Next Level Leverage

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PhiusCon’23
A few warm-up questions*

How do systems create cultures? How do cultures create systems?

What are our values? Where do they come from? Are they universal or culturally determined?

How is it that one way of seeing the world becomes so widely shared that institutions, technologies, production systems, buildings and cities become shaped around that way of seeing?

Once a culture & system have been found lacking, does that have to change through breakdown and chaos?

How do we become so cynical about our ability to achieve our visions?

Why are we more likely to listen to people who tell us we can’t make changes than we are to people who tell them us we can?

*from Donnella Meadows, in Thinking in Systems
Next Level Leverage

“We can not solve our problems using the same level of thinking that created them”
Leverage creates a large force using a small force
1. Origin Story
2. Thinking in Systems
3. Leverage points
4. Synthesis
The passive house community is building the future in the present but is this important work constrained by paradigms from the past?
The Passive House community knows how to design and build... durable and resilient homes that have exceptionally low energy usage.
The Passive House community knows how to design and build... homes that are thermally and acoustically comfortable with excellent indoor air quality.”
The Passive House community knows how to design and build... grid interactive buildings “that have exceptionally low energy usage and that are durable, resilient, comfortable, and healthy”
Origin Story
PhiustCon’22

Palmer House Hotel
Chicago
October 2022
One site. Countless challenges. A looming deadline. This is the ultimate project.
Origin Story, *Thinking in Systems*

- **Building as a System**
- **Society as a System**
- **Geobiosphere as a System**
Leverage creates a large force using a small force

Leverage points are where a small shift in one thing produces large changes in everything.
Donella Backstory

1972
- Dana Meadows, Jay Forrester, Peter Senge, MIT Sys Dyn Grp...
- Herman Daly, Albert Einstein, Vaclav Havel, Lewis Mumford...

2004
We are all, always part, of all that is.
Building as a System, Building Science

Systems of systems
- Climate Systems
- Enclosure systems
- Mechanical Systems

By understanding the building as a system we are able to select and arrange materials to achieve important positive outcomes.
The **streetlight effect** occurs when we search for something where it is easiest to look.
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The constraint is not our understanding of how to build better.
Business as a System
Businesses & Organizations are also Systems

- Clever minds & capable bodies
- Skill & exertion
- Relentless human caring
- Commitment to well being of others
- Capacity to work in community toward common aims

How do we arrange these elements to achieve outcomes we want?
To live consciously, with purpose and intent, means to be open to perceiving the world around and within us, to understand our circumstances, and to decide how to effectively and fluidly respond to them in ways that honor our needs, values and goals.

- Adapted from *Conscious Business* by Fred Kofman
Dimensions of Human Systems (I, We, It)

(I) Individual - Personal - Self
(We) Relationship – Interpersonal - Community
(It) Task – Impersonal - Organizational
(I) In the Individual dimension a business will focus on its ability to foster personal well-being, meaning, and happiness. This is the basis for being cooperative with others, resilient when suffering setbacks, and enthusiastic about opportunities.

(We) In the Relationship realm, the goal of a business is to build a trusting network of collaborative connections with others - a community in which people feel included, respected and enabled to contribute.

(It) At the Task or impersonal level a business exists to achieve its goals, pursue its vision, and fulfill its societal mission in a way that enhances its ability to continue to do so in the future.

Dimensions of Human Systems (I, We, It)
Dimensions of Human Experiences

**Have** – Product, Result

**Do** – Process, Behavior

**Be** – Platform, Structure
Having or achieving desired outcomes requires Doing the things that lead to those outcomes, which, in turn, requires Being the type of person or organization capable of such behavior.
<table>
<thead>
<tr>
<th>Platform Structure (Be)</th>
<th>(I) Individual Personal Self</th>
<th>(We) Relationship Interpersonal Community</th>
<th>(It) Task Impersonal Organizational</th>
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<tr>
<td>Mental models</td>
<td>Shared mental models</td>
<td>Capital</td>
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<td>Personal values</td>
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<td>Process Behavior (Do)</td>
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<td>Product Result (Have)</td>
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**Attitudes**

1. Unconditional Responsibility
2. Essential Integrity
3. Ontological Humility

**Behaviors**

4. Authentic Communication
5. Constructive Negotiation
6. Impeccable Coordination

**Responses**

7. Emotional Mastery

**Businesses & Organizations are also Systems**

These elements can also be arranged to achieve positive outcomes – finding our passion and expressing our essential values through our work.
• Architects
• Engineers
• Builders
• Contractors
• Consultants
• Code Officials
• Inspectors
• Appraisers
• Underwriters
• Bankers/Creditors
• Insurers
• Legislators
• Commissioners

• Lobbyists
• Industry Associations
• Manufacturers
• Distributors
• Advertisers
• Authors
• Publishers
• Podcasters
• Bloggers
• Influencers
• Health care companies
• Allergists
• ...

Human Systems
We have what we need
Earth’s geobiosphere provisions our global society
Window represents the planet’s geobiosphere

Available energy

Sources of low-grade energy active over vast spatial & temporal scales

Real Wealth
Average wood production from 1 hectare of Swedish spruce forest (Ref: Doherty, 1995)
Energy Systems Language: **Basic Phonics**

**Source**: Outside source of energy

**Producer**: Unit that collects and transforms low-quality energy

**Tank**: Compartment of energy storage within the system; the balance of inflows and outflows

**Window**: Separates process from environment. Can be a home, a planet, a city, a power plant, a gold mine, a forest...

**Consumer**: Transforms energy, stores it and feeds it back to inflow

**Transaction**: Sale of goods/services in exchange for payment
“There are no separate systems. The world is a continuum. Where to draw a boundary around a system depends on the purpose of the discussion.”

-- Donella Meadows, Thinking in Systems
Life Cycle Analysis (LCA) & Energy Systems Language (ESL)

**Receiver side analysis**
*Human activity only*

**Donor side analysis**
*Geobiosphere participation*

Adapted from K. Simonen, Life Cycle Assessment
Leverage creates a large force using a small force

Leverage points are where a small shift in one thing produces large changes in everything.
“The idea of leverage points is not unique to systems analysis – it’s embedded in legend...

...we not only want to believe that there are leverage points, we want to know where they are and how to get our hands on them.”

Leverage points are points of power.”

- Donella Meadows, Thinking in Systems
“Leverage points are points of power”
“Leverage points are points of power”
Next Level Leverage happens by applying Phius’ efforts as far from the fulcrum as possible.

Rapid & pervasive impact possible because these forces are not tied to physical events & systems.
A system of assumptions, concepts, values, and practices that constitutes a way of viewing reality.

A conceptual framework—an established thought process.

A way of thinking which can occasionally lead to misleading predispositions; a prejudice.

An example serving as a model or pattern; a template.

A philosophy consisting of ‘top-bottom’ biases which could possibly make the practitioner susceptible to the ‘confirmation bias’

**Synonyms**

* (example) exemplar * (way of viewing reality) model, worldview
Power of Paradigms

“If a factory is torn down but the rationality that produced it is left standing, then that rationality will simply produce another factory. If a revolution destroys a government, but the systematic patterns of thought that produced that government are left intact, then those patterns will repeat themselves... There’s so much talk about the system. And so little understanding.”

- Robert Pirsig, *Zen and the Art of Motorcycle Maintenance*

“Societal systems are the external manifestation of cultural thinking patterns”

– Donella Meadows, *Thinking in Systems*
All is well. We are a modern rational society.
Paradigm: A system of assumptions, concepts, values, and practices that constitutes a way of viewing reality.
To effectively engage & create change in the world we must not fall into the trance of accepting its dominant paradigms.

“*It is in this space of mastery over paradigms that people throw off addictions, life in constant joy, bring down empires... and have impacts that last for millennia.*”

- Donnella Meadows, *Thinking in Systems*
The Passive House community know how to design and build...

...grid interactive homes “that have exceptionally low energy usage and that are durable, resilient, comfortable, and healthy”
The PH community is the fulcrum, the lever, & the force.

**Fulcrum** must be close the system we want to influence – we are working directly with & within society

**Fulcrum** must be strong; it bears great pressure. emotional pressure of swimming upstream in society with a refusal to give up

**System** we want to influence; the coupled geobiosphere and global economy

**Lever bar** must long and strong; PH community has proven strength - length is the breadth of our connections - from jobsites to industry leaders & gov’t institutions

**Paradigms & Mental Models**
Think in Systems & Focus on Paradigms

• Geobiosphere is our planet’s life support system ("bio" includes living beings)
• The US economy is a system of systems – one that is coupled to the geobiosphere Our AEC industry is a system of systems
• Your business/organization is a system
• Your perspectives, motivations & actions are a system
Think in Systems & Focus on Paradigms

• Speak to paradigms (not just things) whenever you can
• Paradigms have power to cause rapid and pervasive changes in a system
• Recognize paradigms in the world, your industry, your business, and your own mind
• Transcend paradigms, stay open, humble and ready to learn
Next Level Leverage happens when we Think in Systems & Focus on Paradigms
Thank You

Graham Irwin, NCARB, CPHC
Kristof Irwin, PE

PhiusCon’23
How do we get folks to line up at the Phius restaurant?
Better Maps
Paradigms & Mental Models

Goals, Rules & Structure of the System

Information Flows & Patterns of Behavior

Physical Situations
Materials, Stocks & Flows

10. Stock-and-Flow Structures: Physical systems & their nodes of interaction
11. Buffers: The sizes of stabilizing stocks relative to their flows
12. Numbers: Constants & parameters such as subsidies, taxes & standards
6. Information Flows: The structure of who does & does not have access to information

7. Reinforcing Feedback Loops: the strength of the gain driving loops

8. Balancing Feedback Loops: The strength of feedbacks relative to the impacts they try to correct

9. Delays: The length of time relative to the rates of systems changes
3. Goals: The purpose of the system; its objectives, intentions & targets
4. Self-Organization: The power to add, change, or evolve system structure
5. Rules: Incentives, punishments, & constraints
Next Level Leverage happens by applying Phius’ efforts as far from the fulcrum as possible.

1. Transcending Paradigms: Stay humble, open, aware & fluid; Impacts here can last for millennia

2. Paradigms: the way of viewing reality out of which the system – its goals, structure, rules, delays & parameters – arises