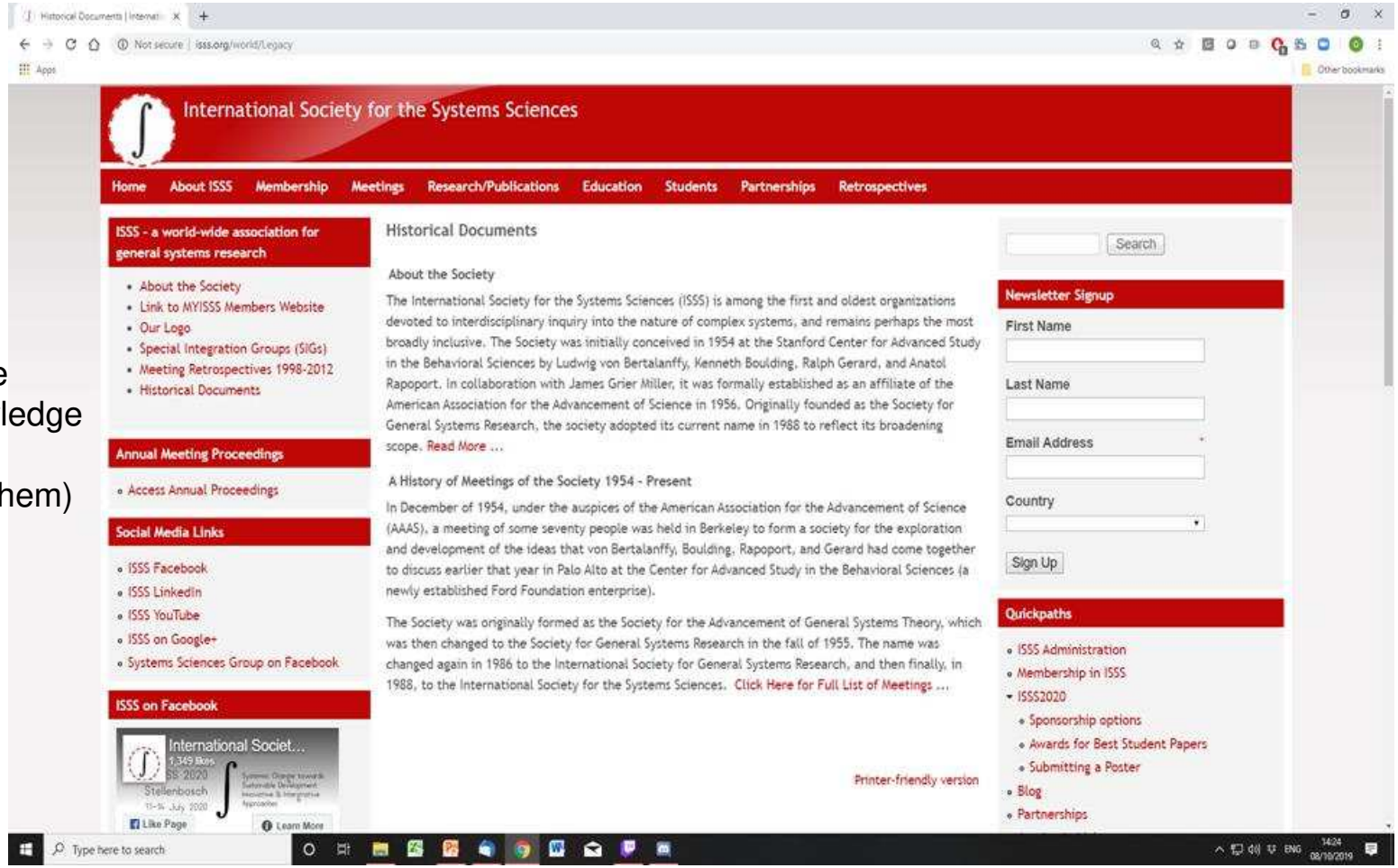
What is the IFSR?

THE INTERNATIONAL FEDERATION FOR SYSTEMS RESEARCH (IFSR), founded 1981, is a non-profit, scientific and educational organization comprising 45 member organizations (status April 2016) from all continents. The overall purpose of the Federation is to advance cybernetic and systems research and systems applications in order to serve the international systems community (see also its constitution). The Federation is guided by a Board of Directors, composed of two individuals from each member organization. The Board elects a President, one to three Vice Presidents, and the Secretary General. These officers form the Executive Committee (EC). The EC acts for the Board pursuant to the authorization of the Board. The Board meets bi-annually in even years, the EC annually.
The IFSR utilizes the following major means of publication

Integrates system organisations (INCOSE is a member)

Mission is to integrate system science knowledge (INCOSE has a joint Working Group with them)



For info: Sue Gabriele, sgabriele@gemslearning.net

System Science RoundTable Guide

FACILITATOR GUIDE

At the start of the round table:

1. Welcome, to this System Science RoundTable (RT). My name is "xxx", and I am your facilitator. This is your RoundTable Guide. We propose to suspend judgment and experience this together without stopping for 60 minutes today. Welcome, we are glad you are here. Let's take one minute and go around the room for initial introductions (top to bottom of the attendee list) —about three words: e.g., your first name, organization/department, field of work/profession. (Cue the person on the left).

2. For our reflection, I'll suggest this question to consider:
   Why are you here and interested in systems science? What characteristics would make systems science successful?

3. While we each consider the topics for a few minutes, I'll ask for volunteers to read aloud the RoundTable Guidelines on the right. OUR FORMAT? OUR PURPOSES? GUIDELINES FOR LISTENING? GUIDELINES FOR SPEAKING? GUIDELINES FOR RESPONDING?

4. I would like to hear everyone's thoughts about these topics or anything else that is on your mind. Let's each take about 60 seconds to speak. Once everyone has spoken we will go around again for reflections with an additional 30 seconds. We will use a timer. Please speak so that everyone can hear. What you say is important to us.

(At the end of the RT please read)

5. It's time to close. Thank you all for your contributions, these will be very valuable as we build over overall situational understanding. If you have something more to say, then please feel free to communicate via email or next time we meet.

SUGGESTED READINGS: RoundTable Guidelines

OUR FORMAT. Our unique format is an eye-opening new practice in democracy. We spend 5 minutes listening to short readings and the suggested topics. We then spend up to 55 minutes on individual comments, time divided equally among all present. One round of 1 minute and then we will have a second round that allows additional reflections.

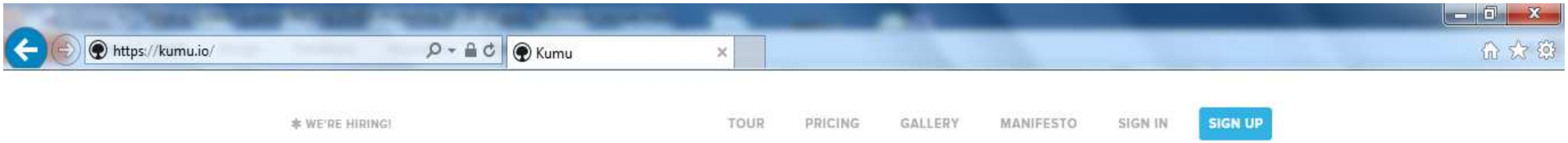
OUR PURPOSES. We use a facilitator guide/script and basic readings--RoundTable Guidelines–for many reasons: 1- We pack in a great deal of information in a very short time, thus leaving maximum time for each of us to present our ideas. 2-The result is we hear everyone's point of view on a topic.3- We experience some new real-time effortless democratic practices: including rotating, distributed leadership; equal time; as well as a simple scaffold to facilitate conscious self-guided evolution. 4- We have found that just as we break the sound barrier when we travel faster than the speed of sound, we break the communication barrier when we hear 15 authentic viewpoints in 45 minutes.

GUIDELINES FOR LISTENING. Listening to the 5 minutes of readings allows us the opportunity to quiet our minds and silently reflect on the topics, the readings, our inner thoughts, and our work and lives. Listening to each other's comments, we hear a great variety of viewpoints. We consciously shift our attitudes from "evaluation" to "valuation," from critiquing to appreciating, from problem-solving to ideal-seeking -- towards one another and towards ourselves.

GUIDELINES FOR SPEAKING. At your turn, please say your name again. Then say something about today's topic, or anything else that is on your mind. Let's each take only one turn to speak and limit our time, so we can offer everyone a turn. Or, if you prefer, pass your turn and just listen today.

GUIDELINES FOR RESPONDING. The facilitator may say "thank you" after you speak. In the interest of time and purpose, we will save all other responses to each other until after the session. We don't want to divert others, or be diverted, from our own individual learning.

We will be doing some co-design.
For those with laptops please register on with Kumu.
It is free to use and entirely web based.

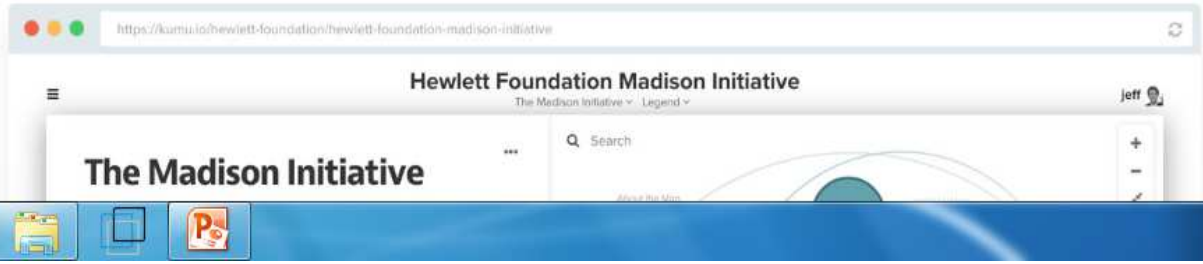


https://kumu.io/grs36/system-literacy-incose-emea-iw-2019
- This is the concept map we worked on concurrently during the workshop

https://kumu.io/grs36/system-literacy
This is the concept map we have been developing in the ISSS systems literacy project

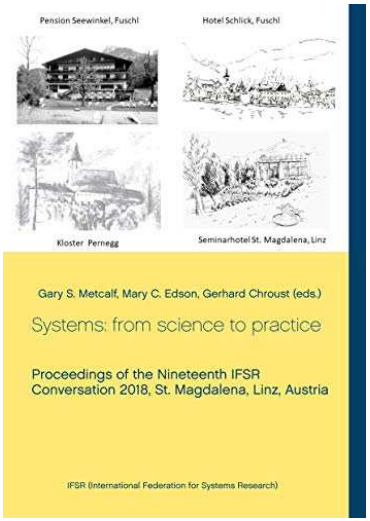
Make sense of your messy world.

Kumu makes it easy to organize complex data into relationship maps that are beautiful to look at and a pleasure to use.



What is Systems Science…?

In 2018 there was an IFSR conversation to progress towards the unification of systems science as a coherent system.

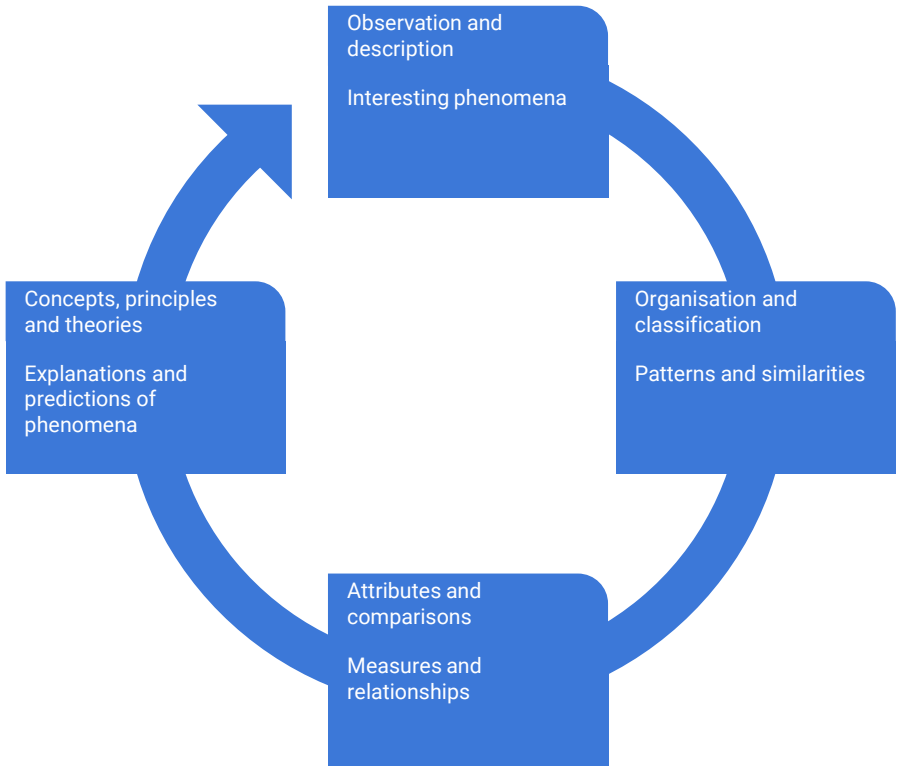


System Science is

- A science….
- And a meta science (maybe a science of sciences)
- A guide to the formation of knowledge (for all sciences and other knowledge domains).
- A study of the nature of systems
- A study of how the observer engages with systems
- This all needs to be captured in a SS knowledge base.

System Science is (needs to be) a systematic enterprise that builds and organizes System knowledge in the form of testable explanations and predictions about the universe

The stages of science development

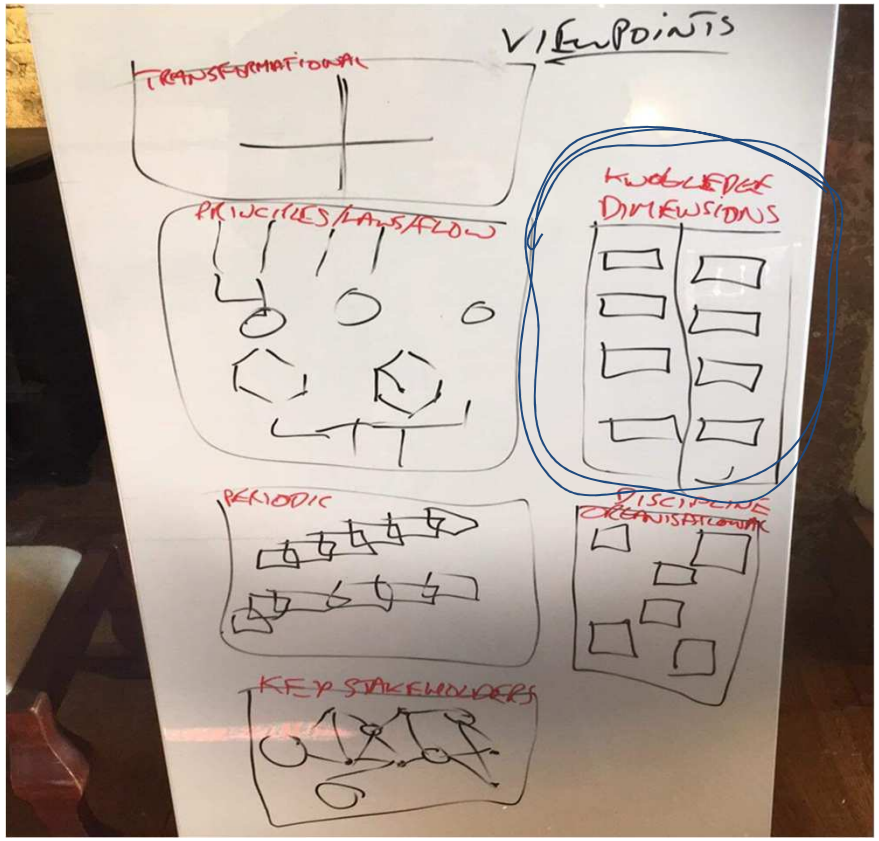


Using scientific theories, we are able to predict what one should expect to observe under “interesting” conditions. This is the status of the domain of physical and chemical sciences today. Biology has entered this stage with the advent of genomic studies.

Systems science may be characterized as a discipline in transition from the descriptive stage to the categorization (organisation/architecture) stage. The field has produced a number of descriptions, e.g. Viable Systems Theory, Living Systems Theory, that purport systemness, but actual mathematical theories that support prediction have yet to emerge.

Without an integrative framework for organising our knowledge, it might be fair to say that systems science is to a degree stuck in the descriptive (naturalist) stage in the development of a science. In some ways akin to field biologists discovering new kinds of plants and animals prior to the development of a categorical science in which the characteristics of those various kinds could be compared and contrasted in various measurements, those biologists were caught in a process of describing similarities, yet over time seeing patterns that hinted at new possibilities of organisation.

Key viewpoints of system science using a common integrative framework?

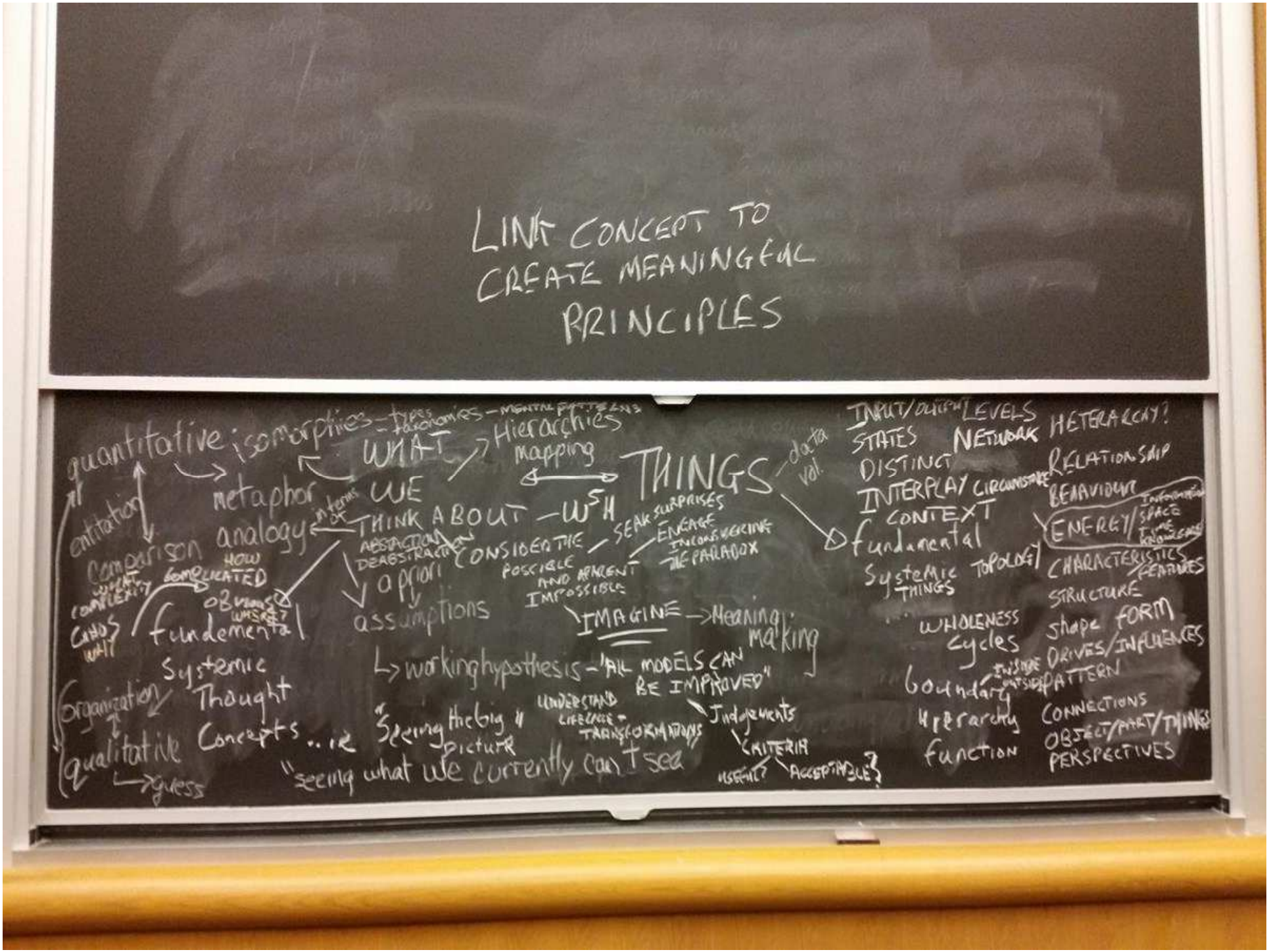


The proposition that “everything is a system” or alternatively that “everything is comprised of systems” implies that there must be universal characteristics common to all systems. The search for the most general or fundamental characteristics of all systems is essentially the search for a General System Theory, such as proposed by Bertalanffy. That would be the universal model, theoretically uniting not only all sciences, but also philosophy, art, spirituality, etc.

The development of systems science requires collaboration between high-level theorists who can identify the most general principles and those working within specific domains who can see the principles and the connections but this has to be done within an organised architecture.

As we continue to share ideas and concepts for system science, certain key diagrams or viewpoints are emerging. It is envisaged that through key viewpoints like these and perhaps a few others, such as a capability viewpoint for system science that we might be able to integrate our knowledge. All of these viewpoints making reference to a foundational data structure.

This morning we will explore two maps of System concepts.


LINK CONCEPT TO
CREATE MEANINGFUL
PRINCIPLES
quantitative
isomorphies
types
taxonomies
mental patterns
WHAT
Hierarchies
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Comparison
abstraction
deabstraction
CONSIDER THE
POSSIBLE
AND APPARENT
IMPOSSIBLE
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THE PARADOX
a priori
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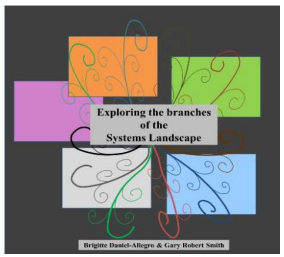
IMAGINE
Meaning
Ma'king
working hypothesis - "ALL MODELS CAN BE IMPROVED"
fundamental
Systemic
Thought
Concepts
organization
qualitative
guess
"Seeing the big picture"
"seeing what we currently can't see"
UNDERSTAND
LIFECYCLE
TRANSFORMATIONS
Judgements
CRITERIA
ESSENTIAL?
ACCEPTABLE?
INPUT/OUTPUT
LEVELS
STATES
NETWORK
DISTINCT
INTERPLAY
CIRCUMSTANCE
CONTEXT
fundamental
Systemic
THINGS
TOPOLOGY
WHOLENESS
Cycles
boundary
Hierarchy
function
HETERARCHY!
RELATIONSHIP
BEHAVIOUR
ENERGY/
Information
SPACE
TIME
KNOWLEDGE
CHARACTERISTICS
FEATURES
STRUCTURE
shape
FORM
DRIVES/INFLUENCES
PATTERN
CONNECTIONS
OBJECT/PART/THINGS
PERSPECTIVES

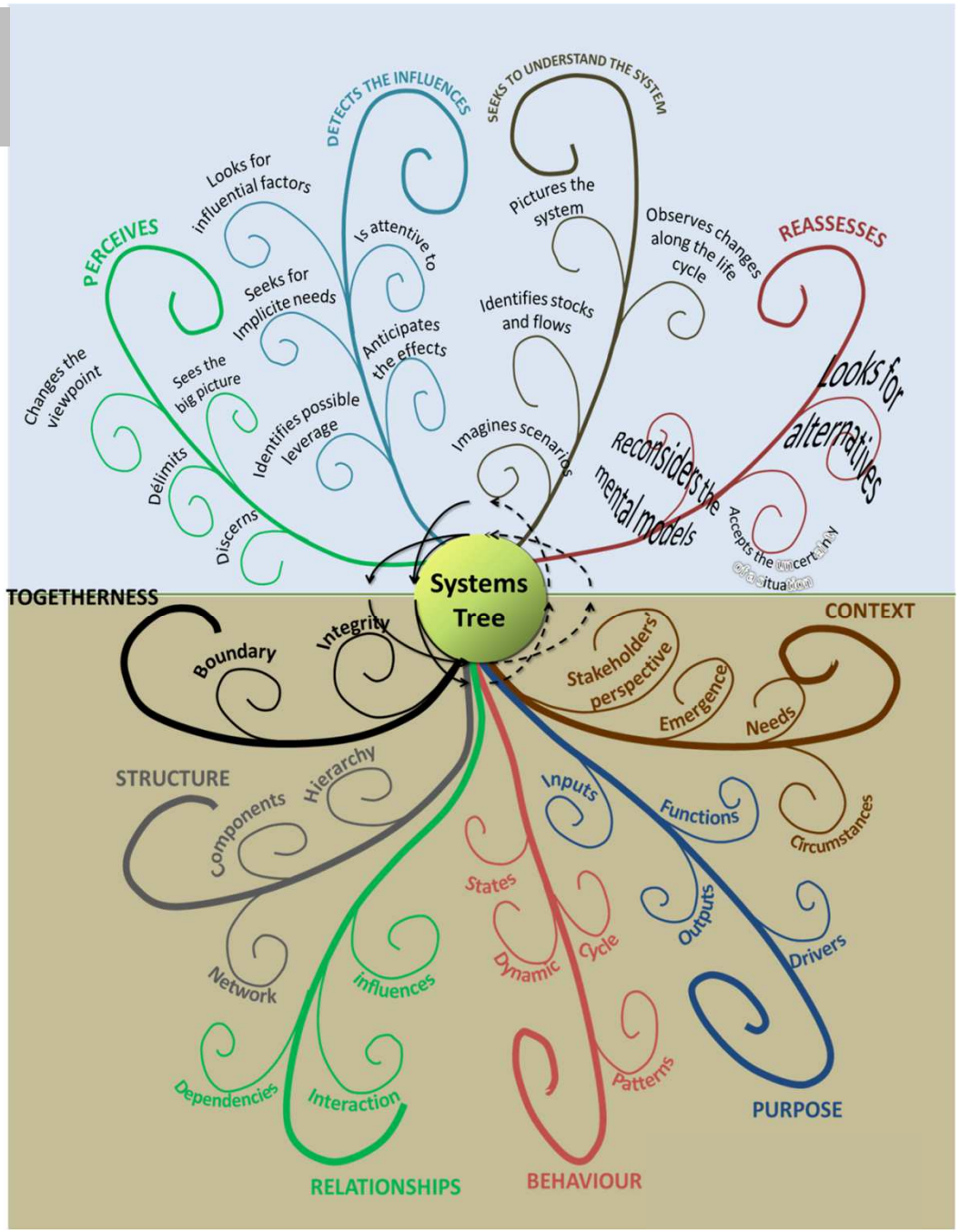
Systemist Concepts

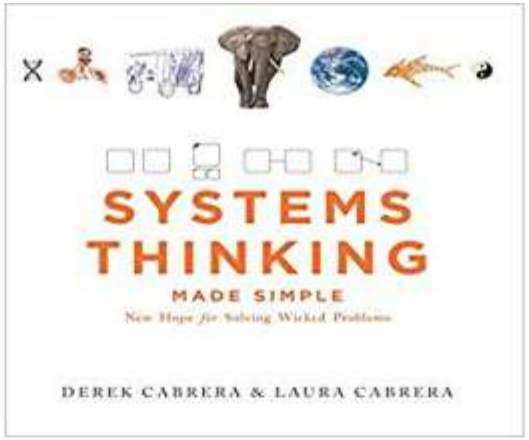
Attitudes or mind-set of the systems thinker

Core concepts of systems that system thinkers think about

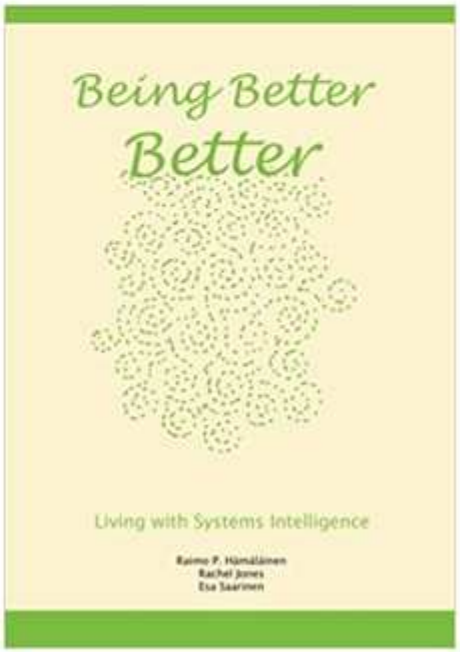


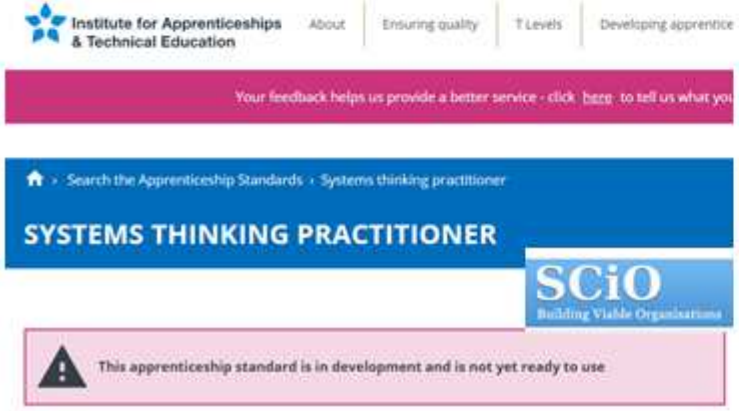
brigitte.daniel.allegro@gmail.com



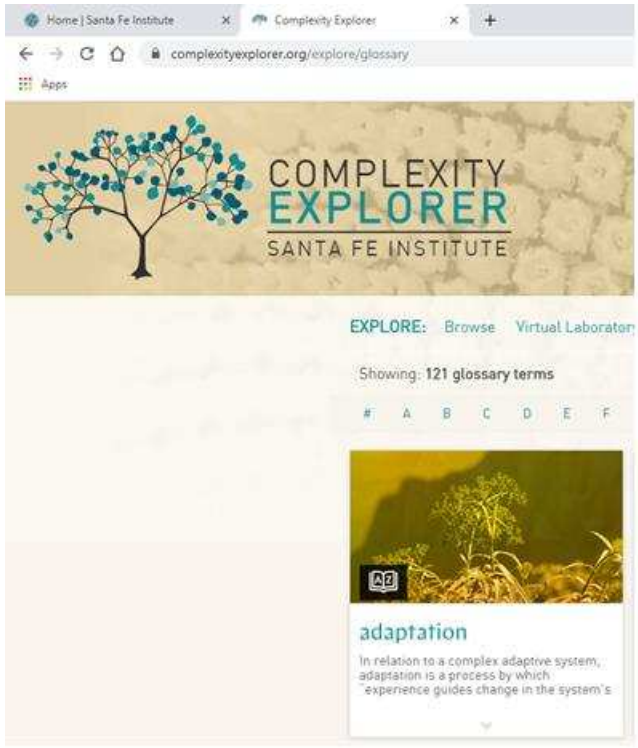


Concepts for engaging with systems

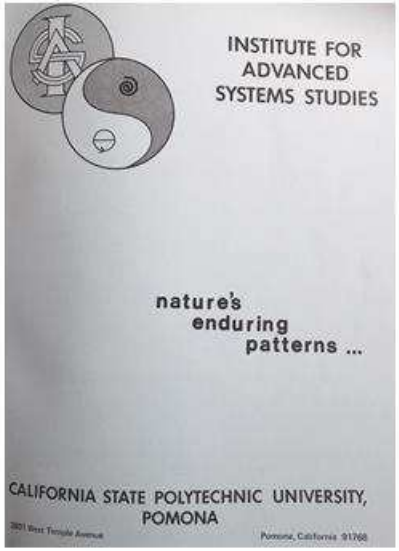


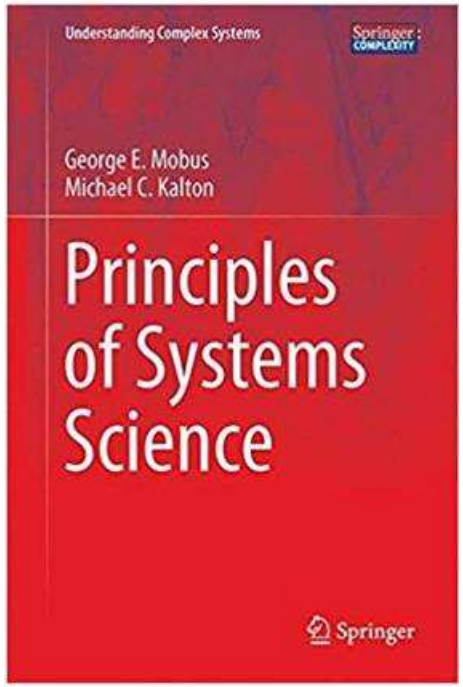


brigitte.daniel.allegro@gmail.com



Core concepts about system fundamentals – "nature's enduring patterns"





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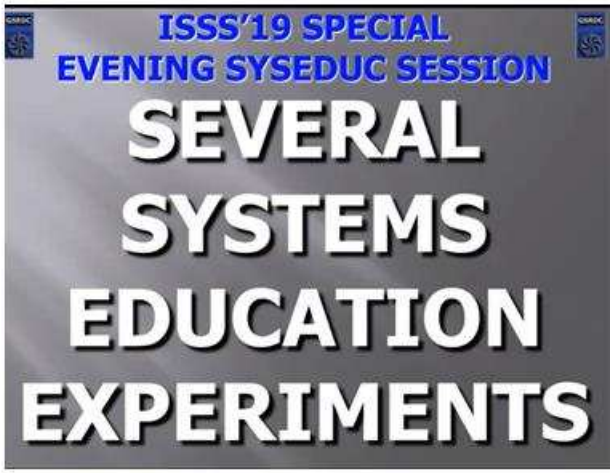
SoSPT I.:
IDENTIFYING FUNDAMENTAL SYSTEMS PROCESSES FOR A GENERAL THEORY OF SYSTEMS

Luke Friendshuh
Systems Modeling Institute, Minneapolis, Minnesota
luke.friendshuh@gmail.com
Len Troncale
Institute for Advanced Systems Studies,
California State Polytechnic University
Pomona, California, lrtroncale@csupomona.edu

ABSTRACT

This paper is one of a series that further develops the System of Systems Processes Theory (SoSPT) which is an attempt at unification of the results of a wide range of systems theories and natural science experiments to enable development of a true "science" of systems. The central purpose of the SoSPT is to achieve a very detailed description of "how systems work." In this paper we explain our work of identifying fundamental systems processes found in some form in many systems. We explain why we focus on isomorphic processes as a practical and useful framework for unifying diverse systems theories at the necessary abstraction level for a general theory. We begin with a definition of "process" in general



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