Capella University

ASK MATT

Actionable Knowledge Mapping to Accelerate Interdisciplinary Collaborations for Research and Practice

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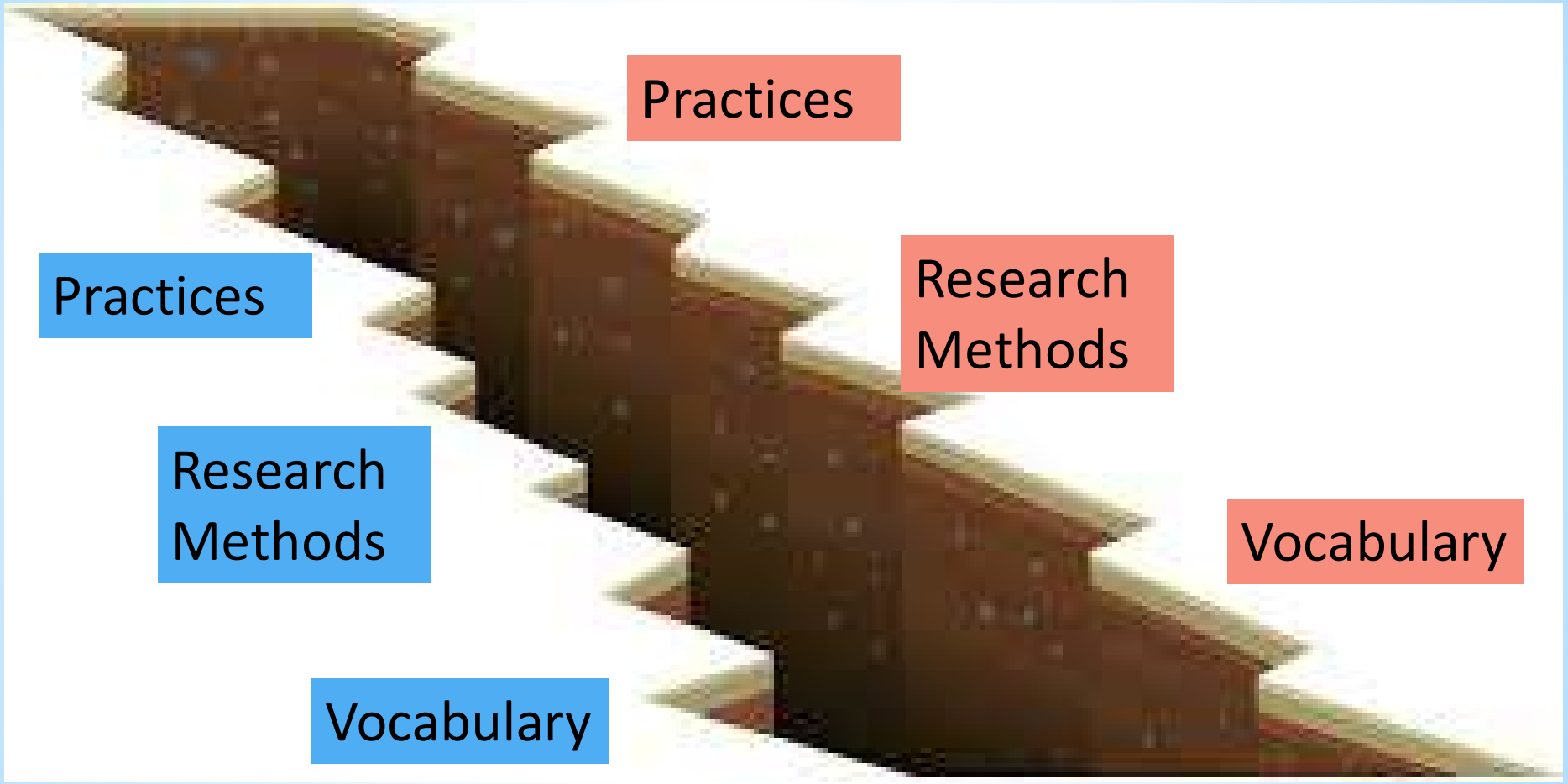
High level problem:

Our problems seem to be increasing exponentially while our ability to address them is increasing only incrementally.

Interdisciplinarity has been touted as the “cure”
But collaboration is more exception than rule


Practices
Practices
Research Methods
Research Methods
Vocabulary
Vocabulary

Q: What do all disciplines have in common?

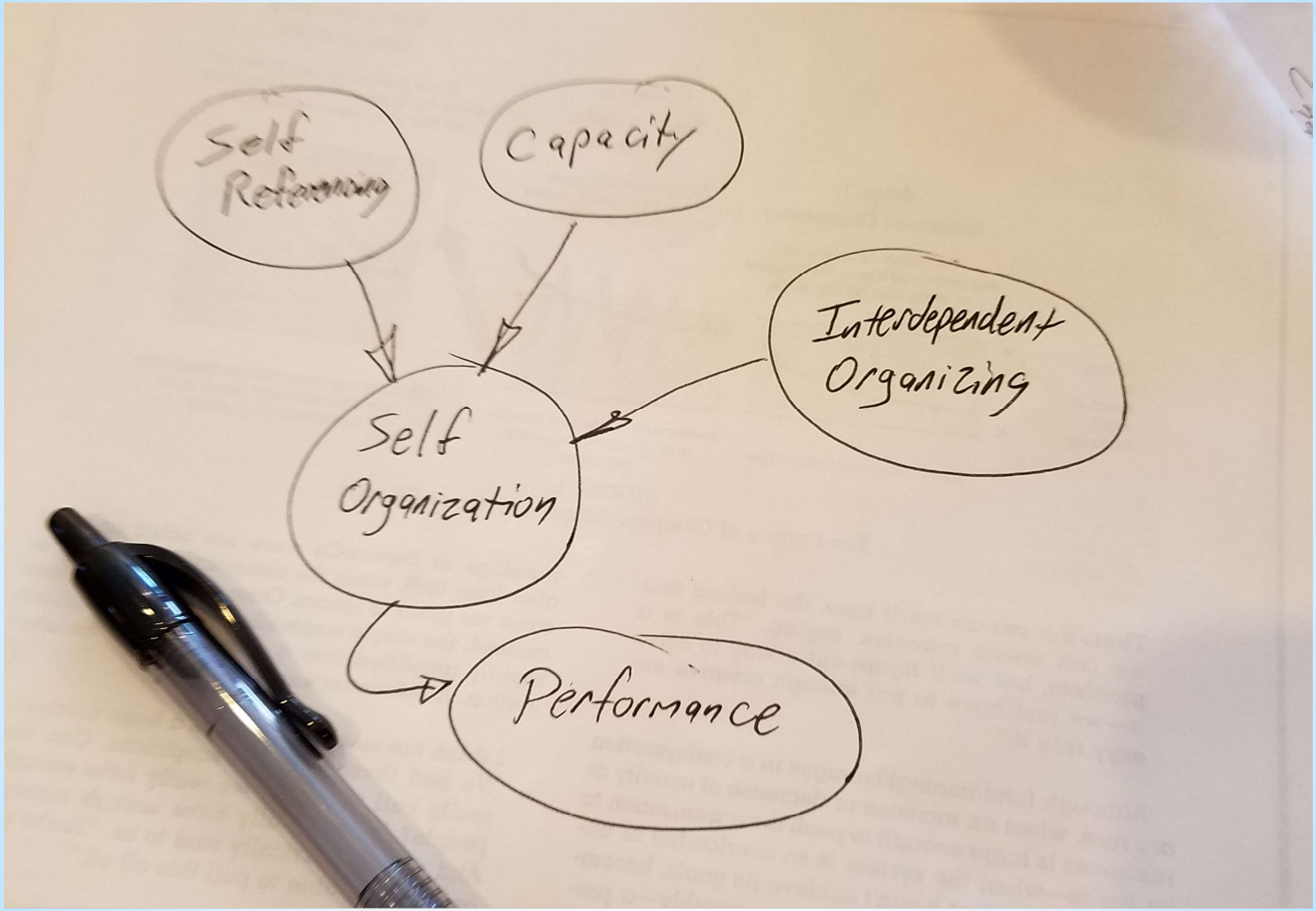
Sociology ---------- Physics

A: Conceptual Systems
(theories, models, etc.)

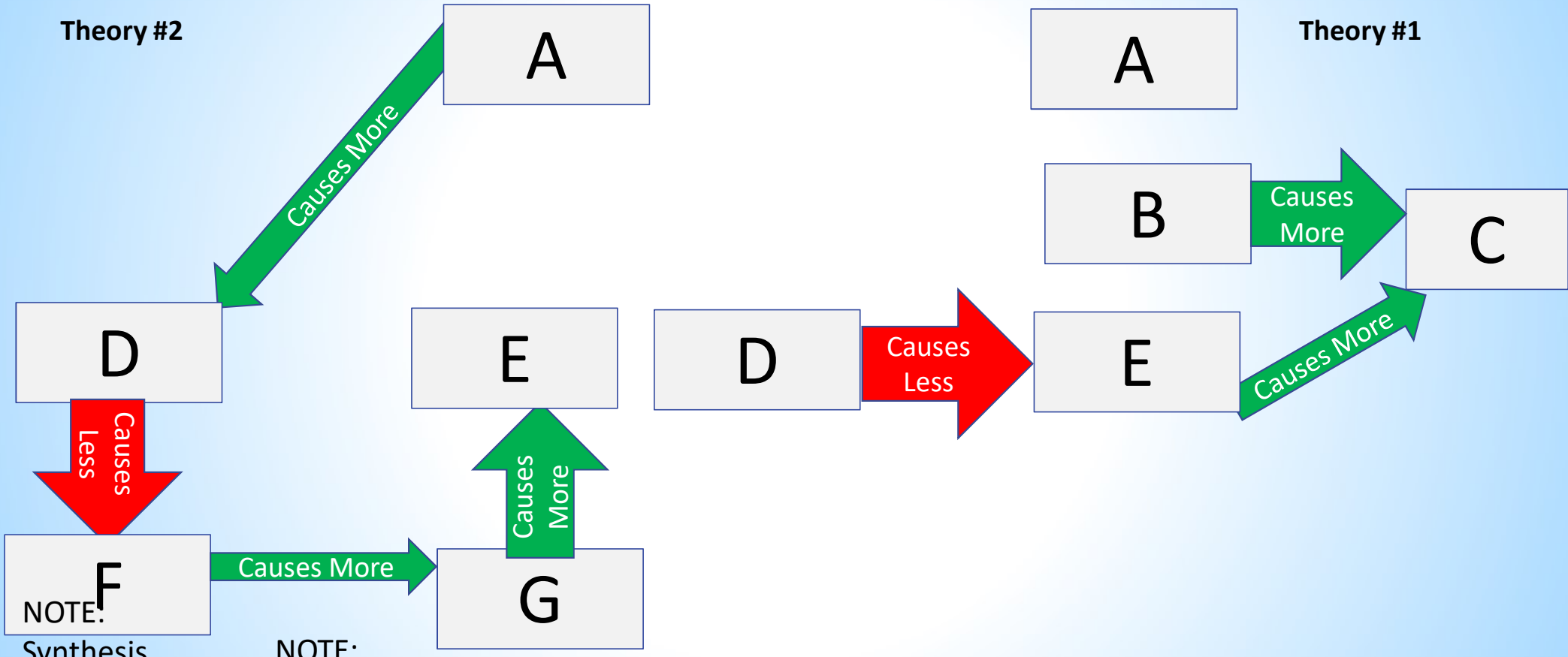
KEY: The more useful theories are made of propositions - describing measurable concepts/variables linked through causal relationships.

Suggests a “common language” between disciplines

Complexity researchers have identified three qualities that distinguish positive self-organization from non-self-organized processes: self-referencing, increased capacity, and interdependent organizing. The more of each of these qualities, the more self-organized the emergent order will be, and the greater the resulting performance.


Self Reflexivity
Capacity
Interdependent Organizing
Self Organization
Performance

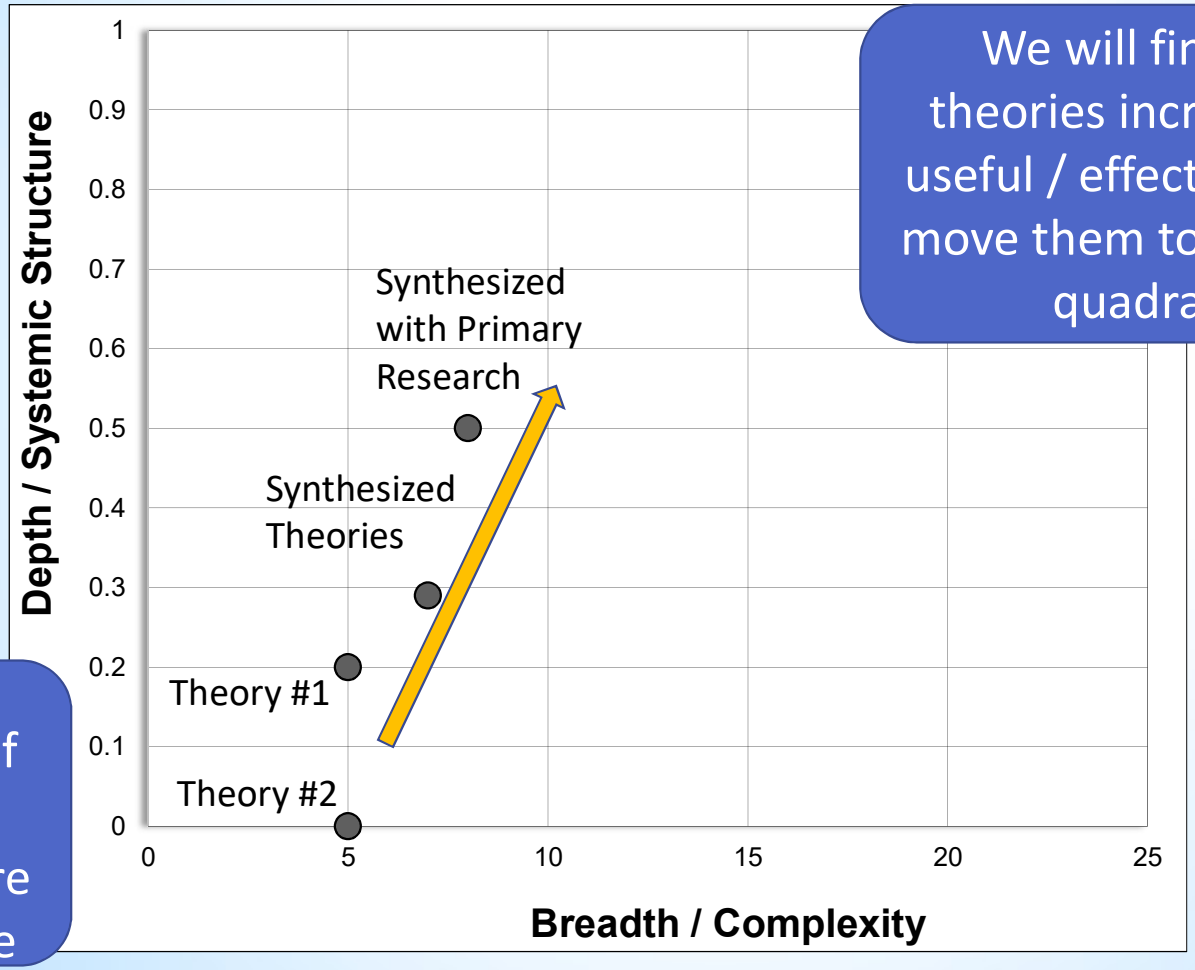
Synthesizing multiple theories



This is what *SYNTHESIS* is all about

Showing Progress in Creating Knowledge

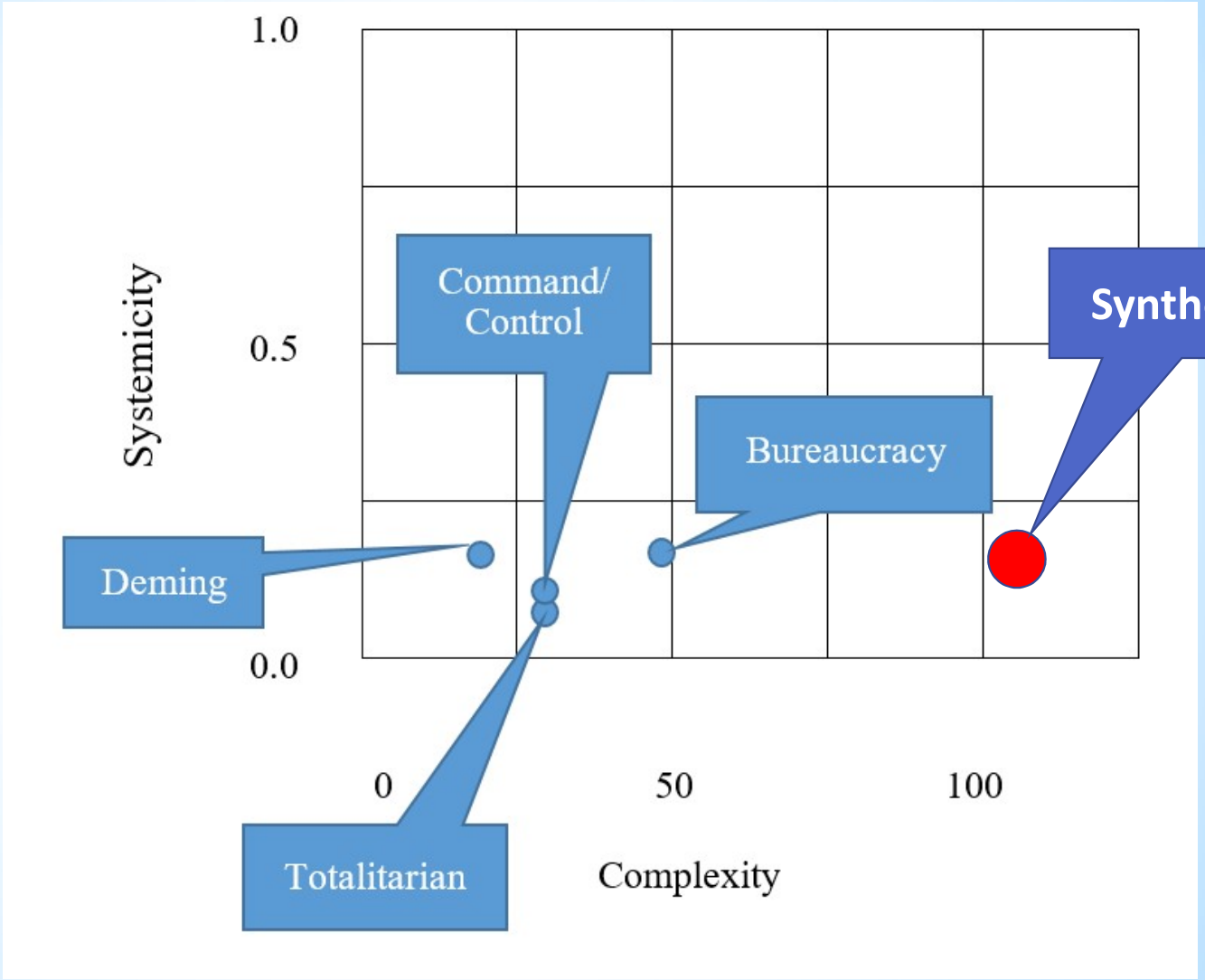
(not simply adding to dusty "storehouse" of human knowledge)



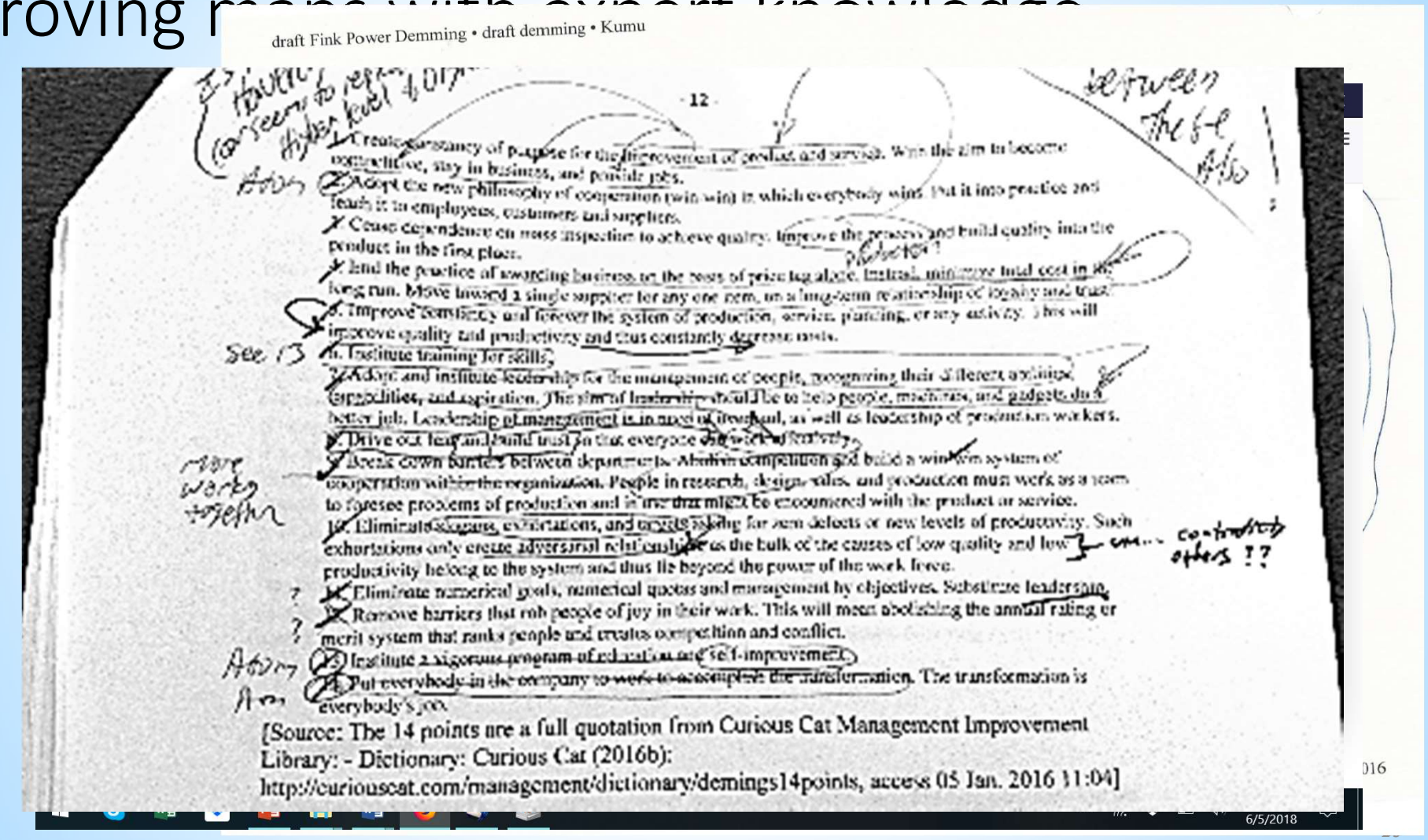
We will find our theories increasingly useful / effective as we move them toward this quadrant

Most theories of the social sciences are down here

IPA results


1.0
0.5
0.0
Systemicity
0
50
100
Complexity
Command/
Control
Synthesized
Bureaucracy
Deming
Totalitarian

Improving maps with expert knowledge



draft Fink Power Demming • draft demming • Kumu

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1. Create constancy of purpose for the improvement of product and service. With the aim to become competitive, stay in business, and provide jobs.
2. Adopt the new philosophy of cooperation (win-win) in which everybody wins. Put it into practice and teach it to employees, customers and suppliers.
3. Cease dependence on mass inspection to achieve quality. Improve the process and build quality into the product in the first place.
4. End the practice of awarding business on the basis of price tag alone. Instead, minimize total cost in the long run. Move toward a single supplier for any one item, on a long-term relationship of loyalty and trust.
5. Improve constantly and forever the system of production, service, planning, or any activity. This will improve quality and productivity and thus constantly decrease costs.
6. Institute training for skills.
7. Adopt and institute leadership for the management of people, recognizing their different abilities, capabilities, and aspiration. The aim of leadership should be to help people, machines, and gadgets do a better job. Leadership of management is in need of overhaul, as well as leadership of production workers.
8. Drive out fear and build trust so that everyone can work effectively.
9. Break down barriers between departments. Abolish competition and build a win-win system of cooperation within the organization. People in research, design, sales, and production must work as a team to foresee problems of production and in use that might be encountered with the product or service.
10. Eliminate slogans, exhortations, and targets asking for zero defects or new levels of productivity. Such exhortations only create adversarial relationships, as the bulk of the causes of low quality and low productivity belong to the system and thus lie beyond the power of the work force.
11. Eliminate numerical goals, numerical quotas and management by objectives. Substitute leadership.
12. Remove barriers that rob people of joy in their work. This will mean abolishing the annual rating or merit system that ranks people and creates competition and conflict.
13. Institute a vigorous program of education and self-improvement.
14. Put everybody in the company to work to accomplish the transformation. The transformation is everybody's job.

[Source: The 14 points are a full quotation from Curious Cat Management Improvement Library: - Dictionary: Curious Cat (2016b): https://curiouscat.com/management/dictionary/demings14points, access 05 Jan. 2016 11:04]

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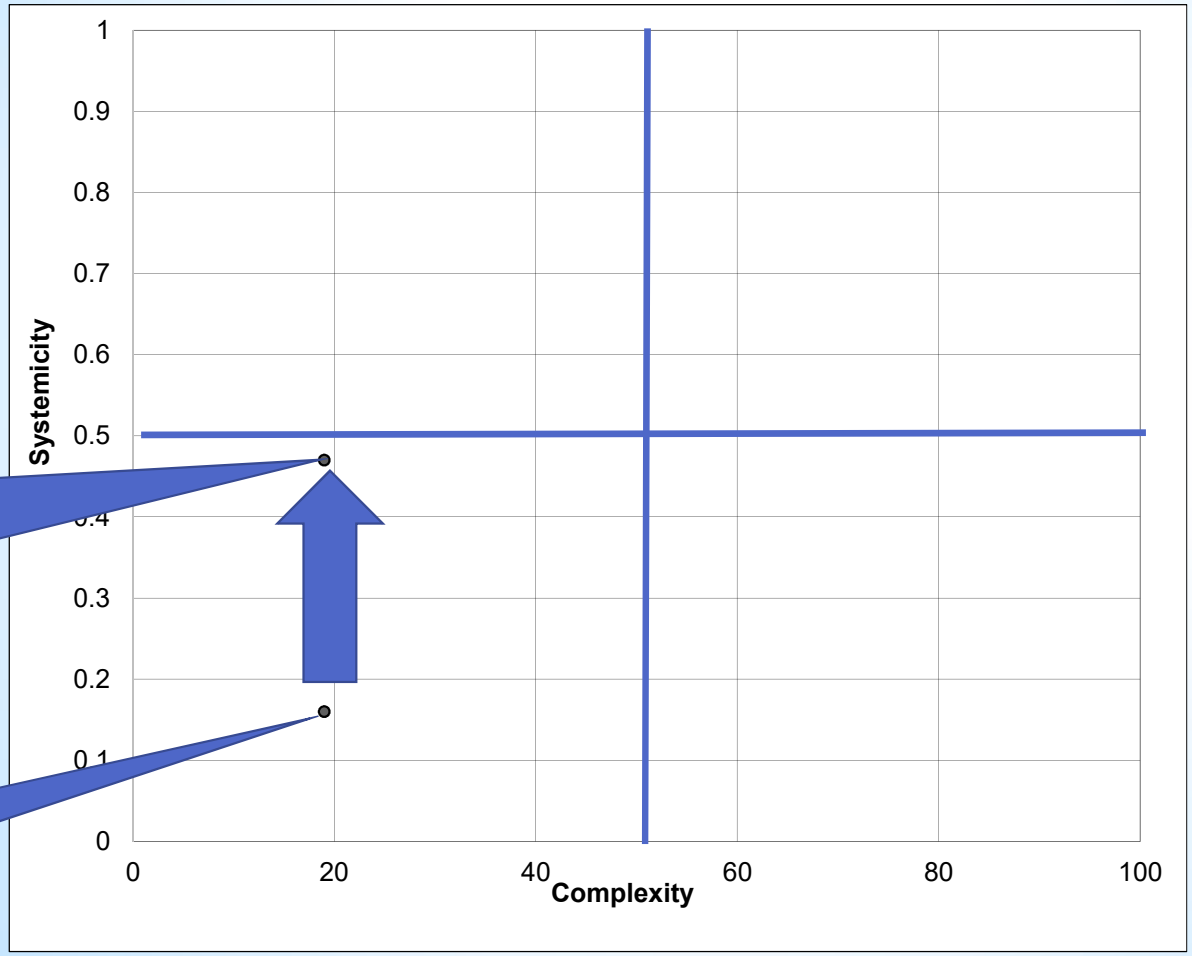
Showing Progress



After adding expert insight

As Published

NOW – let's try adding some expert insight.
Making our understanding of Systems more Systemic

Social Science & Medicine

1. Systems
2. Emergence
3. Complex behavior
4. Elements
5. Interactions
6. Predictability

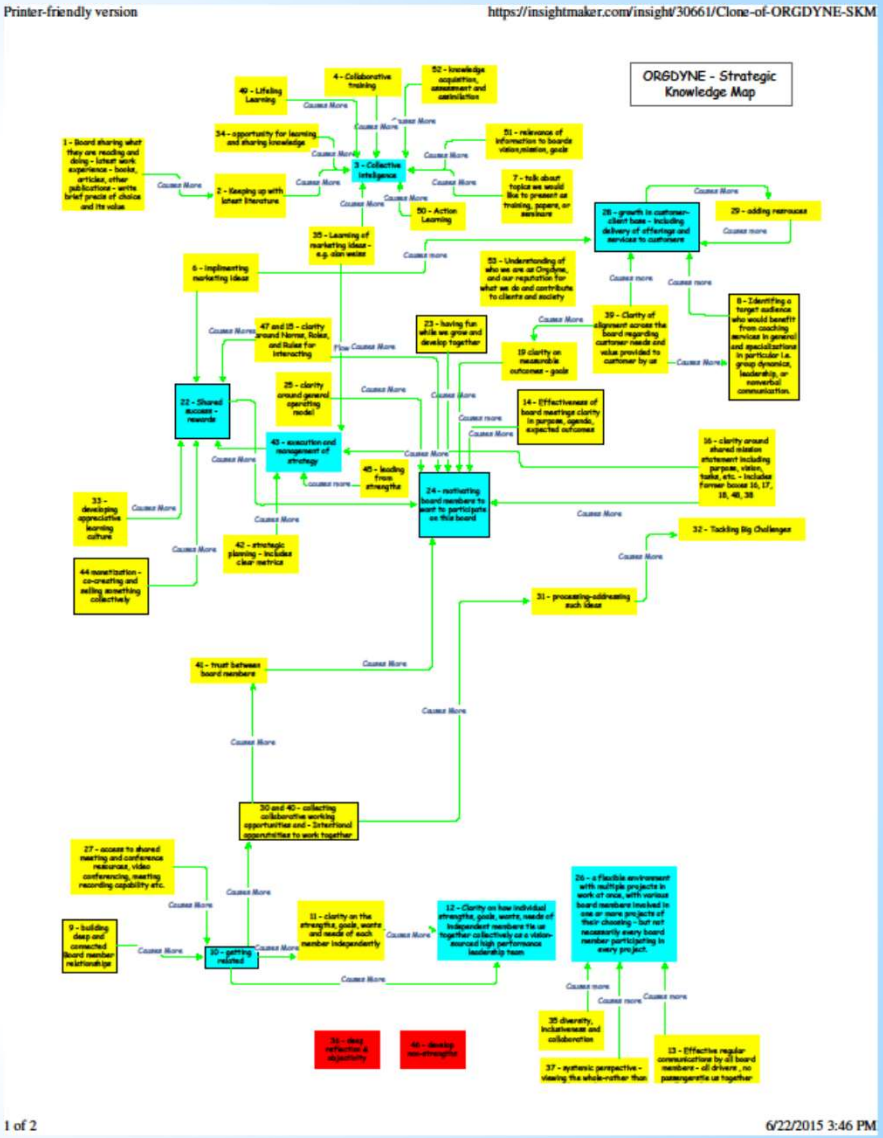
Information / Biology

7. Organizational cohesion
8. Emergence of new properties
9. Interactions within a system (that bind its parts)
10. Interactions with external systems
11. Internal fluctuations

Some Implications for action

- Reach out – make personal contact
  with scholars in other disciplines

- Develop online platforms for collaboration
  (e.g. Insight Maker, Kumu)



Thank You!

Questions & Conversations?

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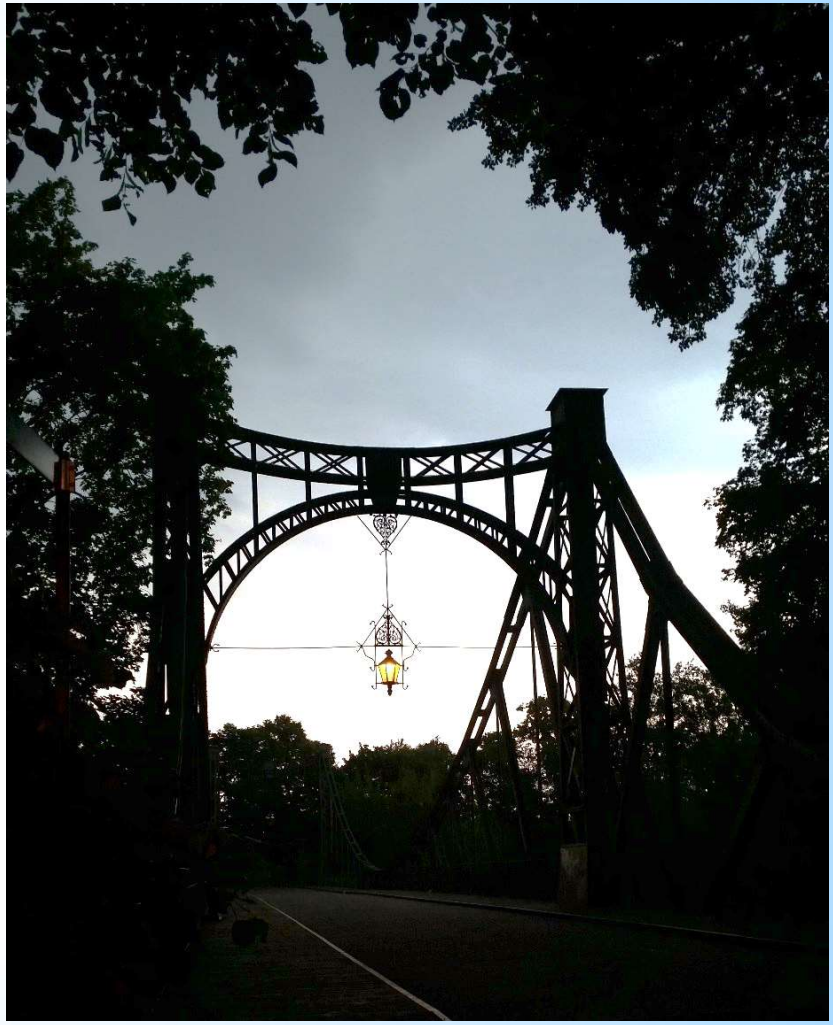


Historical Problem of Fragmentation

Our Disciplines, e.g. sociology: per (Phillips & Johnstone, 2007). "Sociology faces a crisis of fragmentation – there is no unified general sociology. There is no one discipline." (Bakker, 2011) p. 167

Our minds: "there is overwhelming evidence that we humans do in fact maintain overlapping and inconsistent conceptual systems" (Lane 1992, drawing on Lakoff and others, p. 27)

Our philosophies: "are often themselves a contradictory and confusing patchwork of fragments of various philosophers' representations of the world" (Ledoux, 2012, p. 14)

Our policies & politics: Note the divisive nature of many political parties "You are either with us, or against us" (false dilemma)
http://en.wikipedia.org/wiki/You%27re_either_with_us,_or_against_us

Our Fields e.g.: Conflict resolution per Coleman & E. C. Marcus (Eds.), The handbook of conflict resolution: Theory and practice (pp. 869-880). San Francisco: Jossey-Bass.

Measuring Fragmentation

Complexity of theories changes between publications:

Wallis, S. E. (2014). A systems approach to understanding theory: Finding the core, identifying opportunities for improvement, and integrating fragmented fields. *Systems Research and Behavioral Science, 31*(1), 23-31.

<u>Publication #1</u>: (A, B, C) -->> <u>Publication #2</u>: (C, D, E)

Matching Concepts = 1

Total Concepts = 5

Dynamic Robustness = 1/5 = 0.20

(measure of similarity – inverse is measure of change)

Measuring Fragmentation

Examples from Institutional Theory:

Wallis, S. E. (2014). A systems approach to understanding theory: Finding the core, identifying opportunities for improvement, and integrating fragmented fields. *Systems Research and Behavioral Science, 31*(1), 23-31.

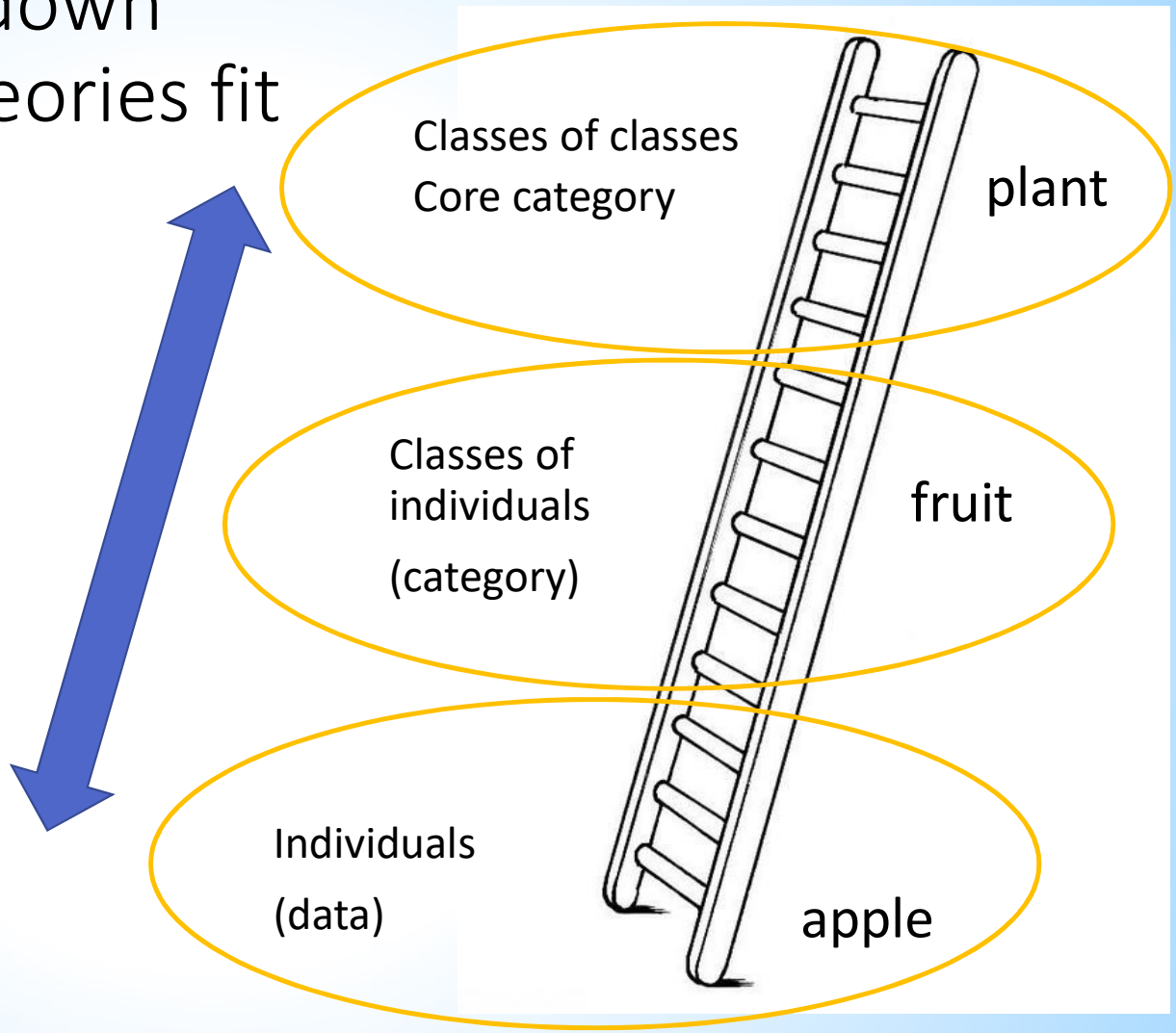
DiMaggio & Powell (1983) – ***22 Concepts;*** Mezias & Scarselletta (1994) – **4 Concepts** (Citing DiMaggio & Powell as sole source); *Only 2 Concepts in common*

Dynamic Robustness = 2/24 = 0.08 similarity

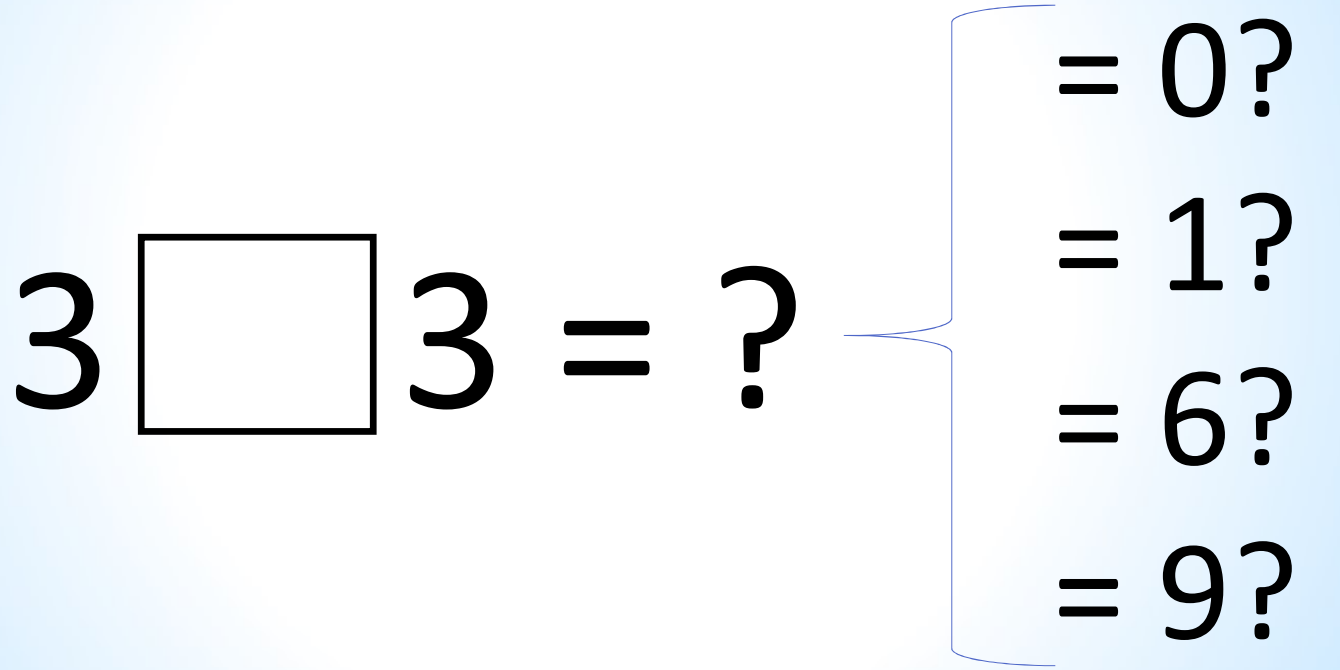
Before	After	Dynamic Robustness
(Scott, 1987)	(Scott, 2005)	0.17 = 10/60
Suddaby & Greenwood (2005)	Greenwood & Suddaby (2006)	0.03 = 1/30

KEY: There is more change than there is stability – no direction for evolutionary "progress"

May need to scale up/down abstractions to help theories fit

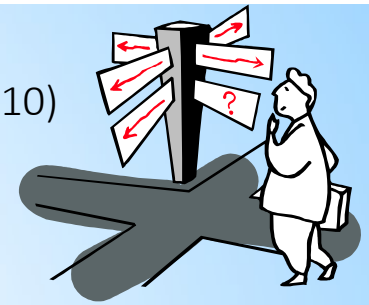


To be Meaningful, Data Requires Connections

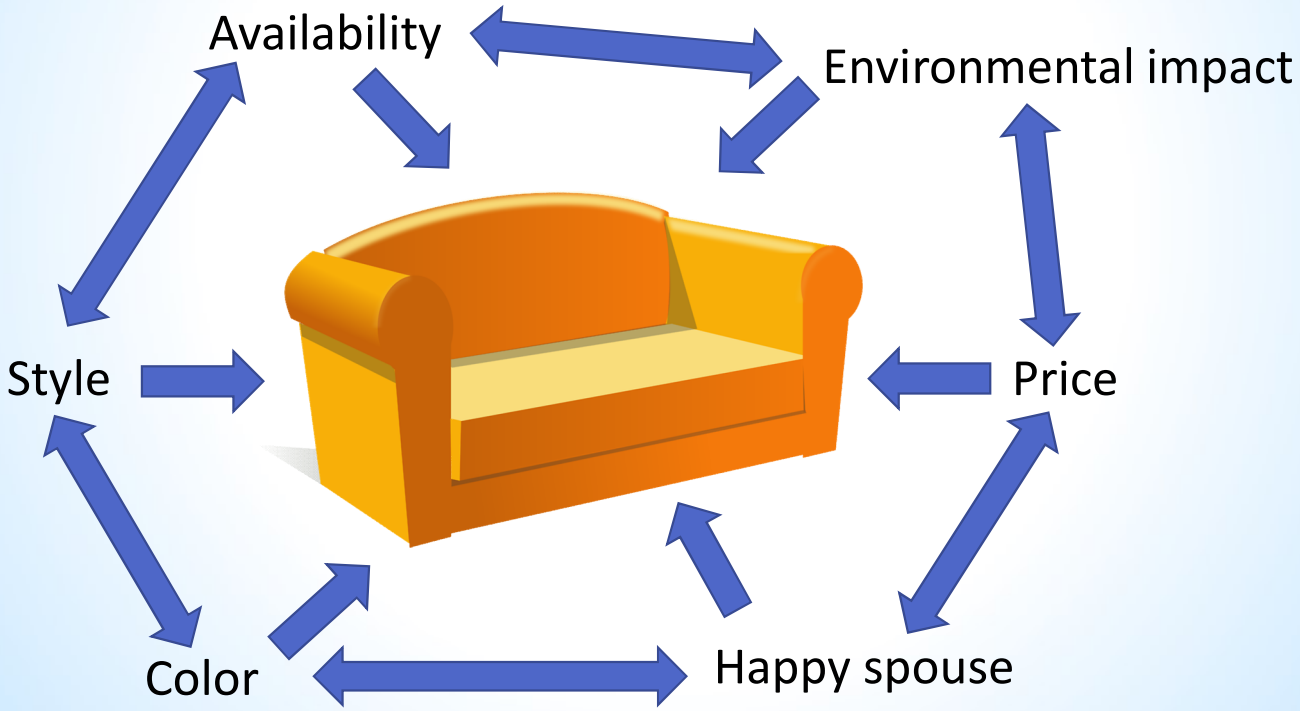


Correspondence? Coherence?

(Müller, 2012; Umpleby, 2010)

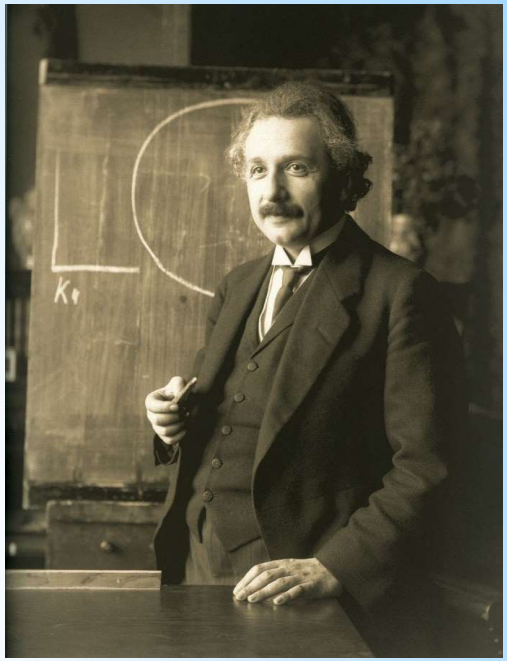


- Science One
- Science Two – includes both!



Resulting Models / Theories…

- More Complex (greater breadth)
- More Systemic (more likely to be effective in a systemic world)
- Clarify opportunities for research
- Suggest directions for practice



KEY: We can accelerate our ability to understand and address problems by accelerating the advance of our theories through interdisciplinary collaboration