

# A WORKBOOK AND ONLINE COMMUNITY for Co-CREATING OUR SUSTAINABILITY ETHIC

## Section III – Transformative Learning Chapter 3 - Living Systems

*The greatest revolution of our time is in the way we see the world. The mechanistic paradigm underlying the Industrial Growth Society gives way to the realization that we belong to a living, self-organizing cosmos. ... This realization changes everything. It changes our perceptions of who we are and what we need, and how we can trustfully act together for a decent, noble future.*

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### What are the attributes of all living systems and the boundary conditions for sustaining them?

Our Antioch cohort of thirty-five met for the first time on 9/11/01, and we met one weekend a month for the next two school years. In addition to my individual studies and the learning we did as a cohort, we were each members of a design team each year, and the second year my team's topic was Living Systems -- we had the privilege of co-teaching a weekend with Fritjof Capra. We also did individual projects, and mine was to help a small town in Oregon define their desired future in terms of balanced sustainability, and their public school system to respond with the learning, both in community and in school to be successful. This project included writing a Theory Paper that required understanding the underlying theory of 'sustainability'. That theory is 'Living Systems Theory', and once understood comes the additional understanding of who we need to be, our ethics, and what we need to do, our actions, to re-achieve sustainability.

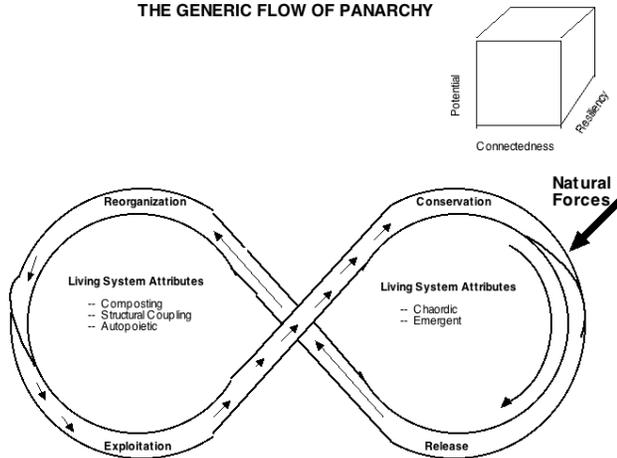
In the Spring of 2003 I attended a monthly presentation and conversation group convened by the System Science department at Portland State University. The focus was on why it does not make sense to use the term 'health' as

a descriptor of ecology. This created significant dissonance for me as I discern the planet, and the Universe, as a living entity -- often using 'health' terminology like breathing, metabolism, immunity, capacity to heal, community and reproduction in my conversations and writing. When the session was over, I was asked if I would present and facilitate at the next meeting on the subject of what does make a living system a living system, and how does all this relate to ecological 'health'. I purposefully stayed away from the more difficult concepts and terminology used by the scientists who have constructed Living Systems Theory, moving the conversation from being overly mental to being more physical, emotional, and sometimes spiritual.

I have used the material from this presentation on many occasions, and now map the living system attributes into the Panarchy flow shown next and described in Chapter III-7, '[Other Seminal Learning](#)'. This drawing shows that all Living Systems have a natural flow that not only helps us understand them, but also provides great insight for interventions so that we essentially flow with rather than try to manage them.

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### THE GENERIC FLOW OF PANARCHY



I always begin the description of the Panarchic cycle with the 'Natural Force' that perturbs the system with energy that 'awakens' and nurtures latent seeds. There is an immediate release quickly followed by reorganizing activities, and then the slower processes of the system being fertile and sustaining other new life, and then moving into a more dormant stage. These cycles are geological like eruptions and earthquakes, annual like our seasons, or may be as short as nanoseconds in the case of particles. The cycles are nested. They vary according to the attributes connectedness, resiliency and potential shown above, and in every moment there are a myriad of shorter cycles at play within the longer cycles.

I began my presentation and facilitation with an Appreciative Inquiry so that everyone in the room would get in touch with their own sense of reverence for life. I then shared my view that we are each a living system in the midst of other living systems on which we are highly dependent, and we all have the same basic attributes. We live in a life-death-life continuum in which we are highly interdependent; a blend of cooperation and competition in which cooperation is clearly the dominant paradigm; and where each living system exhibits the same set of attributes.

#### Dissipation or Composting –

In Nature, our ecological base, there is zero waste. Every living system is

biodegradable and when it dies, it becomes compost for the sustenance of future living systems. So dissipation doesn't lead to the demise of a system, but is part of an ongoing process in which new forms are constantly reemerging. And what emerges is part of an ongoing adaptation and improvement process. Thus, contrary to entropy, life flourishes.

#### Emergence –

Living systems that are suited to their environment do flourish. They interact in such a way that there is novelty. Chemically, hydrogen and oxygen, neither with the properties of water, combine to form water; animals like bees become part of the flora's proliferation process, and create honey as a result; natural forces like the wind interact with the trees to help them develop tensile strength. We are surrounded by a plethora of newness every day. Unlike mechanical systems where the whole is always less than the sum of its parts, it appears that in living systems, the whole is always greater than the sum of its parts. There is an element of mystery.

#### Structurally Coupling –

There is more than just cooperation and novelty, there is dependence, a Web of Life. Our species relies on the trees for oxygen just as the trees rely on us for carbon dioxide. We rely on the Earth's systems to sustain our lives -- clouds to filter us from the sun; cleansing for suitable water, air and soil; growing for food and materials; and healing that for our species comes from sensual beauty and naturopathic medicines, and for the Earth's systems from an innate intelligence grounded in cooperation. We are energetically connected with every other living system.

Autopoietic –

Each living system has the capacity to reproduce itself so that the integrity of its organization is maintained. Offspring maintain a structural sameness with their specie and characteristics of their parents are recognizable across the generations. But, genetically, they are not identical with either their parents or their siblings – the closest similarity being identical twins.

Organization is Fixed and Structure Changes

Unlike mechanical systems, and our organizations that emulate them, where we think of the structure being fixed and the organization as changing, in living systems the organization is fixed and structure is in constant flux. Dissipation and emergence never stop, and new structure, like the cells in our body, are always re-emerging. The ramifications of this difference are often difficult to understand. In the last chapter of Section V, we will look briefly at the possibility that Shamanic cultures speak ‘languages of life’ that shape their world views in ways that are very difficult for those of us who speak mechanical ‘input-process-output’ languages to comprehend.

As I presented the attributes of a Living System, there was a sense in the room that there was a duality rather than a blending of organic and mechanical systems. So we talked about Nature and the inclusion of mechanical attributes as fundamental to living systems.

We had a brief conversation on ‘Natural Capitalism’ using material from Hawkins, Lovens, and Lovens book of the same name to show how we are structurally coupled to the Earth, and that the biological services the Earth provides such as supporting our breathing, can be valued at \$10K annually for every person on the planet.

We then talked about having a ‘bandwidth’ for survival that will be written up in some detail in Section VI when the problem of re-achieving sustainability will be presented. Suffice to say at this point that our dependencies and need to ‘structurally couple’ with other life systems is a matter of life and death for our specie.

Changing our primary world-view from mechanical systems to living systems is a generational challenge that I believe must begin with education at every level. In order to have successful ‘Sustainability Education Programs’, the teachers and administrators must be steeped in the underlying Living System Theory.

## Reflection

We are all in touch with nature, although we may go for long periods of time when our bare feet don’t actually touch the Earth. Most of our earliest learning came from sensing natural events. As we grew older most of us masked natural phenomena as our learning came from printed material about a world that is invented and constructed by humans. Think about a time when you knew you were experiencing the creativity of nature -- a time of birth, beauty, awakening, force or awe. A moment when there was emergence.

What was the event? And how might you characterize it?

Was there a feeling of purpose or intelligence?

Was the whole possibly greater than the sum of its parts?

Could you feel yourself part of something bigger than the world you normally describe for yourself?

Was there a sense of mystery?