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# Scenarios and Systems Thinking: ThinkWater

Jeremy Solin, ThinkWater

A background image of a desert landscape with sand dunes and a dark, overcast sky. The image is framed with rounded corners.

THE NEXT BIG THING  
IN WATER  
RESEARCH, EXTENSION,  
AND EDUCATION  
**ISN'T**  
WATER

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 **THINK** WATER [thinkwater.us](http://thinkwater.us)

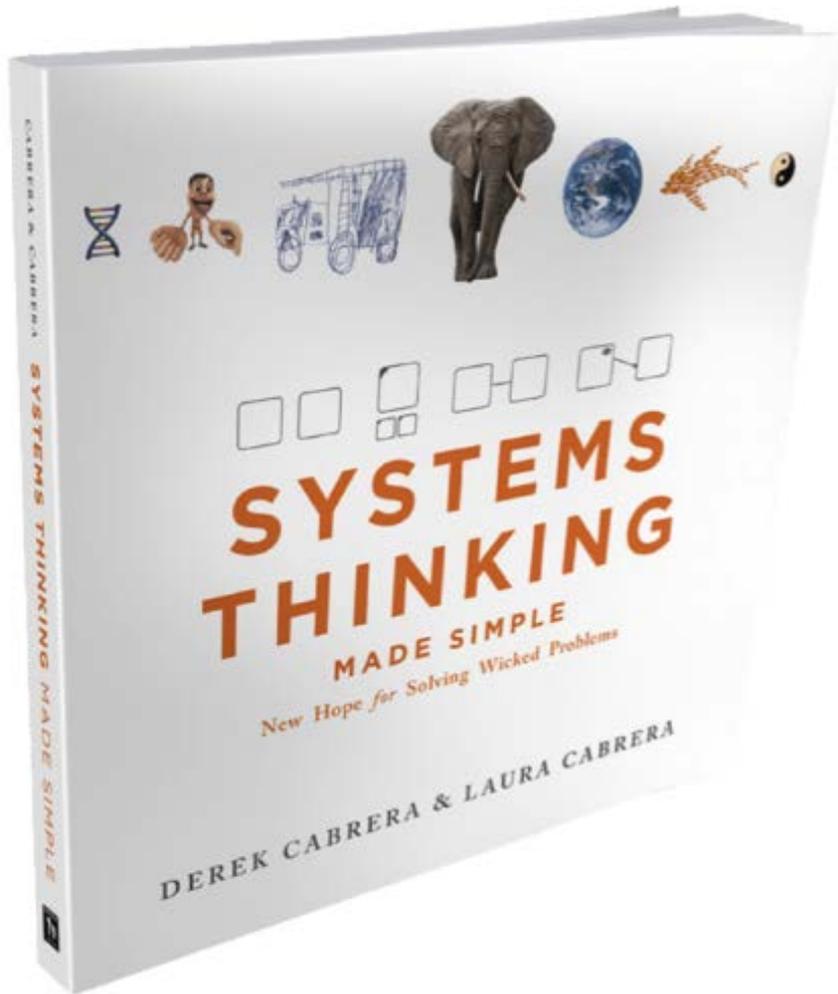


# SYSTEMS

the study of how systems work  
("systems science")

# THINKING

the study of how we think  
("cognition")



# SYSTEMS THINKING

MADE SIMPLE

*New Hope for Solving Wicked Problems*

DEREK CABRERA & LAURA CABRERA

CABRERA & CABRERA

SYSTEMS THINKING MADE SIMPLE





# 4 ways to apply systems thinking

1. Improve our own thinking - DSRP in metacognition
2. Improve education and outreach - structure information using DSRP, MAC for design
3. Develop adaptive organizations - VMCL
4. Improve understanding of complex issues - mapping using DSRP



**KEEP  
CALM  
JUST  
LOOK HARDER  
DAMMIT**

# Systems Thinking

Recognizing and applying our thinking and organizations as a complex adaptive systems...



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complex



simple

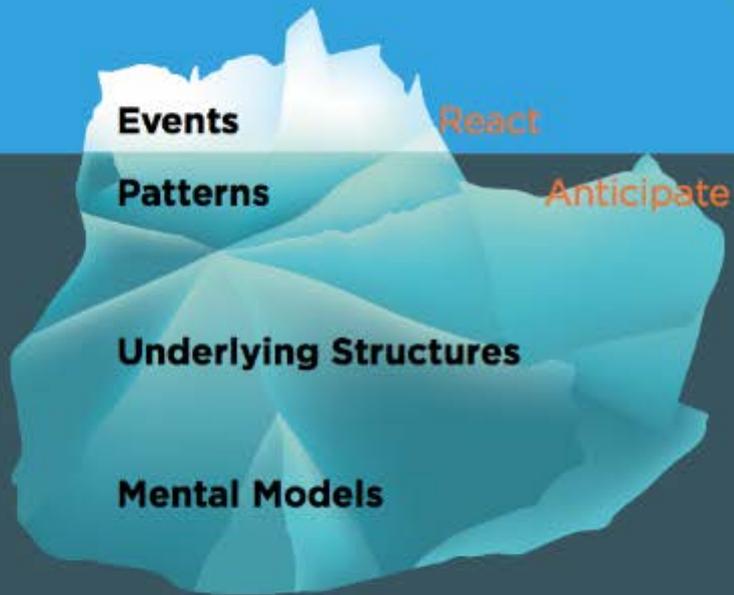


**3 things systems thinkers (you) can do**



# #1 Be Metacognitive

# THINKING



**Events**

React

**Patterns**

Anticipate

**Underlying Structures**

**Mental Models**

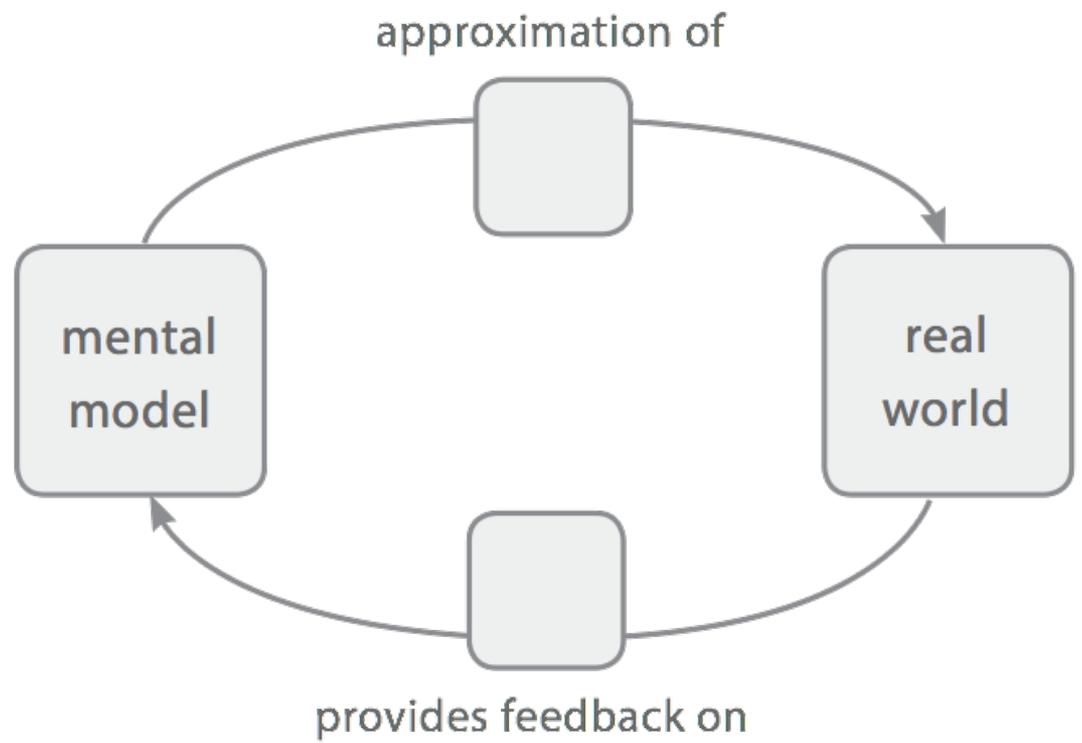
You or your organization



Design

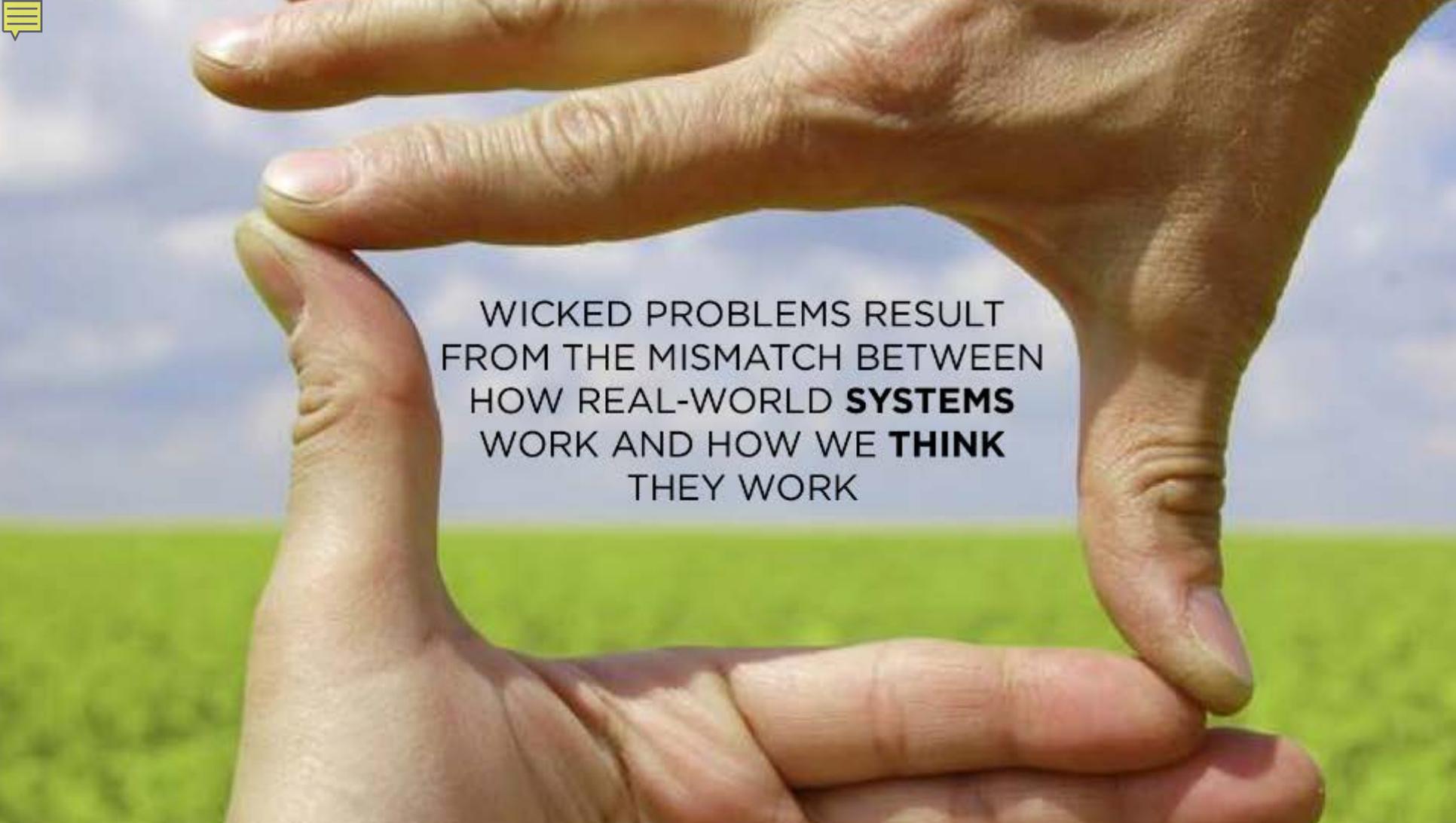
Transform

# SYSTEMS THINKING



**Mental model describes, predicts, and leads to behavior in the real world. Real-world consequences inform adaptation, viability, and competition among models.**



A close-up photograph of two hands, one above the other, with their fingers curved to form a circular frame. The background is a bright green field under a blue sky with light clouds. The text is centered within the circular frame.

WICKED PROBLEMS RESULT  
FROM THE MISMATCH BETWEEN  
HOW REAL-WORLD **SYSTEMS**  
WORK AND HOW WE **THINK**  
THEY WORK



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$$K \neq I$$

$$K = I \cdot T$$



## #2 Use the 4 Building Blocks/Rules of Systems Thinking - DSRP

# DSRP

*simple rules of metacognition/systems thinking*

–DSRP are the ways information can be **STRUCTURED** to make meaningful knowledge.

DISTINCTIONS RULE (D): Any idea or thing can be distinguished from the other ideas or things it is with

SYSTEMS RULE (S): Any idea or thing can be split into parts or lumped into a whole

RELATIONSHIP RULE (R): Any idea or thing can relate to other things or ideas

PERSPECTIVES RULE (P): Any thing or idea can be the point or the view of a perspective

# **Making Distinctions (identity-other)**





**other**

**identity**

**tasteless**

**taste**

**ground**

**figure**

**odorless**

**odor**

**noise**

**signal**

**-feedback**

**+feedback**

OUR BLESSED HOMELAND

THEIR BARBAROUS WASTES

OUR GLORIOUS  
LEADER

THEIR WICKED  
DESPOT

OUR GREAT  
RELIGION

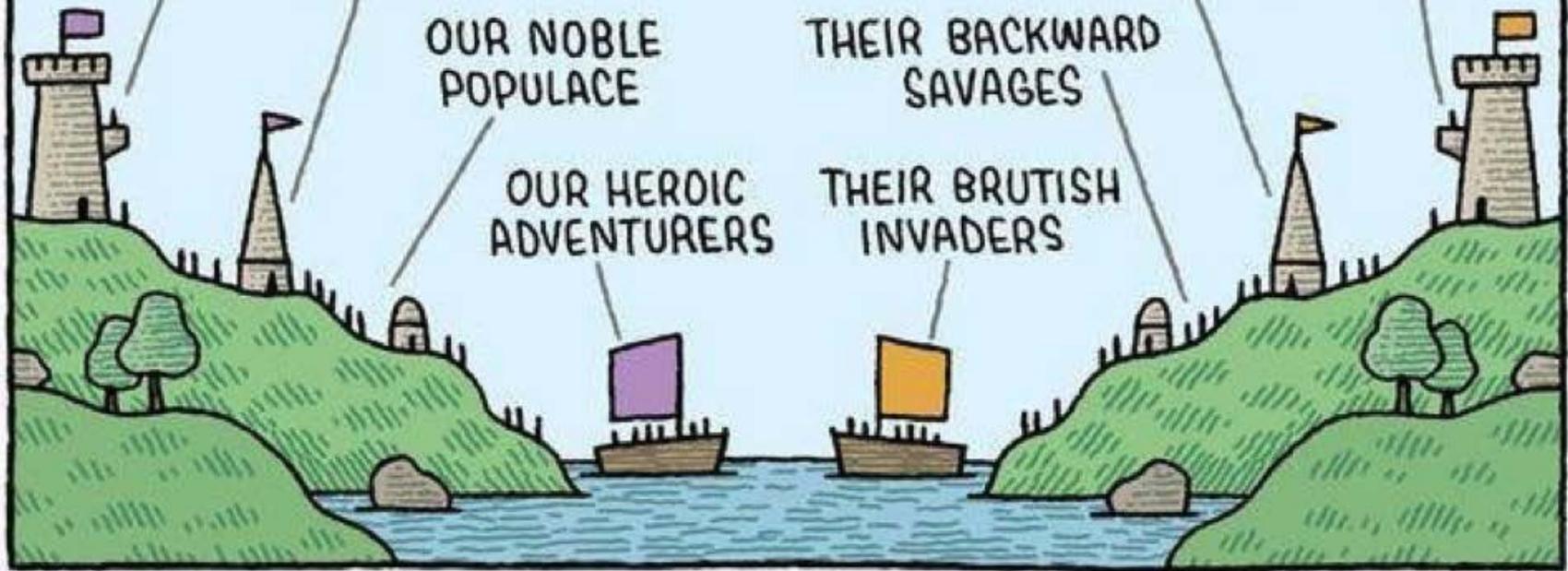
THEIR PRIMITIVE  
SUPERSTITION

OUR NOBLE  
POPULACE

THEIR BACKWARD  
SAVAGES

OUR HEROIC  
ADVENTURERS

THEIR BRITISH  
INVADERS



# Organizing Systems (part-whole)



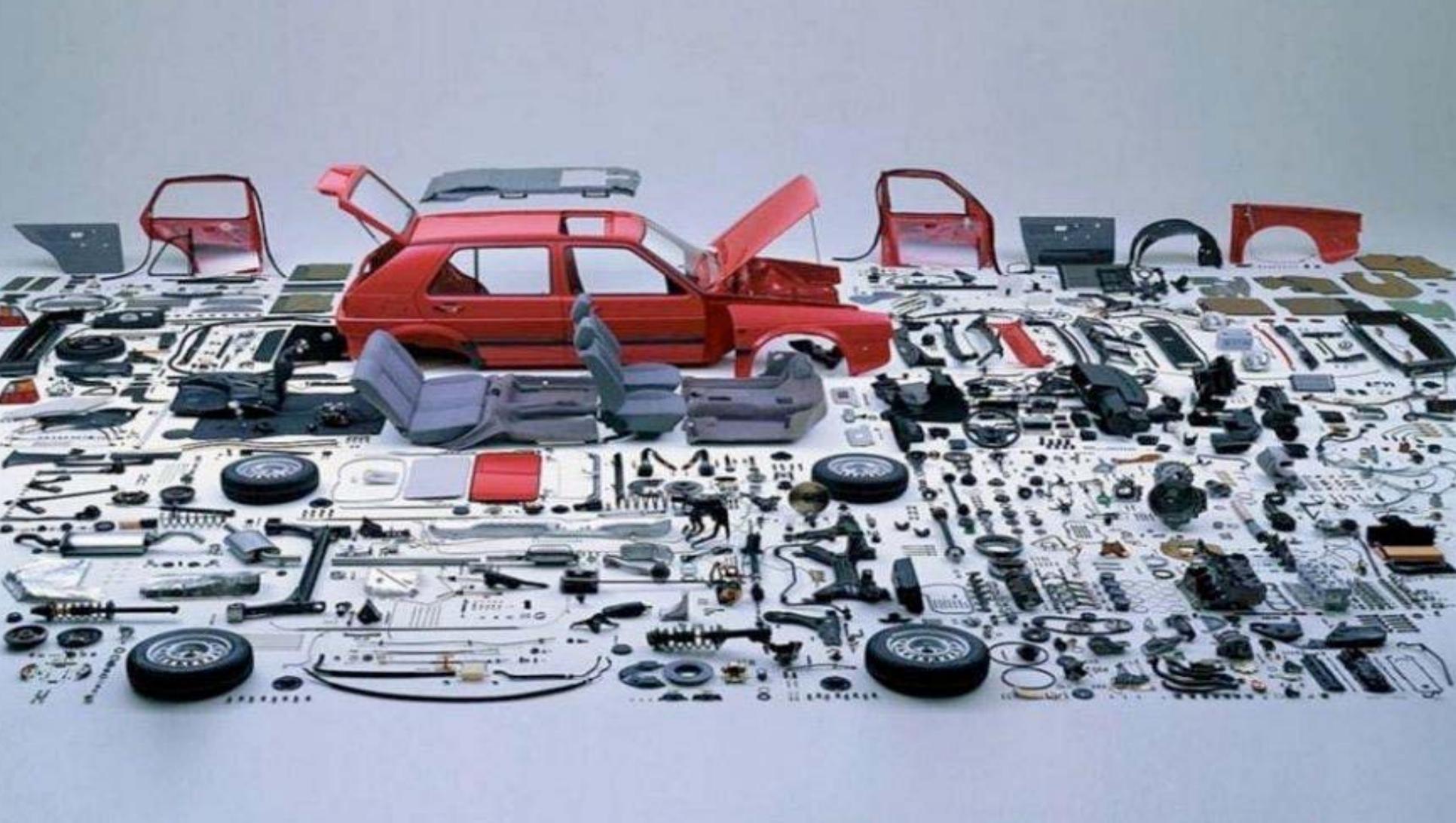


Splitters



Lumpers









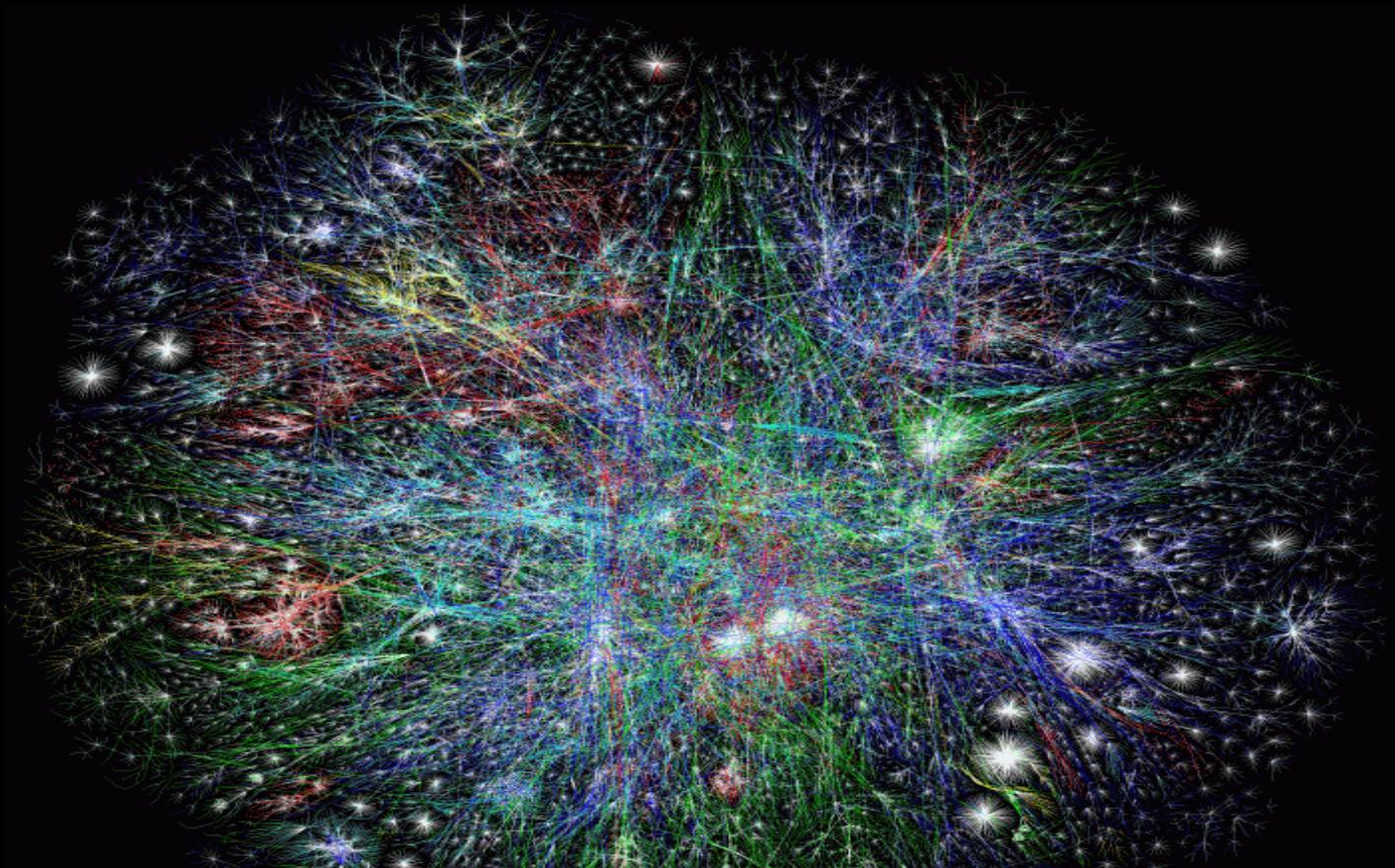
# Recognizing Relationships (action-reaction)



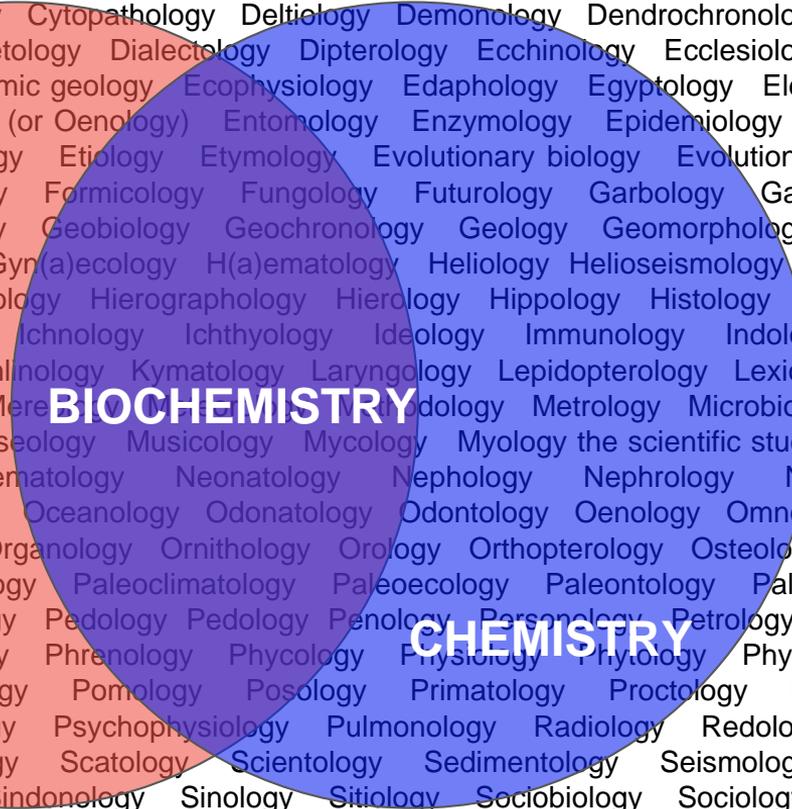




Click [here](#)



Aerology Assiriology Astacology Asterozoology Astrobiology Astrogeology Astrology Astrotheology Atmology Audiology  
Autecology Auxology Axiology Bacteriology Balneology Barology Batology Bibliology Bioecology Biology Bromatology Brontology  
Campanology Cardiology Cariology Cereology Cetology Characterology Chorology Christology Chronology Climatology Codicology  
Coleopterology Conchology Coniology Controllogy Cosmetology Cosmology Craniology Criminology Cryology Cryptology  
Cryptozoology Cynology Cytology Cytomorphology Cytopathology Deltiology Demonology Dendrochronology Dendrology Deontology  
Dermatology Dermatopathology Desmology Diabetology Dialectology Dipterology Ecchiology Ecclesiology Eccrinology echinology  
Ecogeomorphology Ecohydrology Ecology Economic geology Ecophysiology Edaphology Egyptology Electrophysiology Embryology  
Emetology Endocrinology Enigmatology Enology (or Oenology) Entomology Enzymology Epidemiology Epistemology Escapology  
Eschatology Ethnology Ethnomusicology Ethology Etiology Etymology Evolutionary biology Evolutionary psychology Exobiology  
Exogeology Felinology Ferroequinology Fetology Formicology Fungology Futurology Garbology Gastrology or Gastroenterology  
Gemmology or Gemology Biology Geeneology Geobiology Geochronology Geology Geomorphology Gerontology Glaciology  
Grammatology Graphology Grossology (fictional Gyn(a)ecology H(a)ematology Heliology Helioseismology Helminthology Hepatology  
Herbology Herpetology Heteroptology Hieroglyphology Hieroglyphology Hierology Hippology Histology Histopathology Historiology  
Horology Hydrogeology Hydrology Hypnology Ichology Ichthyology Ideology Immunology Indology Iranology Islamology  
Japanology Karyology Killology Kinesiology Kremlinology Kymatology Laryngology Lepidopterology Lexicology Limnology Lithology  
Ludology Lymphology Malacology Mammalogy Merology Meteorology Metrology Microbiology Micrology Mineralogy  
Missiology Mixology Molinology Morphology Museology Musicology Mycology Myology the scientific study of muscles Myrmecology  
Mythology Nanotechnology Nanotribology Nematology Neonatology Nephology Nephrology Neurology Neuropathology  
Neurophysiology Nosology Numerology Nutriology Oceanology Odonatology Odontology Oenology Omnology Oncology Oneirology  
Onomatology Ontology Oology Ophthalmology Organology Ornithology Orology Orthopterology Osteology Otolaryngology Otology  
Otorhinolaryngology Paleanthropology Paleobiology Paleoclimatology Paleoecology Paleontology Paleophytology Paleozoology  
Palynology Parapsychology Parasitology Pathology Pedology Pedology Penology Personality Petrology Pharmacology Phenology  
Phenomenology Philology Phlebology Phonology Phrenology Phycology Physiology Phyology Phytopathology Phytosociology  
Piphilology Planetology Planktology Pneumology Pomology Posology Primatology Proctology Psephology Psychobiology  
Psychology Psychopathology Psychopharmacology Psychophysiology Pulmonology Radiology Redology Reflexology Rheology  
Rheumatology Rhinology Ripperology Sarcology Scatology Scientology Sedimentology Seismology Selenology Semiology  
Semitology Serology Serpentology Sexology Sindonology Sinology Sitiology Sociobiology Sociology Somatology Somnology  
Soteriology Sovietology Speleology Splanchnology Sporology Stemmatology Stomatology Sumerology Symbology Symptomatology  
Synecology Syphilology Taxology Technology Teleology Teratology Terminology Thanatology Theology Thermology Tibetology  
Tocology Tonology Topology Toxicology Traumatology Tribology Trichology Typology Ufology Universology Unology Uranology  
Urbanology Urology Uroradiology Vaccinology Velology Venereology Vexillology Victimology Virology Volcanology Xenobiology

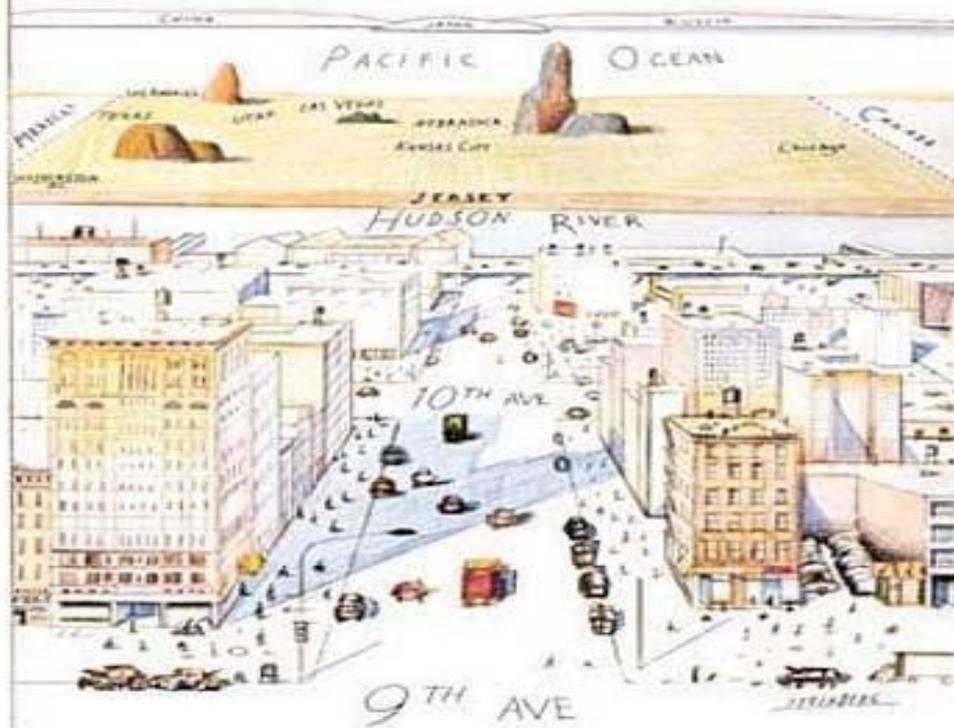


# Taking Perspectives (point-view)





# THE NEW YORKER





**“When you change the way you look at things,  
the things you look at change.”**

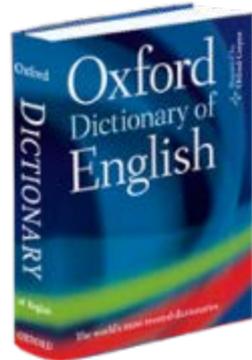


# #3 Repeatedly Apply Systems Thinking (DSRP) to Your Work



**BROAD**

**DEEP**



Distinction  
System  
Relationship  
Perspective

# DON'T





DO

DO  
DR



---

complex



simple



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the power of simplicity

dsrp

distinctions • systems • relationships • perspectives

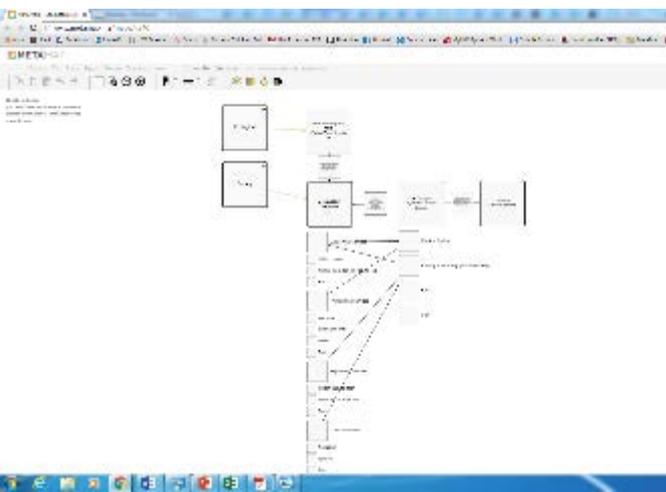
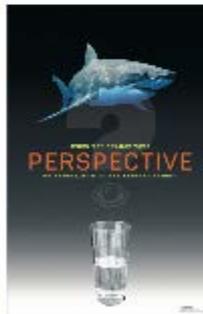
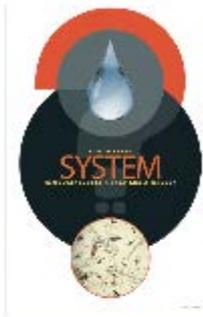
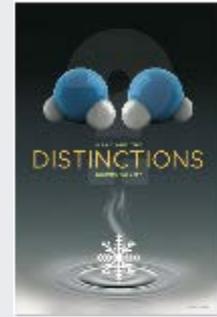


# TW Wisconsin

Implementation,  
Innovation and  
Learning



# ThinkWater Resources





THINK WATER

[www.thinkwater.us](http://www.thinkwater.us) | [www.facebook.com/waterthinkers](https://www.facebook.com/waterthinkers)

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