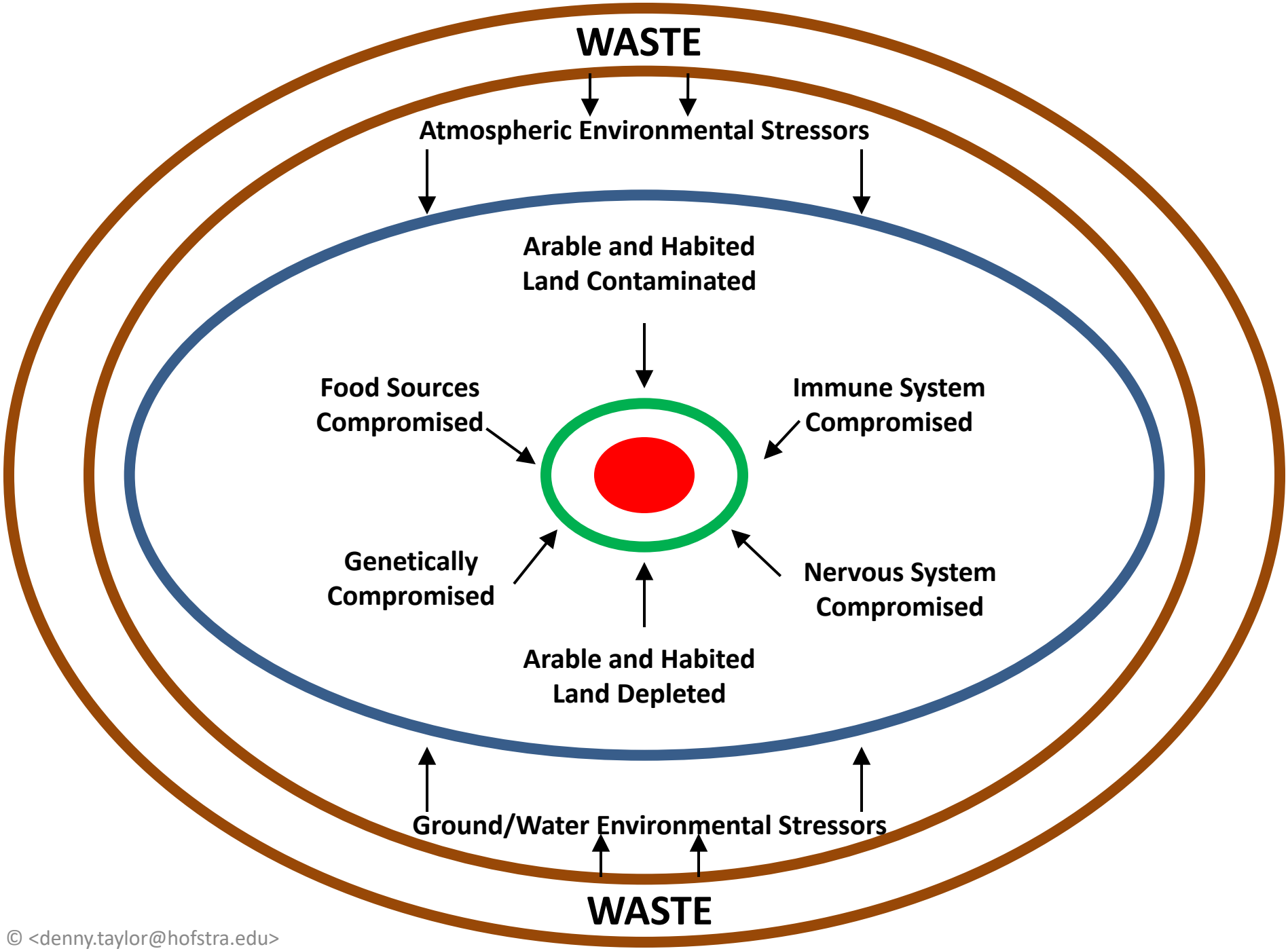
How Do Scientist Communicate Information?

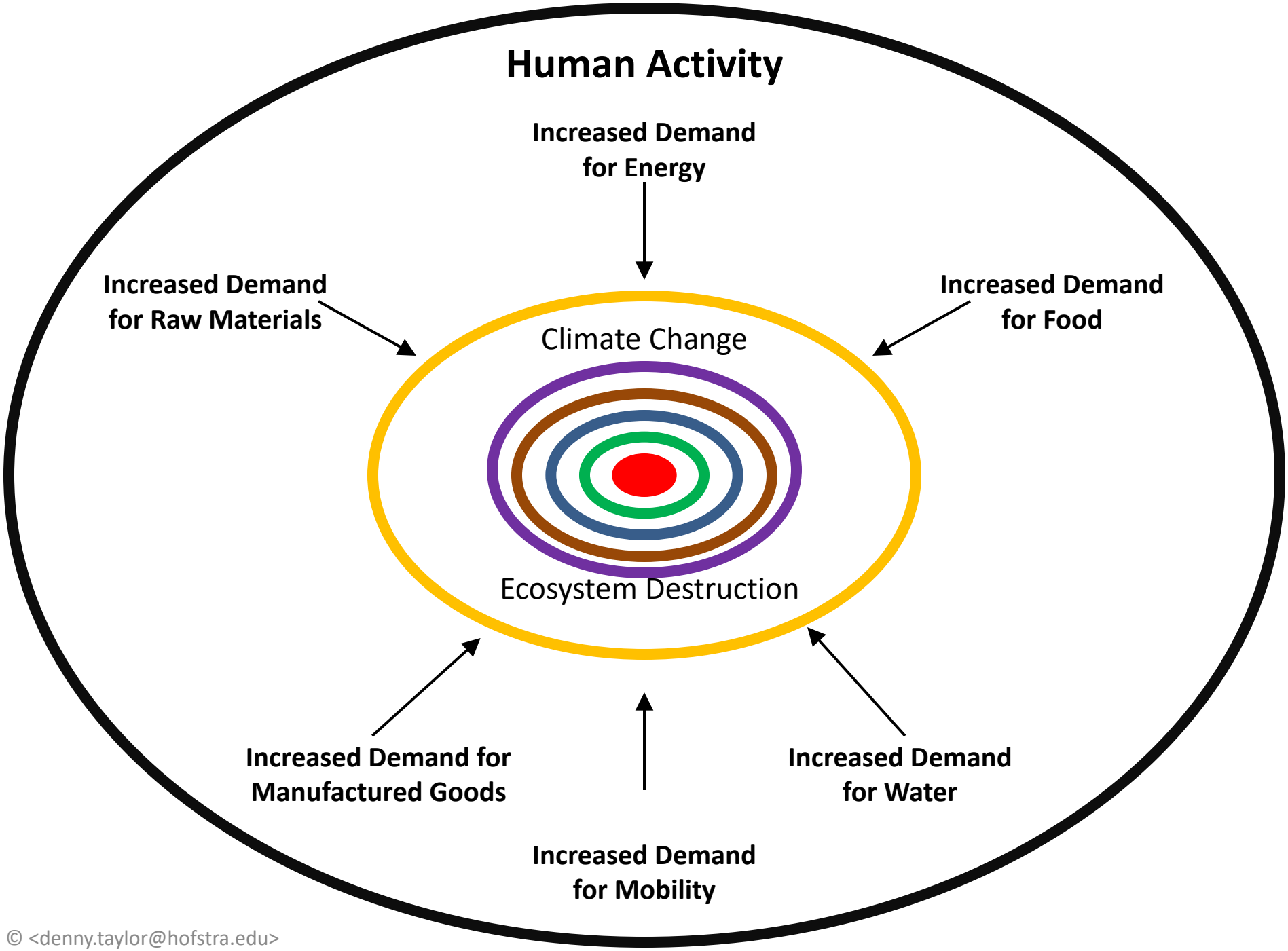
- The task facing this learned community is fraught with difficulties – not of science but of communication about science;
- Scientists can do the research that they are eminently qualified to carry out – but how do they communicate the information?
- It is also of critical importance that attention is given to the communicative practices in, amongst, and between, the various discourse communities to which people belong.

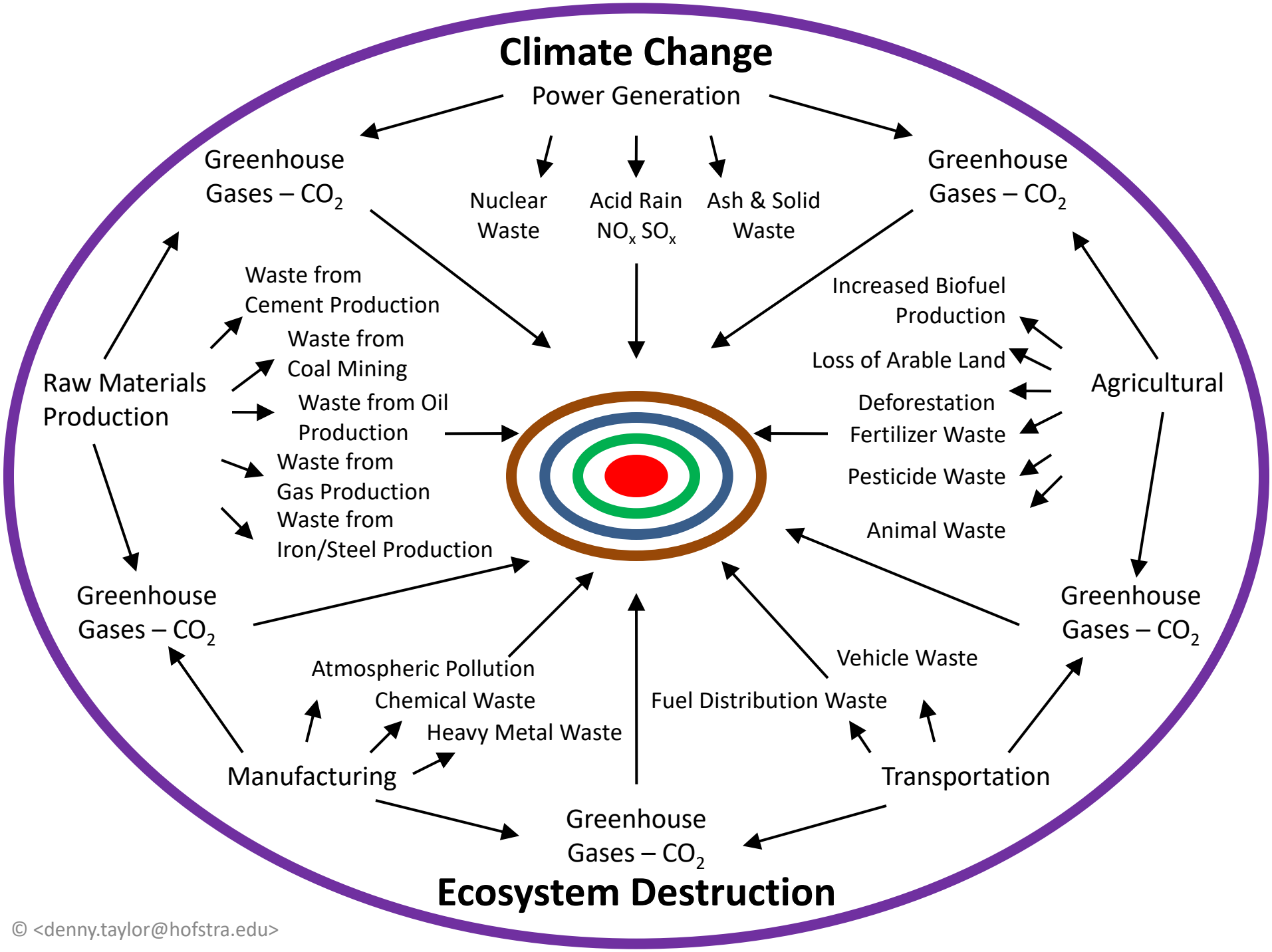
Re-Visioning for the Public the SuperComplexity of Earth Systems and Human Activity

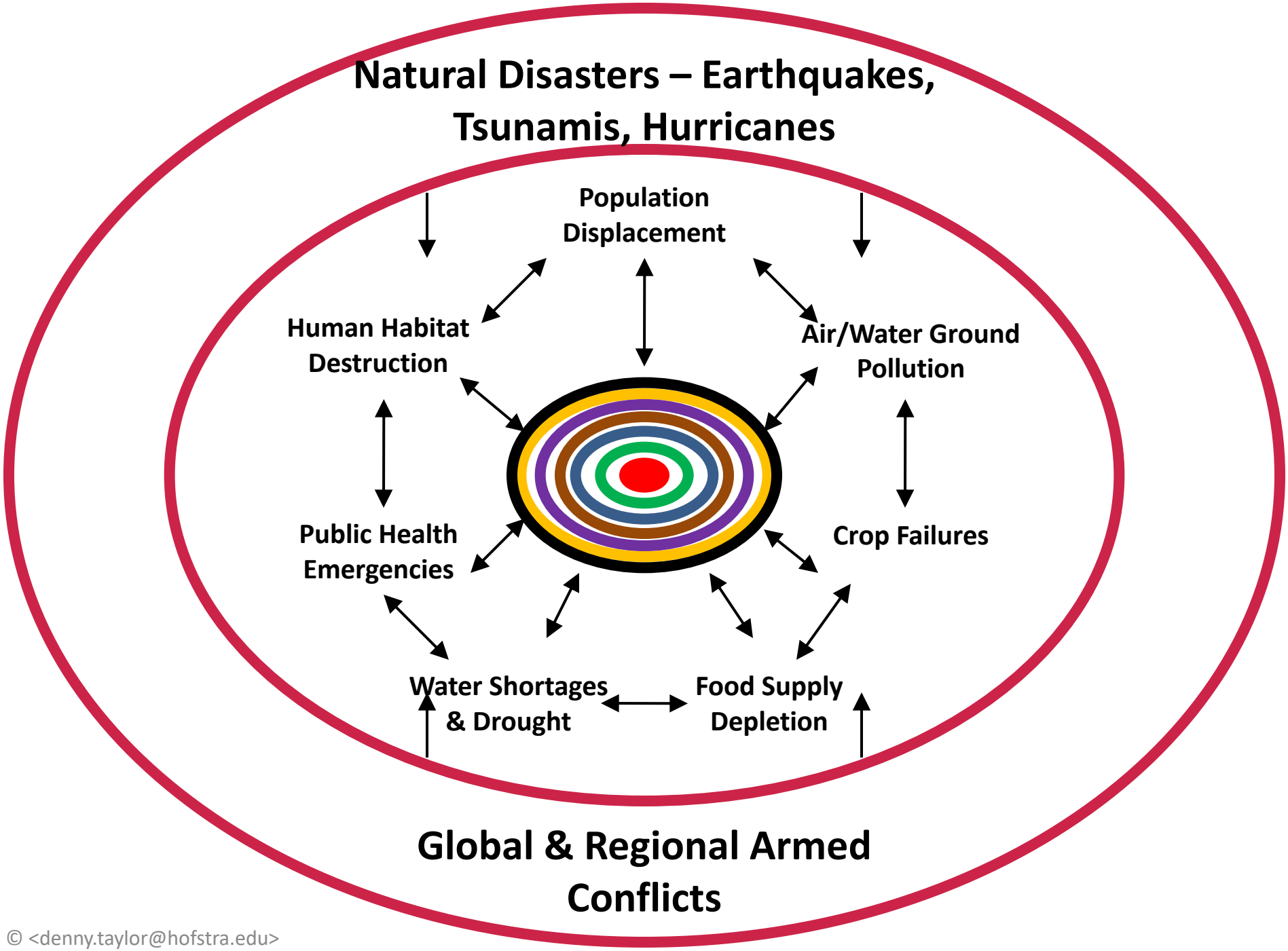
A Transdisciplinary Representation

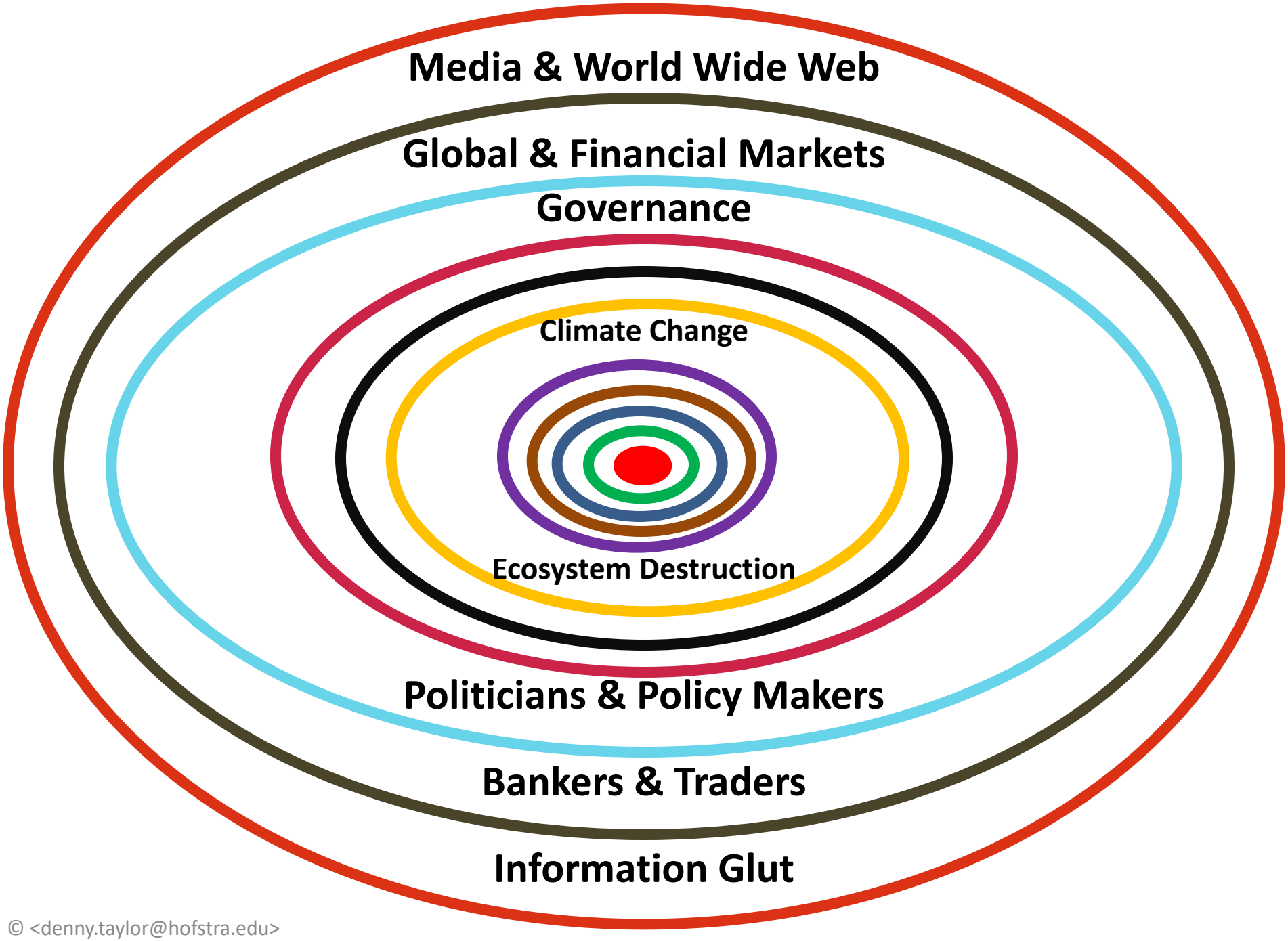


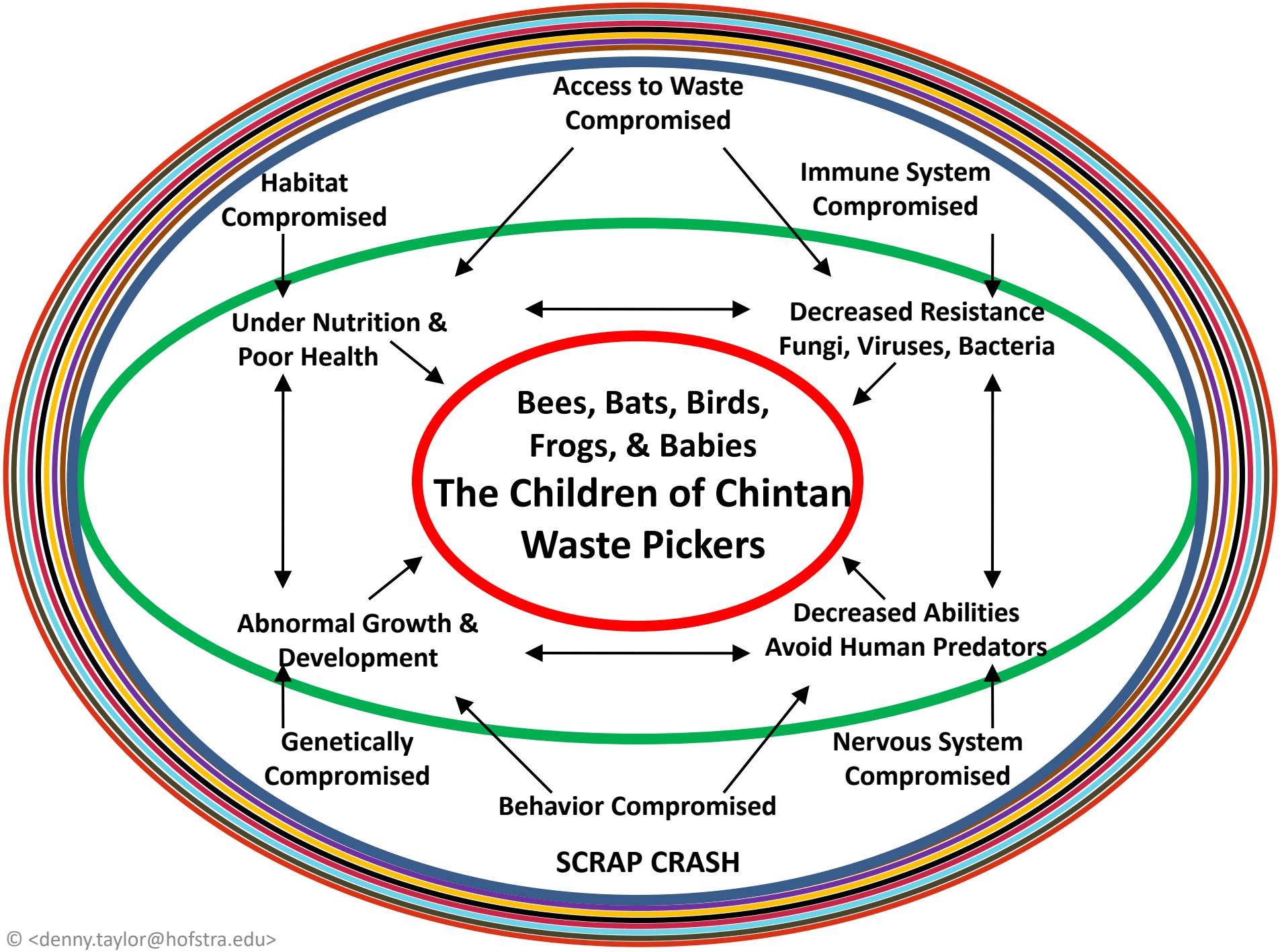












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Women of Haiti and the Other