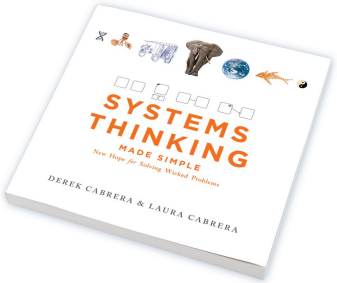
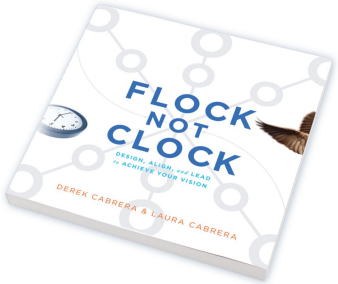


Cabrera, D. & Cabrera, L. (2018) *Systems Thinking Made Simple: New Hope for Solving Wicked Problems in a Complex World [2nd edition]*. Plectica Publications. Ithaca, NY.



Cabrera, D. & Cabrera, L. (2018) *Flock Not Clock: Design, Align, and Lead to Achieve Your Vision.* Plectica Publications. Ithaca, NY.

You are free to use these ideas internally but please support our continued research in Systems Thinking by crediting and citing their sources.

CABRERA RESEARCH LAB

THE WORLD BANK

CORNELL UNIVERSITY FOUNDED A.D. 1865

SYSTEMS THINKING MADE SIMPLE

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Laura Cabrera, PhD
Cornell University
Cabrera Research Lab
dac66@cornell.edu
lac19@cornell.edu

We're on...

#systemsthinking
#DSRP
#VMCL
@cabreraresearch

Thanks!

NSF USDA

SANTA FE INSTITUTE

Systems Thinking…

Why do we need it?

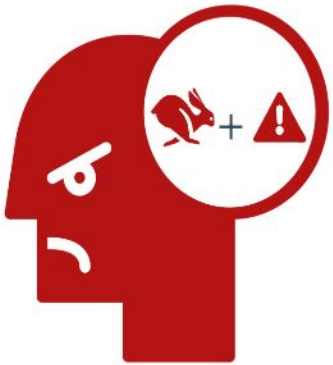
Who is it for?

What is it?

How do we do it?

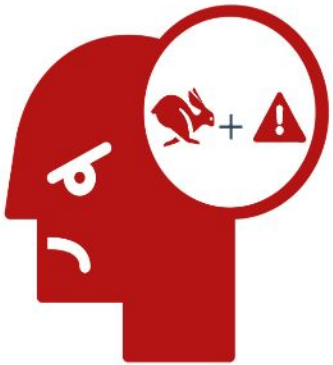
System 1 Thinking

Fast & Wrong A Lot



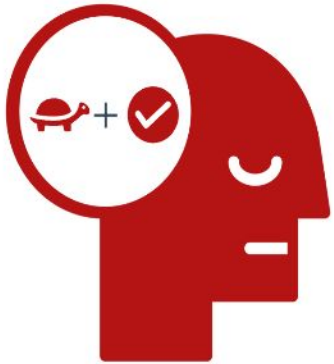
System 1 Thinking

Fast & Wrong A Lot



System 2 Thinking

Slow & Right More Often

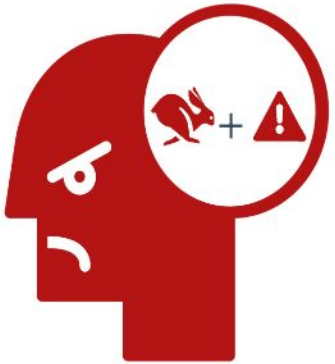


System 3 Thinking

Fast & Right More Often

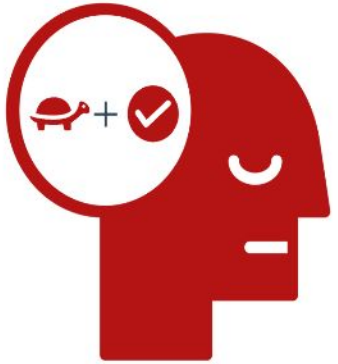
System 1 Thinking

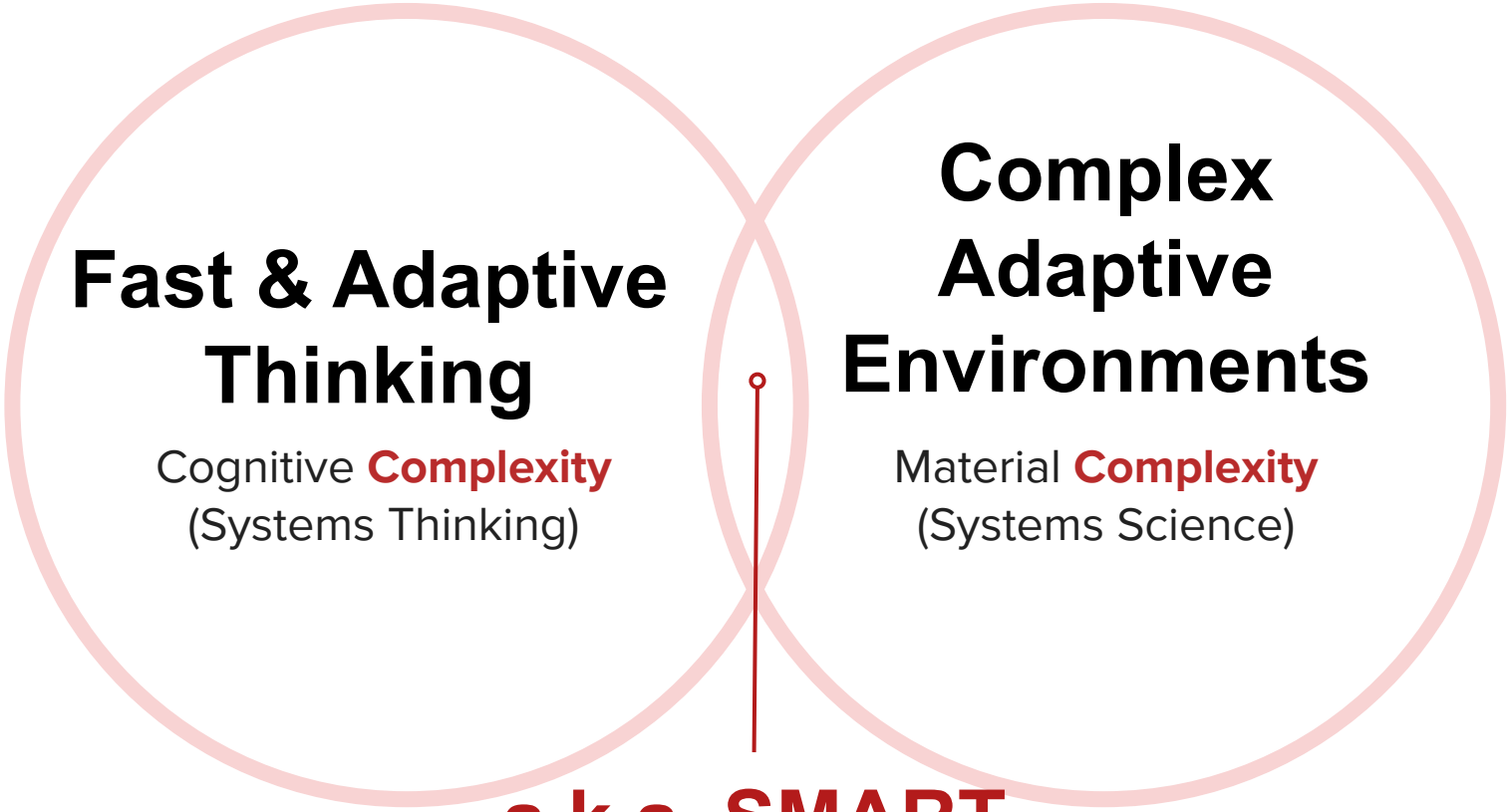
Fast & Wrong A Lot



System 2 Thinking

Slow & Right More Often





a.k.a. SMART

The ability to organize information to adapt to reality

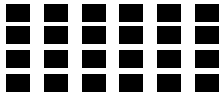
“Insights into our own thoughts, or metacognition, is key to high achievement in all domains”

(Scientific American Mind, Fleming, 2014)

If you want to develop emotional intelligence, you'd be better to train in metacognition than emotional intelligence

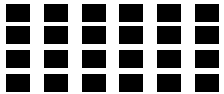
Cite: Joseph and Newman (2010) Emotional Intelligence: An Integrative Meta-Analysis and Cascading Model. Journal of Applied Psychology. Vol. 95, No. 1, 54 –78

Smart is no longer possessing information. Smart is the ability to **organize** information to adapt to reality.



Information

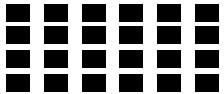
aka, content data

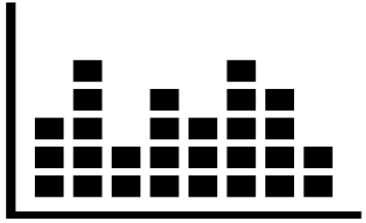


Information & Organization

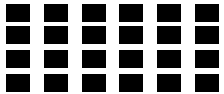
aka, content
data

aka, thinking
encoding
cognition
structuring
DSRP



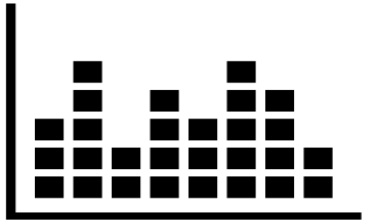


Information & Organization = Meaning/ Mental Model



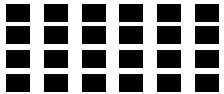
Information &

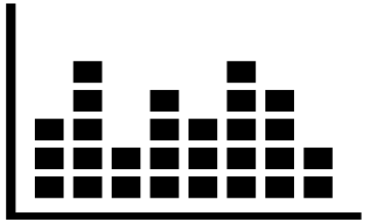
Organization =



Meaning/
Mental Model

Predictions
Decisions
Behavior





Information & Organization = Meaning/ Mental Model

aka, content
data

aka, thinking
encoding
cognition
structuring
DSRP

Predictions
Decisions
Behavior

Woman, without her man, is helpless.

Woman, without her, man is helpless.

M=IO

M=IO
DSRP

4 SIMPLE ORGANIZING RULES

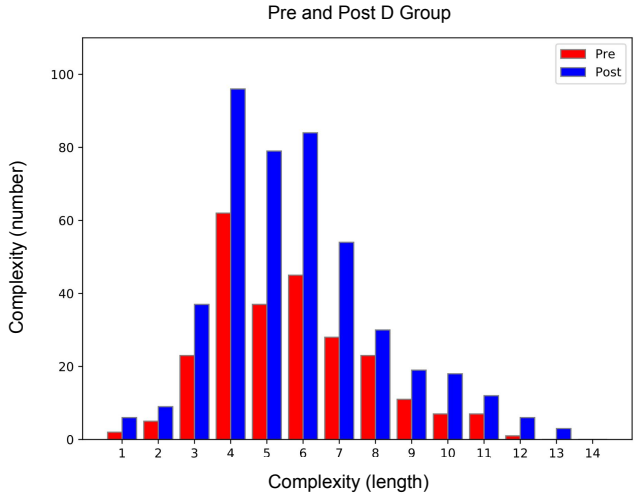
DISTINCTIONS (D)	
identity (i)	*other (o)*

SYSTEMS (S)	
part (p)	*whole (w)*

RELATIONSHIPS (R)	
action (a)	*reaction (r)*

PERSPECTIVES (P)	
point (ρ)	*view (v)*

Smart is no longer possessing information. Smart is the ability to **organize (DSRP)** information to adapt to reality.


Pre and Post D Group
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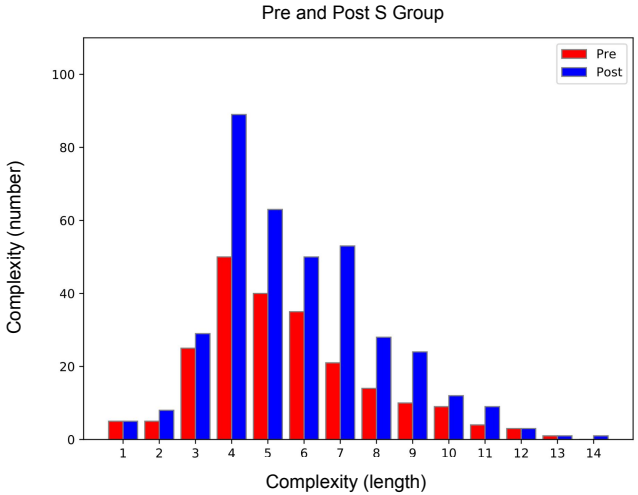
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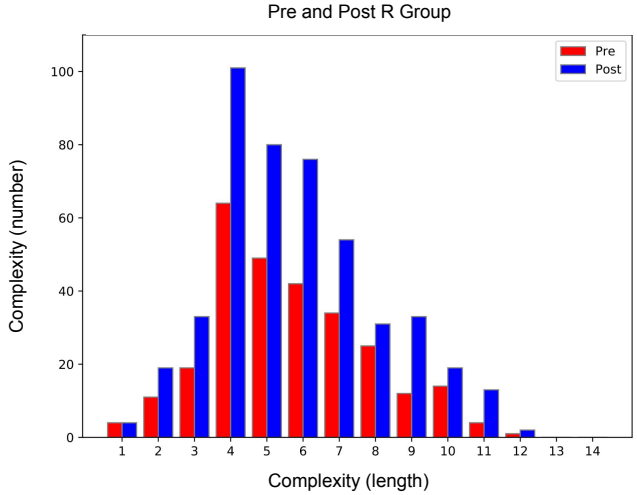
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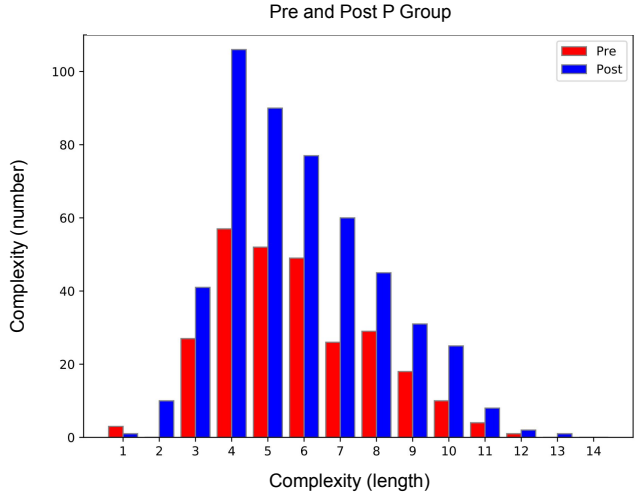
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14

MORE | BETTER

You are **already** & **always** doing DSRP.

You are **already** & **always** doing DSRP.

Reality is **already** & **always** doing DSRP.

You are **already** & **always** doing DSRP.

Reality is **already** & **always** doing DSRP.

Metacognition is purposefully **using** DSRP
to organize information to adapt to reality.

When

WHAT YOU THINK

matches

WHAT IS REAL

the decisions you make work out as planned

LOVE Reality

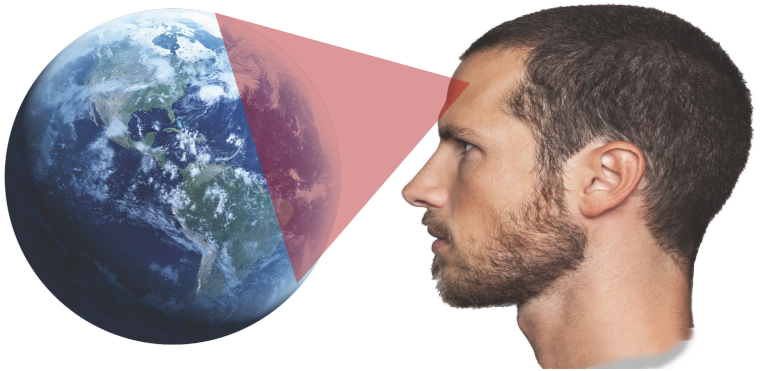
BIAS & MENTAL MODELS

Reality

You

Reality You

Unaware of
Reality Bias

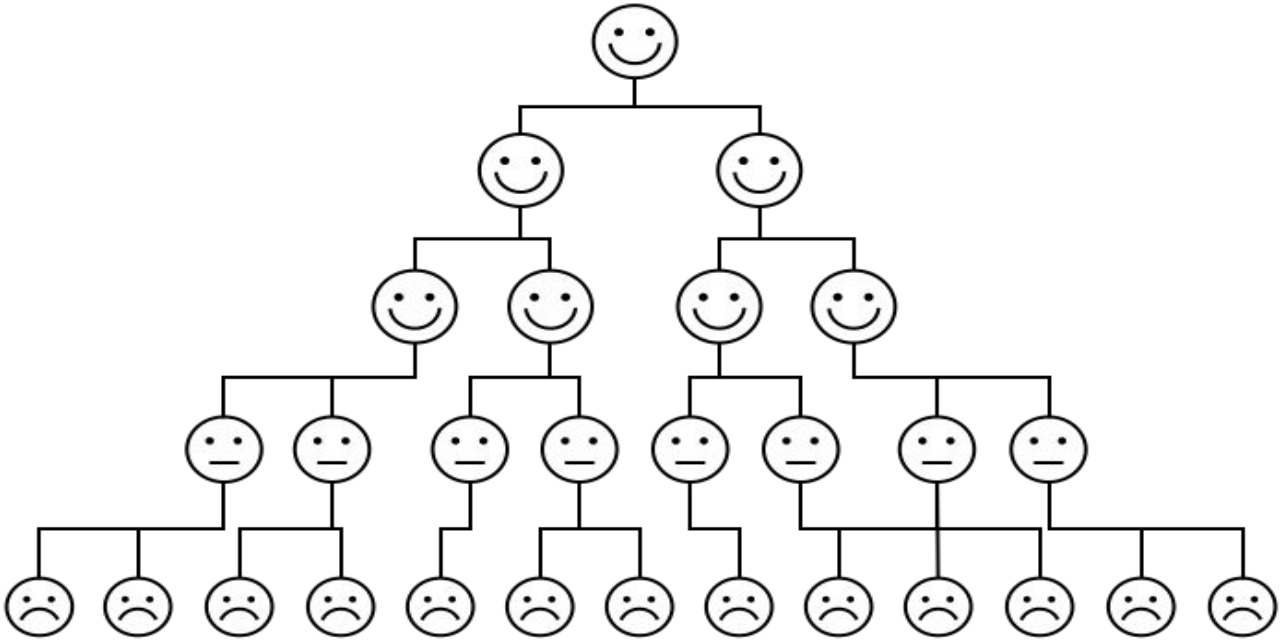


Mental Model

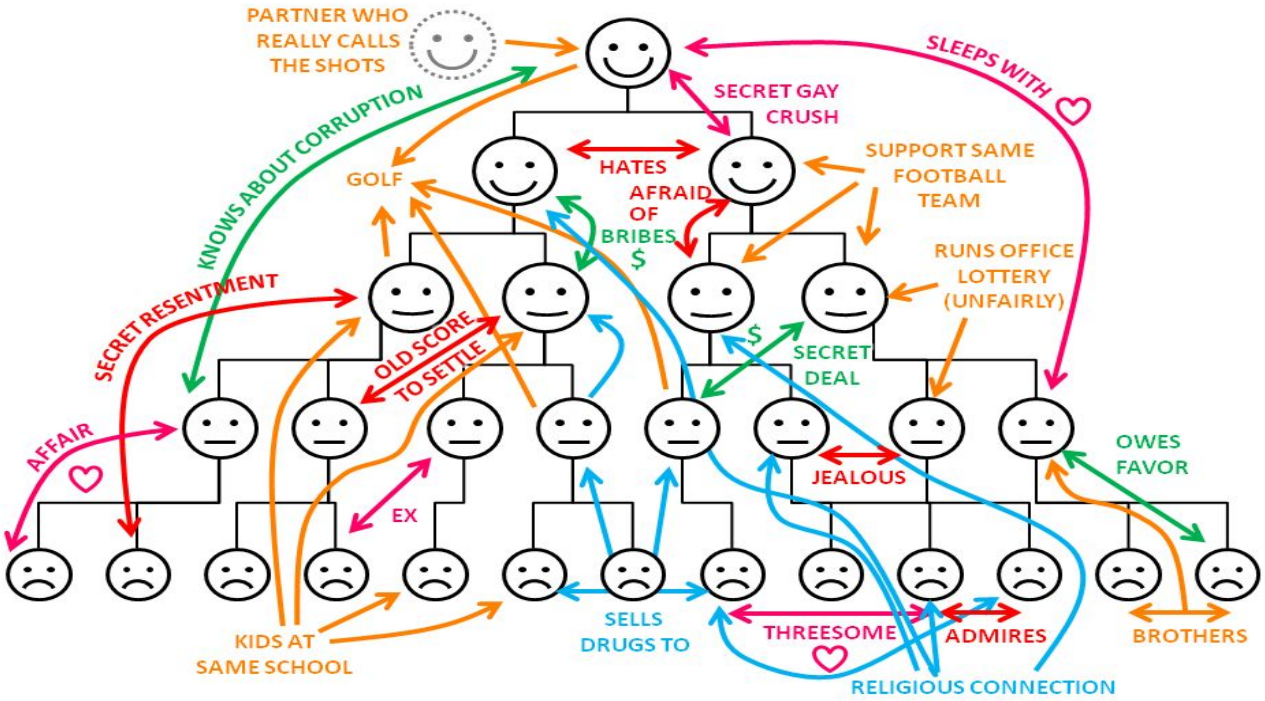
Reality You

Aware of
Reality Bias

How we *think* the system is organized...



How the system is *actually* organized...



Mental Models

Aka. Meaning

Test your model

Real world

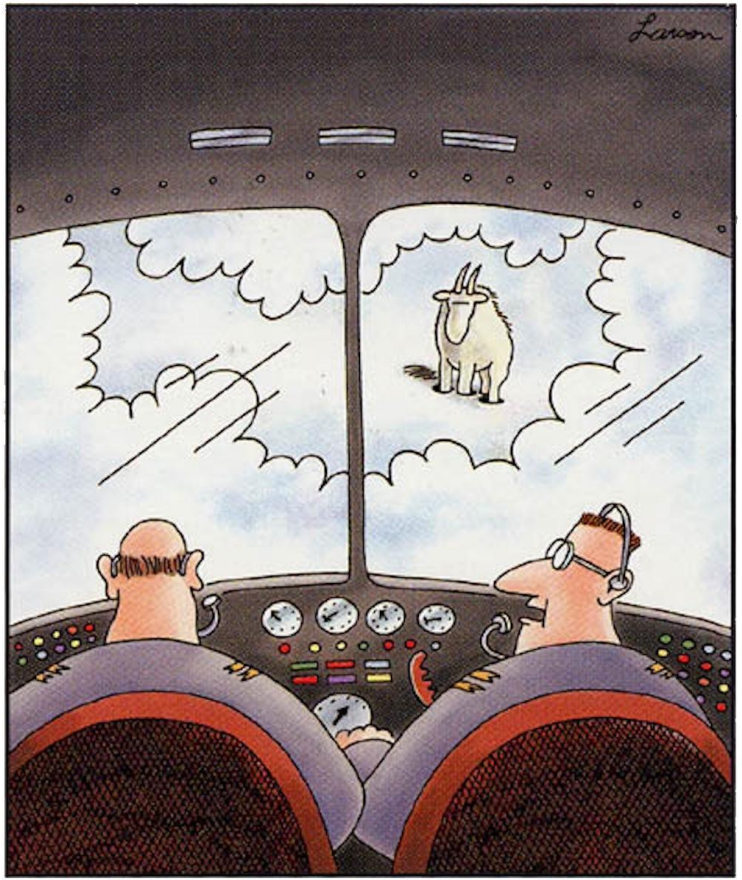
Mental Models

Test your model

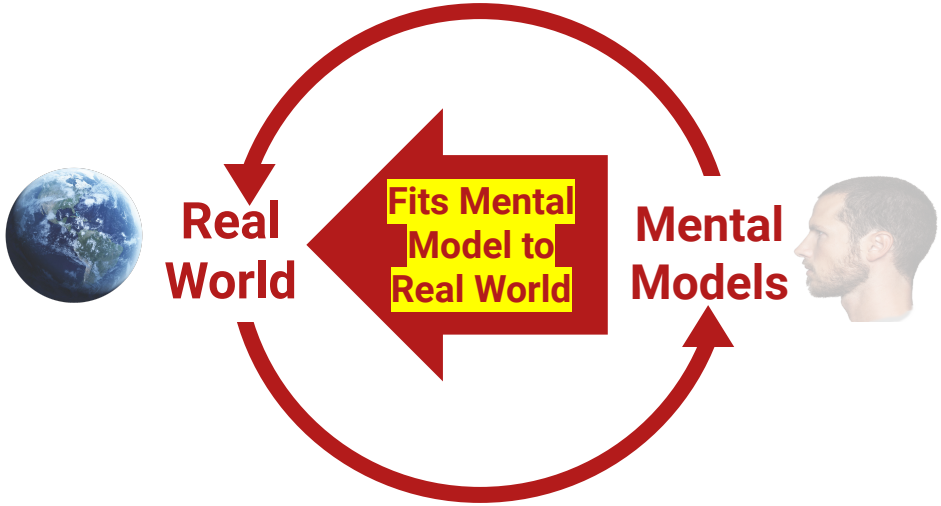
Real world

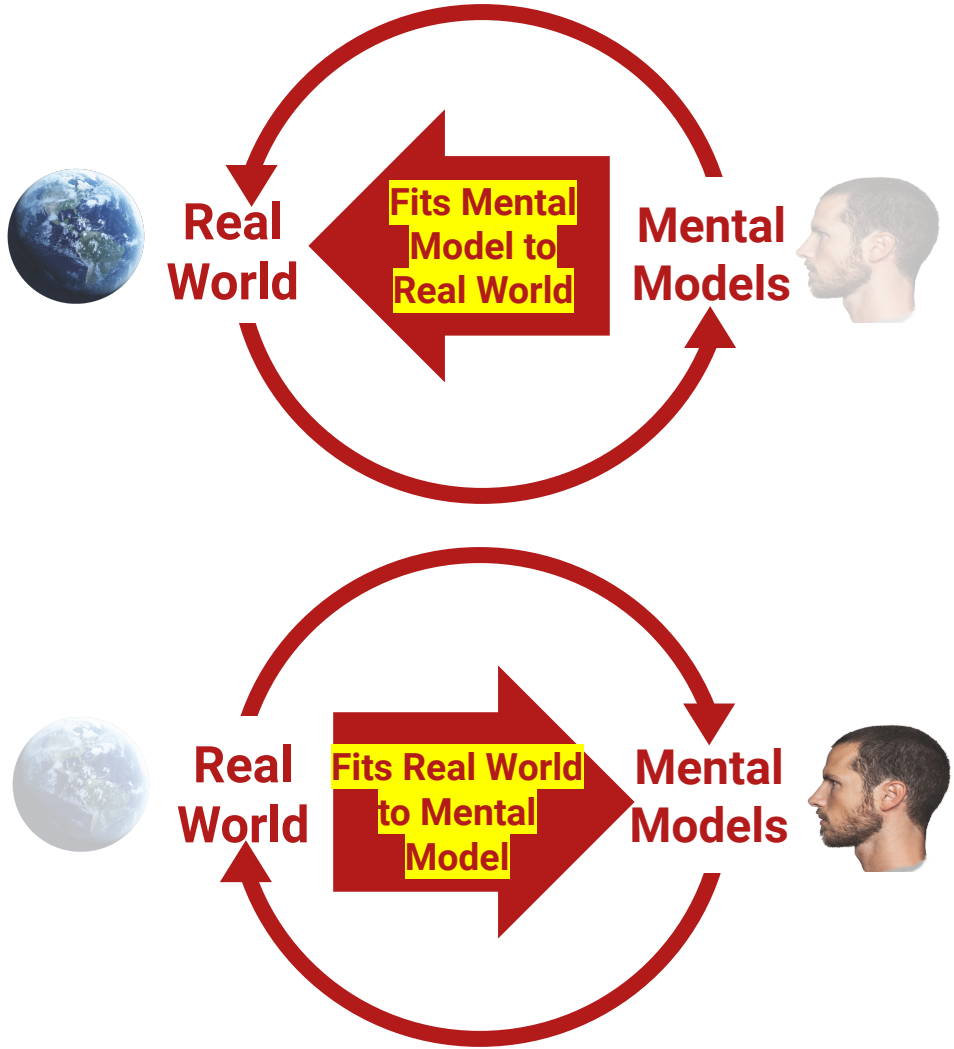
Mental Models

Adjust your model



“Say...what’s that mountain goat doing way up here in a cloud bank?”


Real
World
Fits Mental
Model to
Real World
Mental
Models


Real World
Fits Mental Model to Real World
Mental Models
Real World
Fits Real World to Mental Model
Mental Models

Test your model

Real world

Incremental Improvement

Mental Models

Adjust your model

REFLECTION

How do you think the simple act of recognizing your mental models will change you? How would it change your work place if everyone did?

VUCA

Volatile Uncertain
Complex Ambiguous

VUCA

Volatile Uncertain
Complex Ambiguous

LAMO

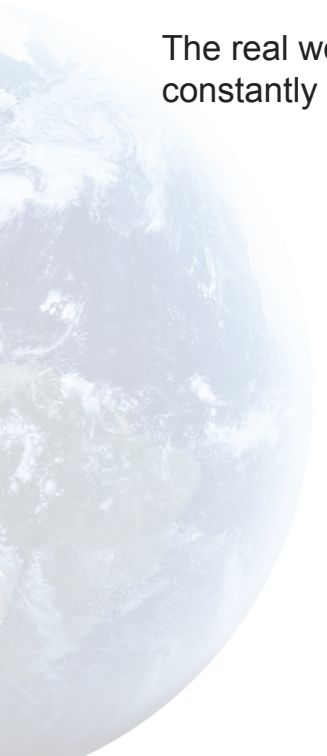
Linear Anthropocentric
Mechanistic Ordered

VUCA

Volatile Uncertain
Complex Ambiguous

VUCA World

The real world is dynamic, adaptive, organic, and constantly evolving...

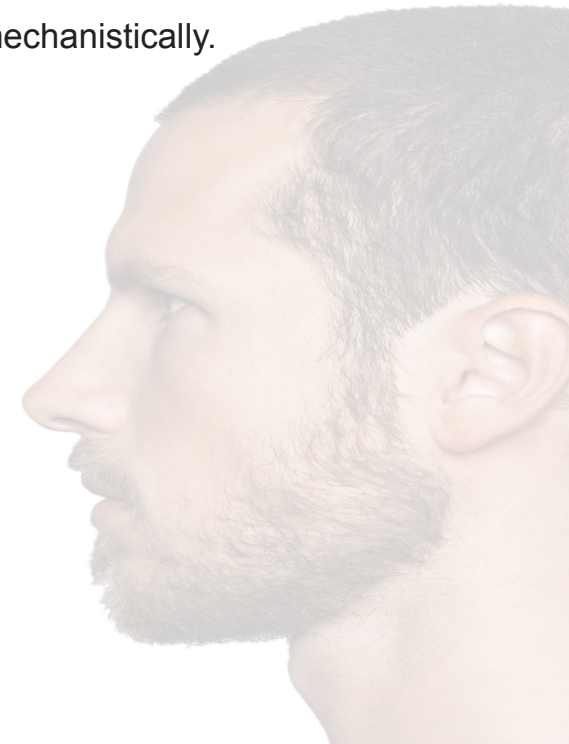


LAMO

Linear Anthropocentric
Mechanistic Ordered

LAMO Thinking

Yet, we tend to think mechanistically.



VUCA

Volatile Uncertain
Complex Ambiguous

VUCA World

The real world is dynamic, adaptive, organic, and constantly evolving…

The real world is multivalent bynature (And-Both can be true)...

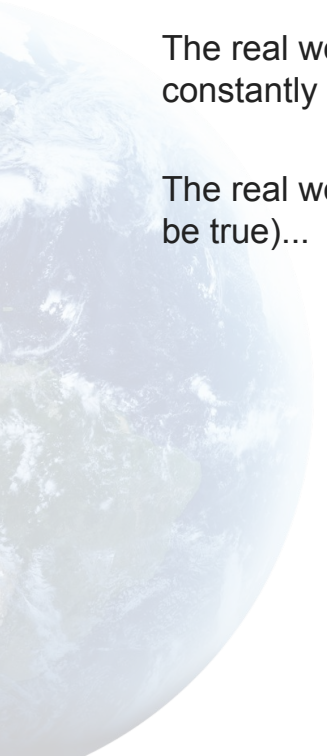
LAMO

Linear Anthropocentric
Mechanistic Ordered

LAMO Thinking

Yet, we tend to think mechanistically.

Yet, our thinking tends to be needlessly bivalent (Either-Or thinking).



VUCA

Volatile Uncertain
Complex Ambiguous

VUCA World

The real world is dynamic, adaptive, organic, and constantly evolving...

The real world is multivalent bynature (And-Both can be true)...

The real world is networked and nested and complex with a sprinkling of randomness...

LAMO

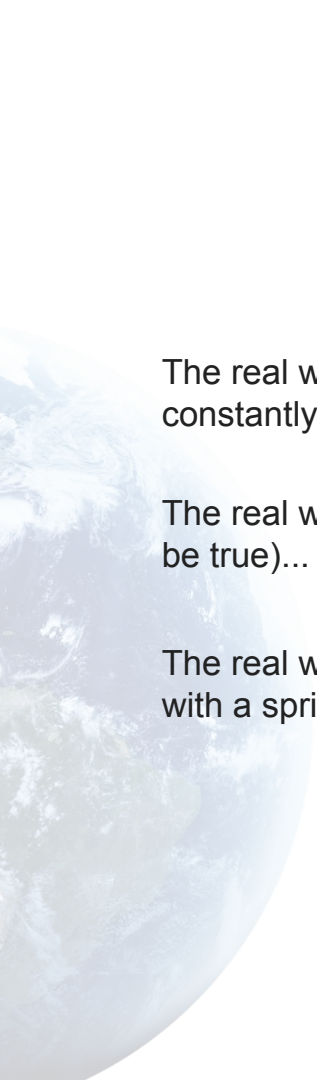
Linear Anthropocentric
Mechanistic Ordered

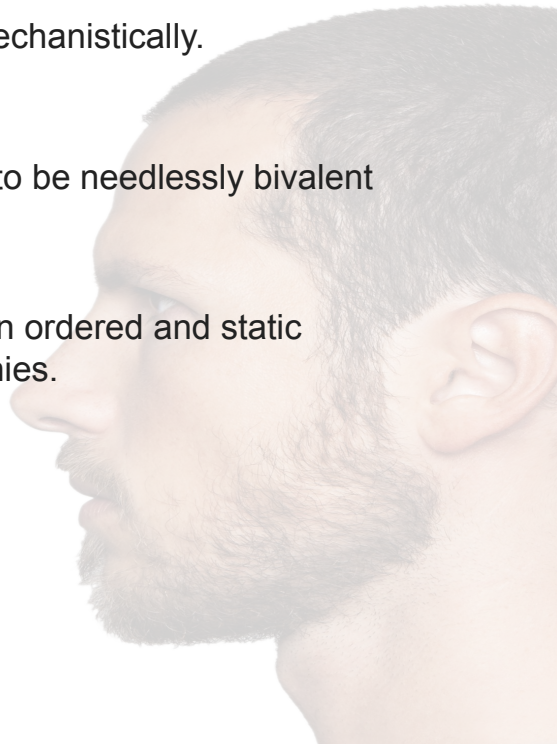
LAMO Thinking

Yet, we tend to think mechanistically.

Yet, our thinking tends to be needlessly bivalent (Either-Or thinking).

Yet, we think of things in ordered and static categories and hierarchies.





VUCA

Volatile Uncertain
Complex Ambiguous

VUCA World

The real world is dynamic, adaptive, organic, and constantly evolving...

The real world is multivalent bynature (And-Both can be true)...

The real world is networked and nested and complex with a sprinkling of randomness...

The real world is nonlinear and includes feedback and webs of causality...

LAMO

Linear Anthropocentric
Mechanistic Ordered

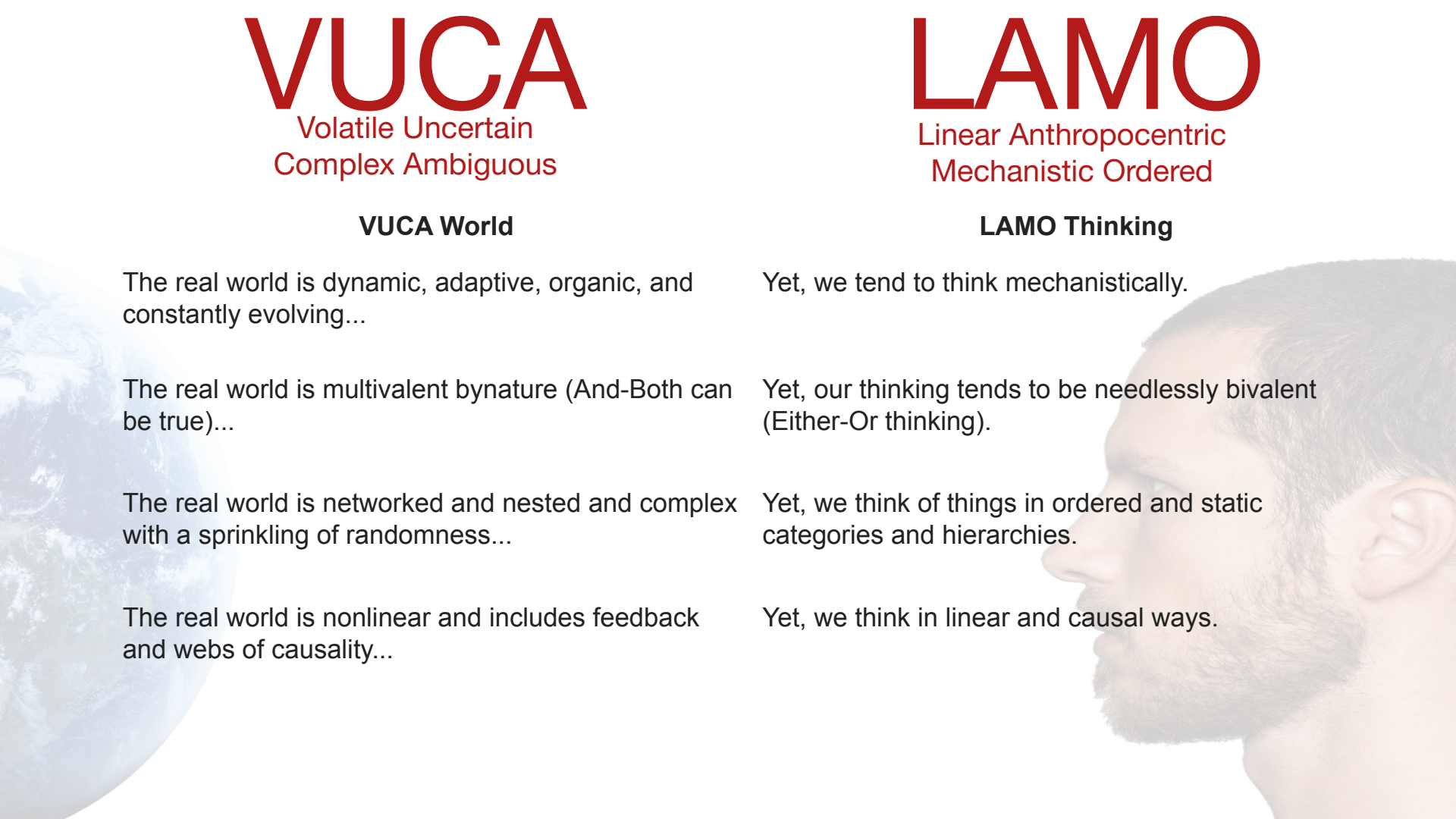
LAMO Thinking

Yet, we tend to think mechanistically.

Yet, our thinking tends to be needlessly bivalent (Either-Or thinking).

Yet, we think of things in ordered and static categories and hierarchies.

Yet, we think in linear and causal ways.



VUCA

Volatile Uncertain
Complex Ambiguous

VUCA World

The real world is dynamic, adaptive, organic, and constantly evolving...

The real world is multivalent bynature (And-Both can be true)...

The real world is networked and nested and complex with a sprinkling of randomness...

The real world is nonlinear and includes feedback and webs of causality...

The real world is agnostic about human endeavors.
(We are small and insignificant.)...

LAMO

Linear Anthropocentric
Mechanistic Ordered

LAMO Thinking

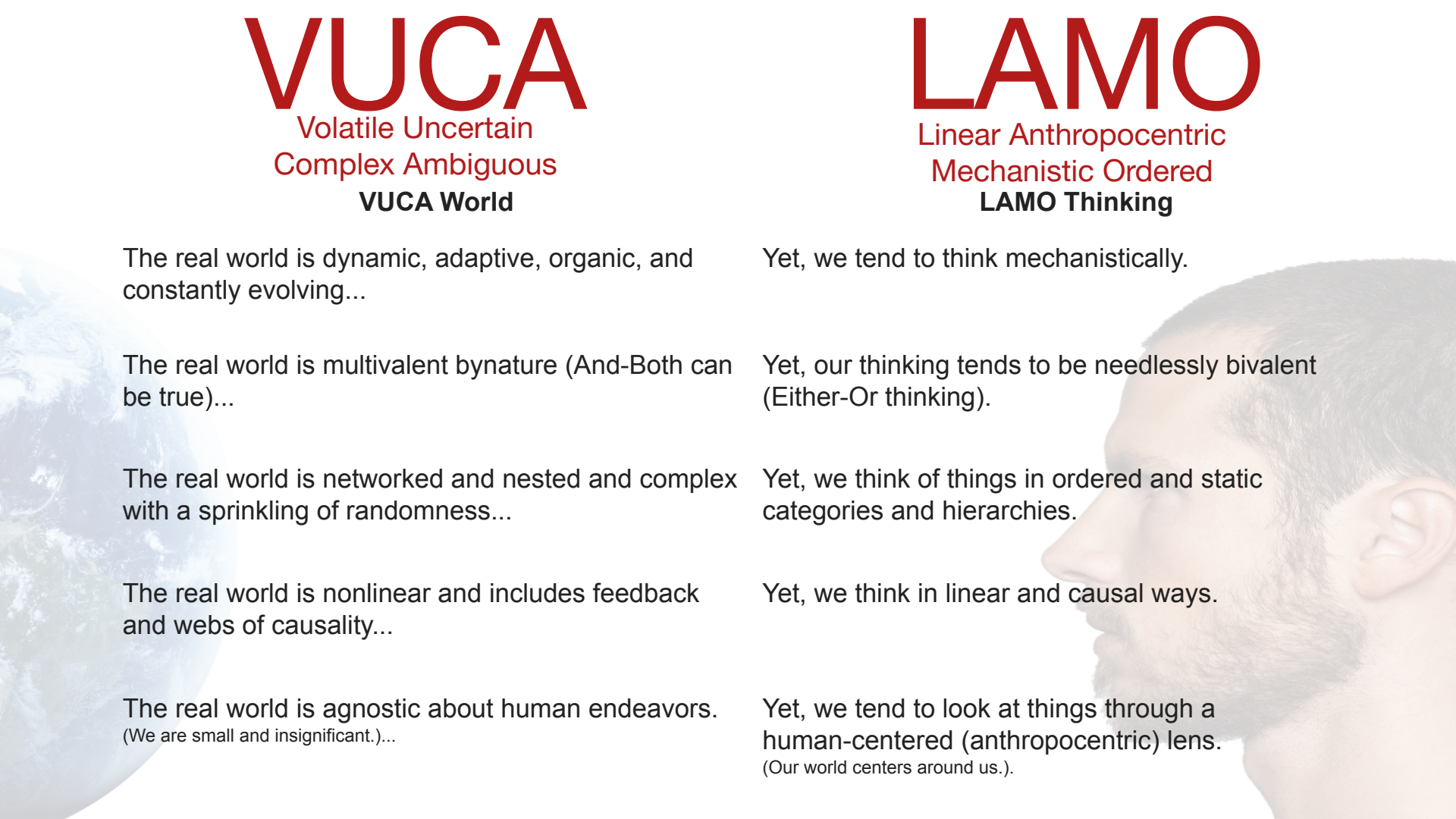
Yet, we tend to think mechanistically.

Yet, our thinking tends to be needlessly bivalent (Either-Or thinking).

Yet, we think of things in ordered and static categories and hierarchies.

Yet, we think in linear and causal ways.

Yet, we tend to look at things through a human-centered (anthropocentric) lens.
(Our world centers around us.).



VUCA World

The real world is dynamic, adaptive, organic, and constantly evolving...

The real world is multivalent bynature (And-Both can be true)...

The real world is networked and nested and complex with a sprinkling of randomness...

The real world is nonlinear and includes feedback, webs of causality, and material relationships...

The real world is agnostic about human endeavors. (We are small and insignificant.)...

LAMO Thinking

Yet, we tend to think mechanistically.

Yet, our thinking tends to be needlessly bivalent (Either-Or thinking).

Yet, we think of things in ordered and static categories and hierarchies.

Yet, we think in linear and causal ways.

Yet, we tend to look at things through a human-centered (anthropocentric) lens. (Our world centers around us.).

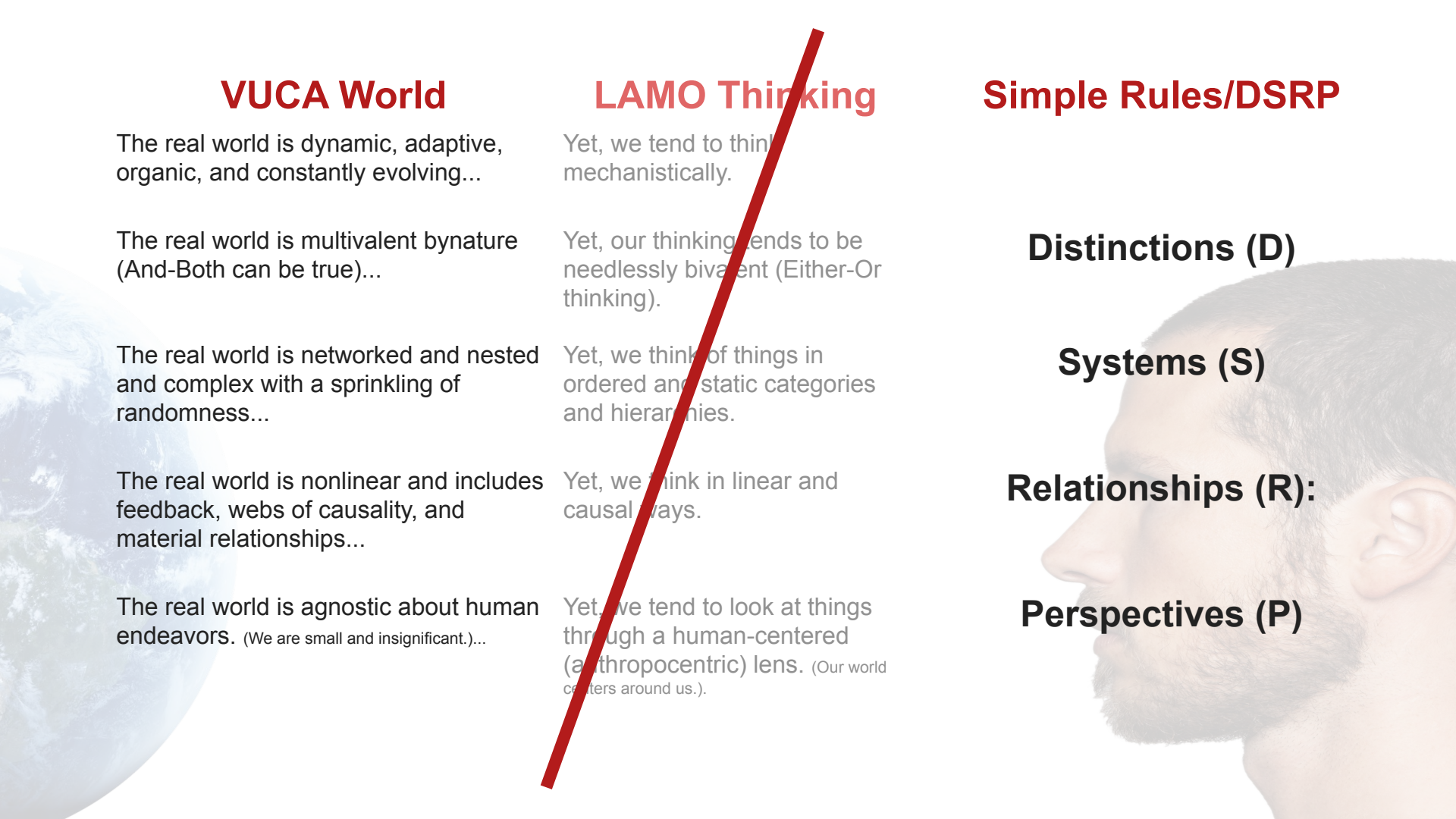
Simple Rules/DSRP

Distinctions (D)

Systems (S)

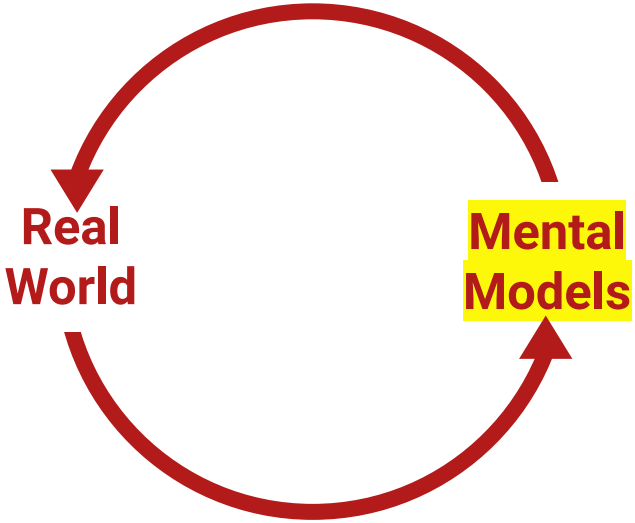
Relationships (R):

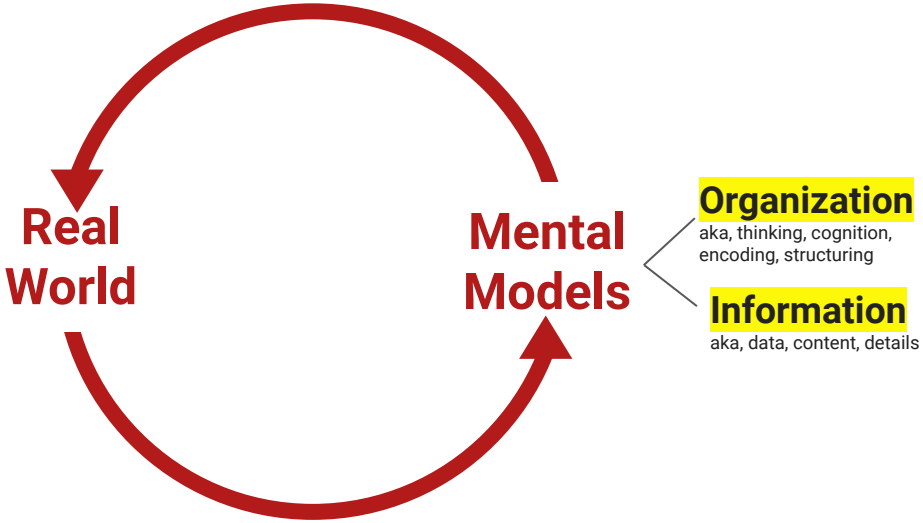
Perspectives (P)

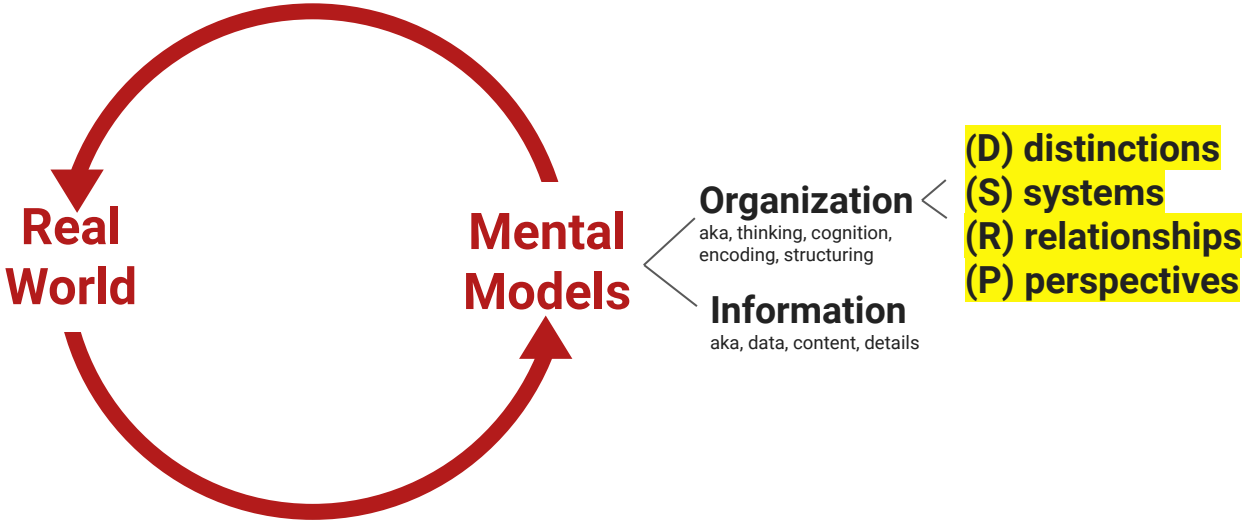


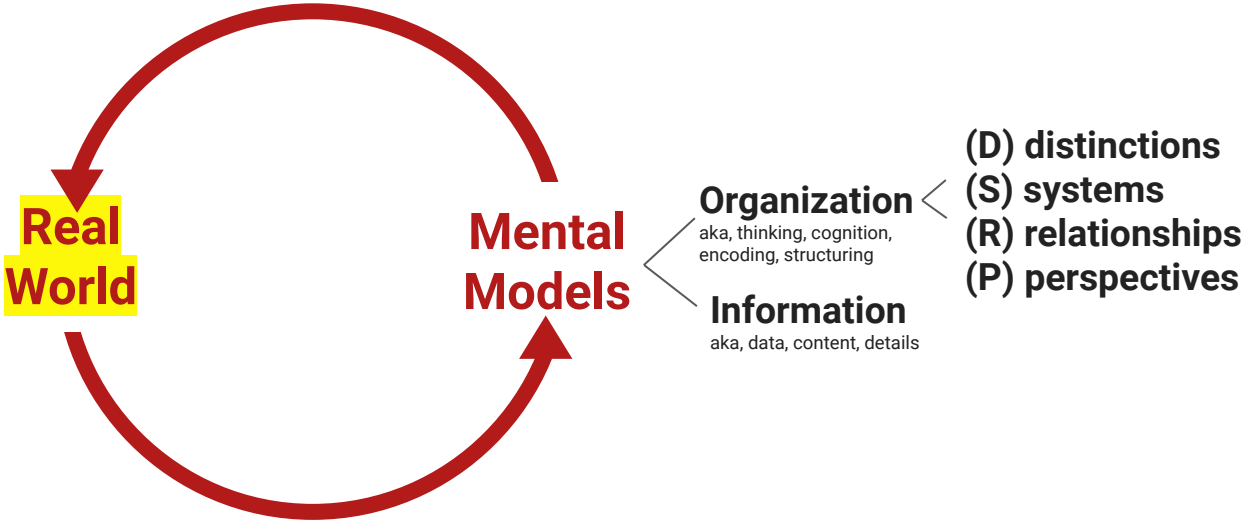
L♥VE Reality

FUNDAMENTALS (**DSRP**)


Real
World
Mental
Models


Real World
Mental Models
Organization
aka, thinking, cognition, encoding, structuring
Information
aka, data, content, details


Real World
Mental Models
Organization
aka, thinking, cognition, encoding, structuring
Information
aka, data, content, details
(D) distinctions
(S) systems
(R) relationships
(P) perspectives


Real World
Mental Models
Organization
aka, thinking, cognition, encoding, structuring
Information
aka, data, content, details
(D) distinctions
(S) systems
(R) relationships
(P) perspectives

(D) distinctions
(S) systems
(R) relationships
(P) perspectives

Organization
aka, organization, structure

Information
aka, data, details, stuff

Real World

Mental Models

Organization
aka, thinking, cognition, encoding, structuring

Information
aka, data, content, details

(D) distinctions
(S) systems
(R) relationships
(P) perspectives

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Increases the ℙrobability of match

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(D) distinctions
(S) systems
(R) relationships
(P) perspectives

SYSTEMS THINKING

CAS-VUCA
Real World

CAS-VUCA Friendly
Mental Models

When

WHAT YOU THINK

matches

WHAT IS REAL

the decisions you make work out as planned

Q: What is smart?

A: The ability to organize information and adapt in context.

LOVE Reality

DAILY PRACTICE

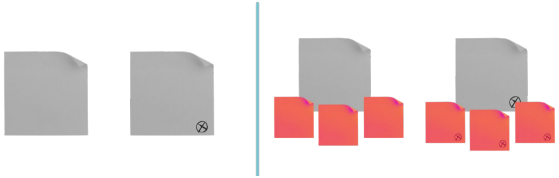
DSRP

DAILY PRACTICE

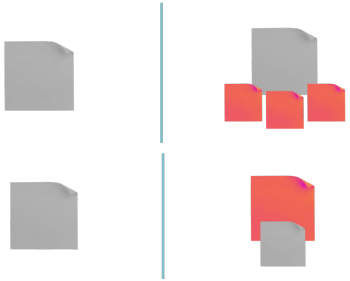
MOVES

5 Mental Moves Research Shows Help Solve Problems

What things am I choosing to see and not see? [DioList]



How are these things grouped? [Zoom]



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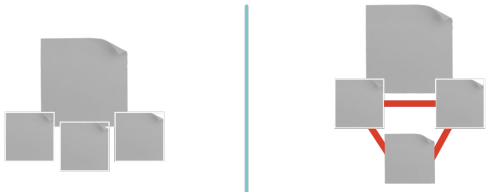
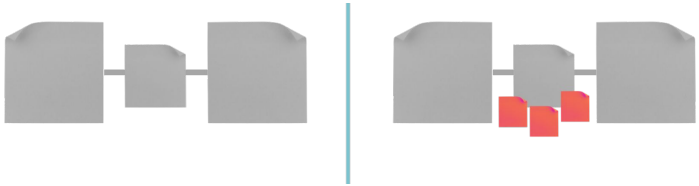
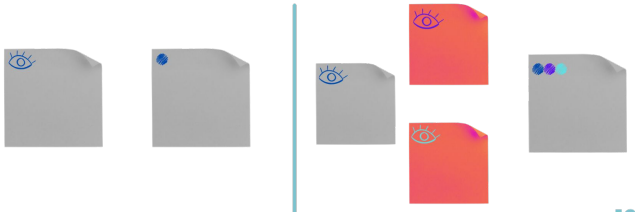


Do these relationships have parts and names? [RDS]



How do things change when we take different perspectives? [P-circle]



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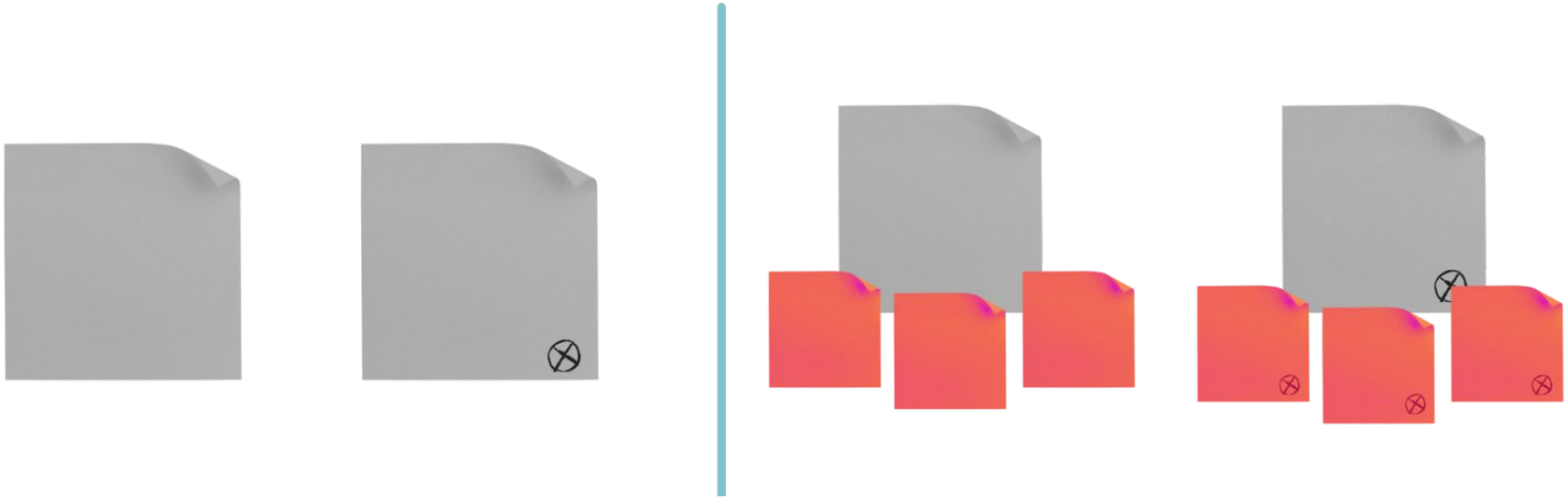
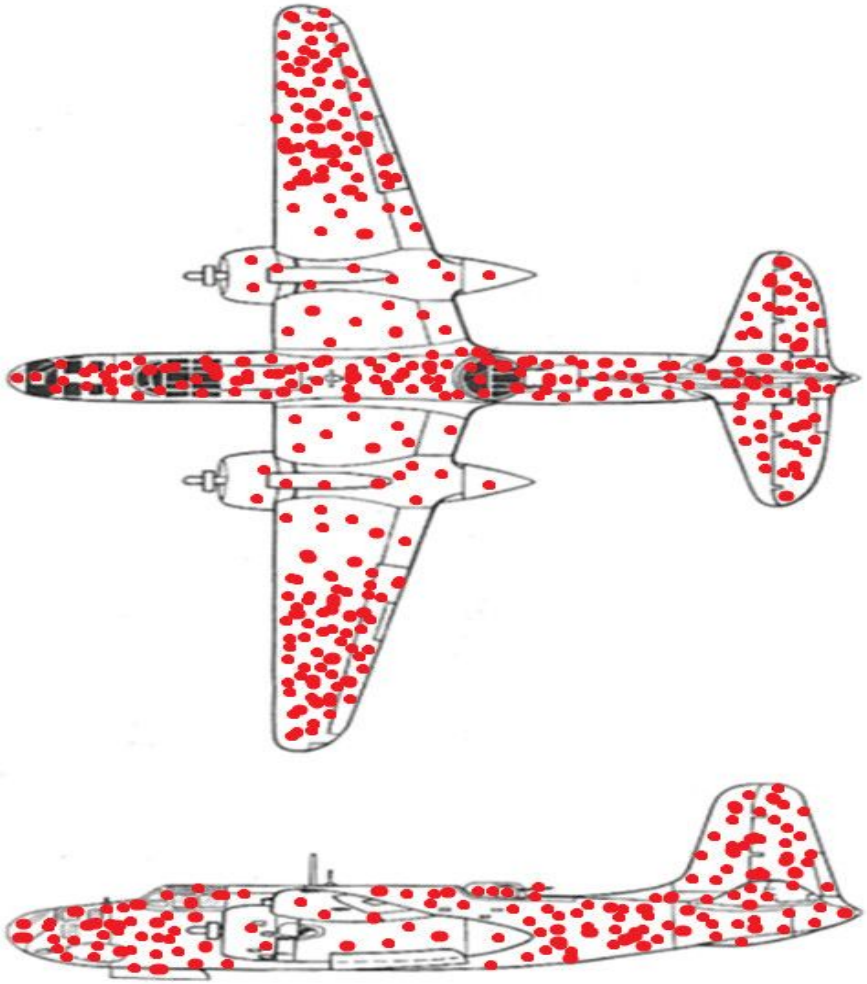
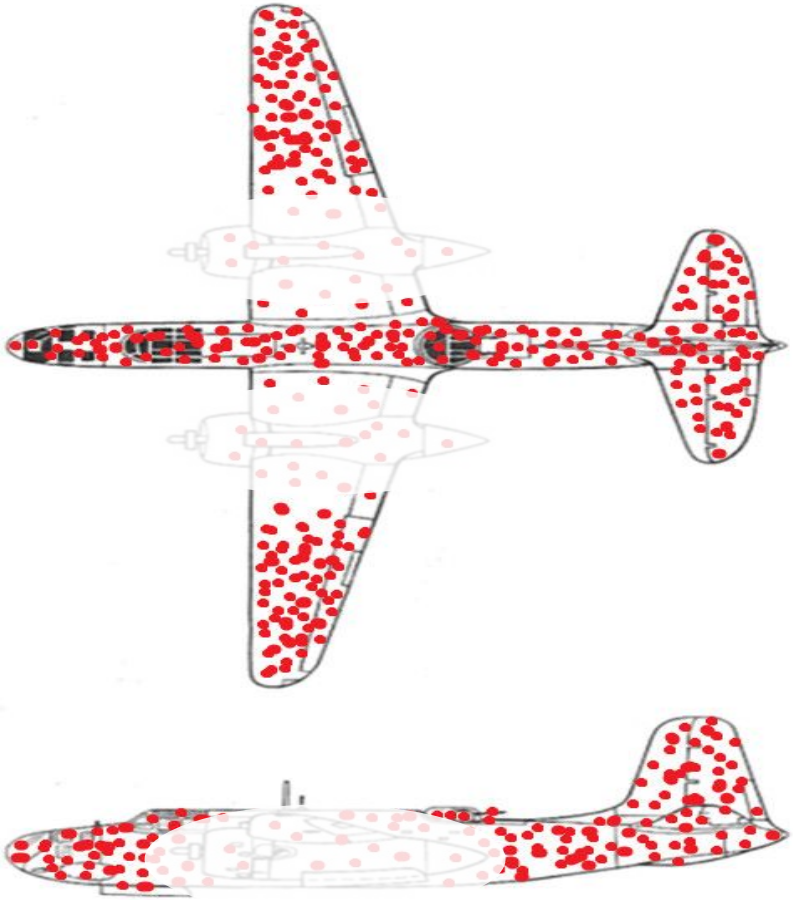
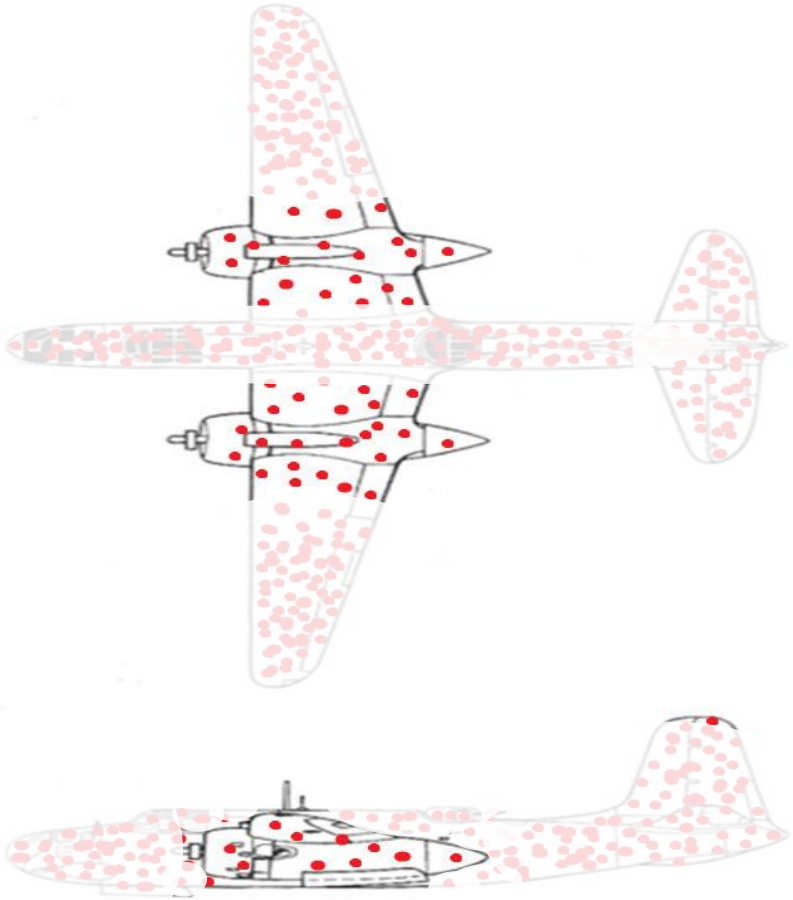






What the Officer's Distinguished
identity (i)-other (o)



What Wald Distinguished
identity (i)-other (o)

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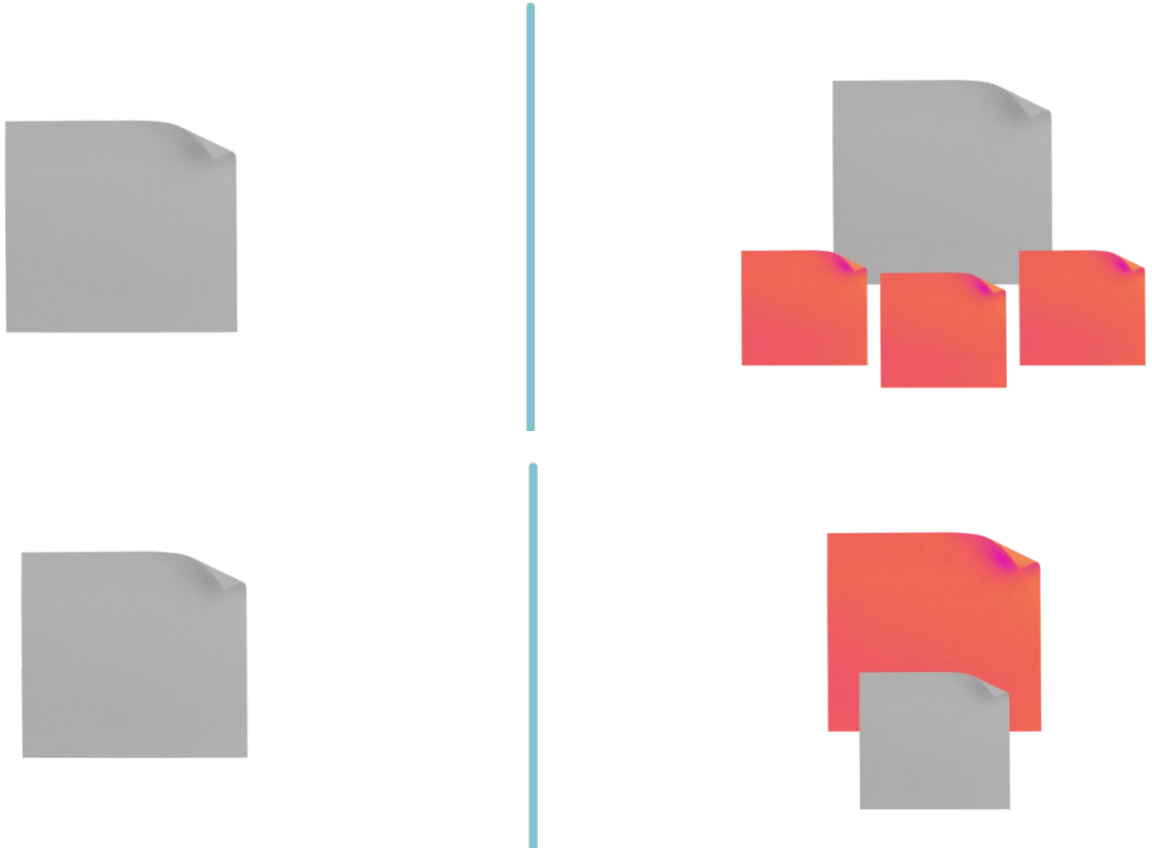
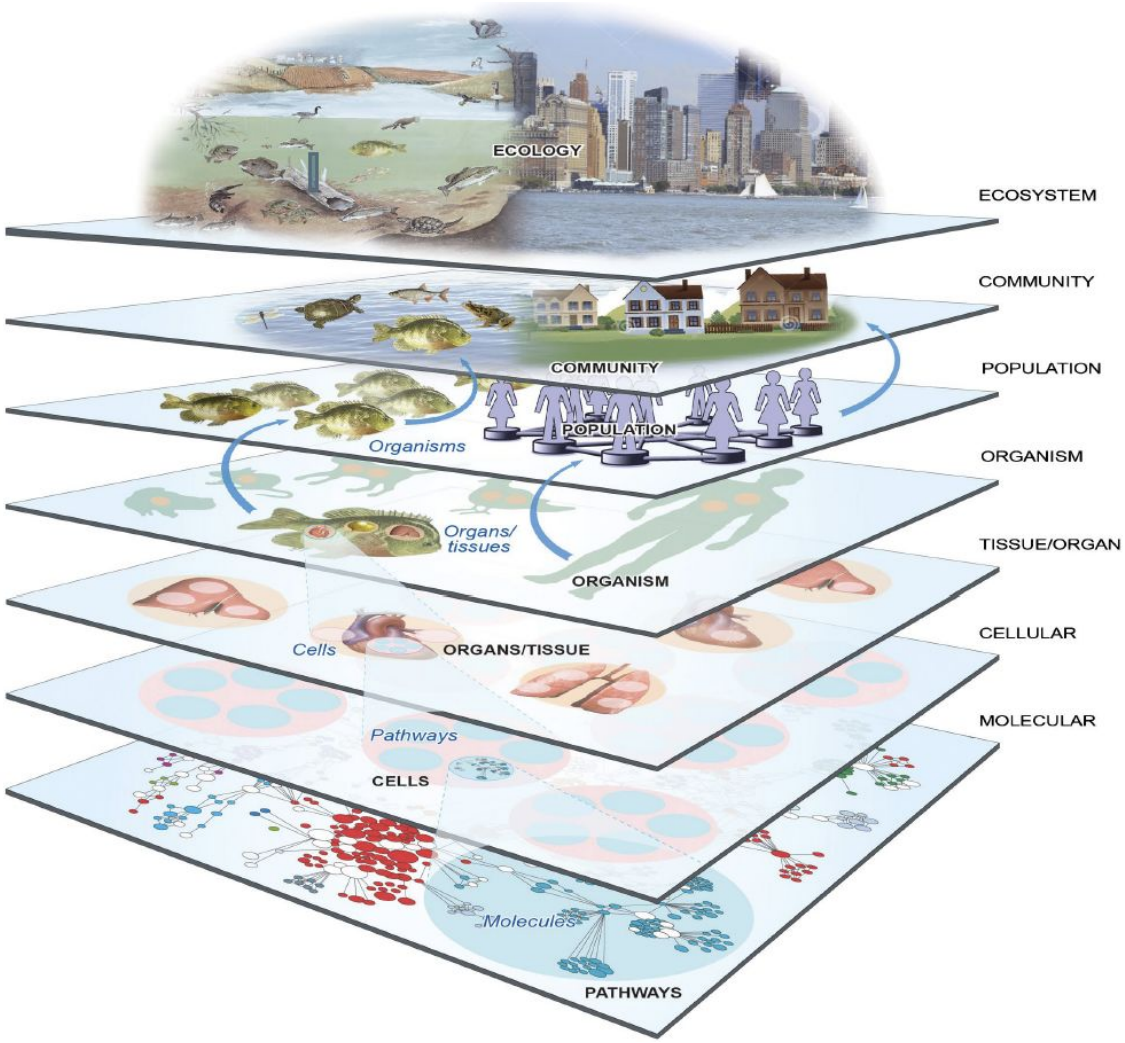


Splitters

Lumpers


ECOLOGY
ECOSYSTEM
COMMUNITY
COMMUNITY
POPULATION
POPULATION
Organisms
ORGANISM
Organs/
tissues
ORGANISM
TISSUE/ORGAN
Cells
ORGANS/TISSUE
CELLULAR
Pathways
CELLS
MOLECULAR
Molecules
PATHWAYS

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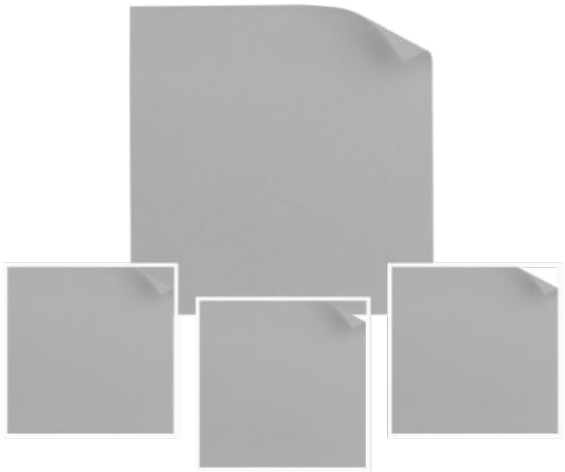

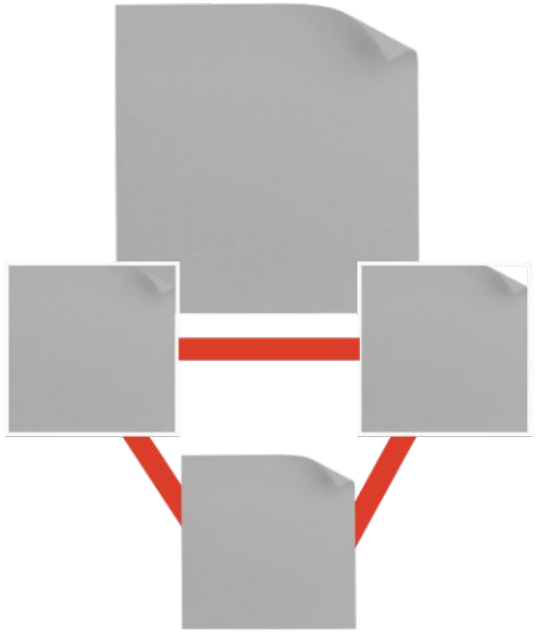

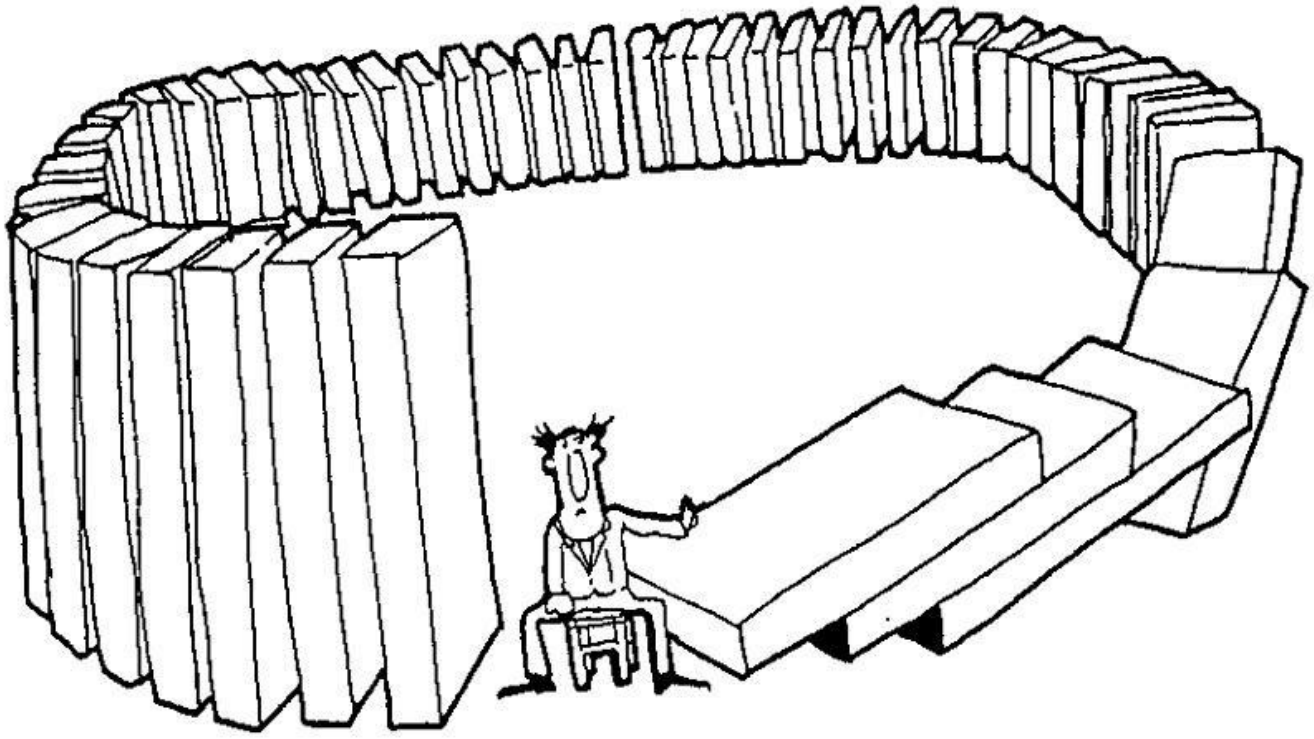

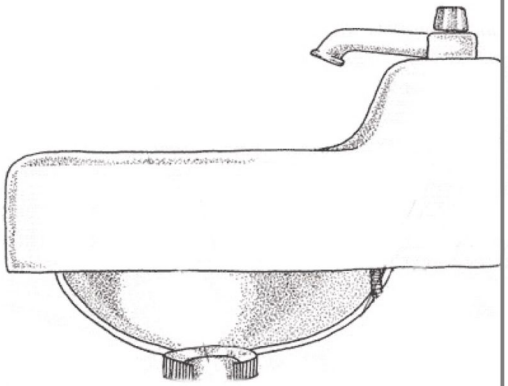

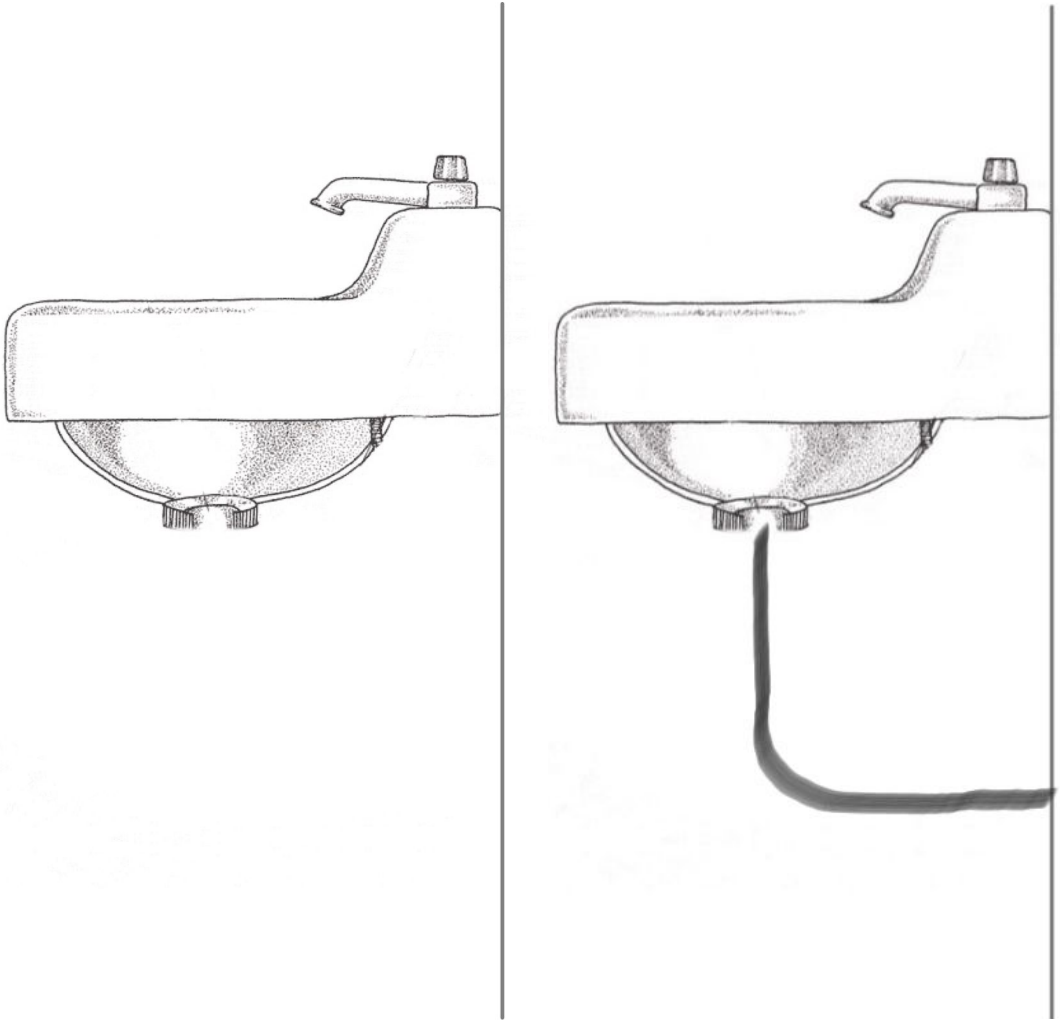

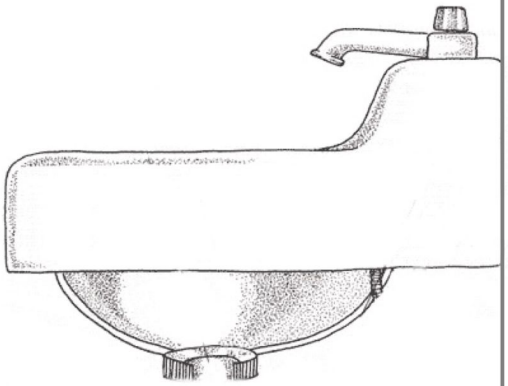

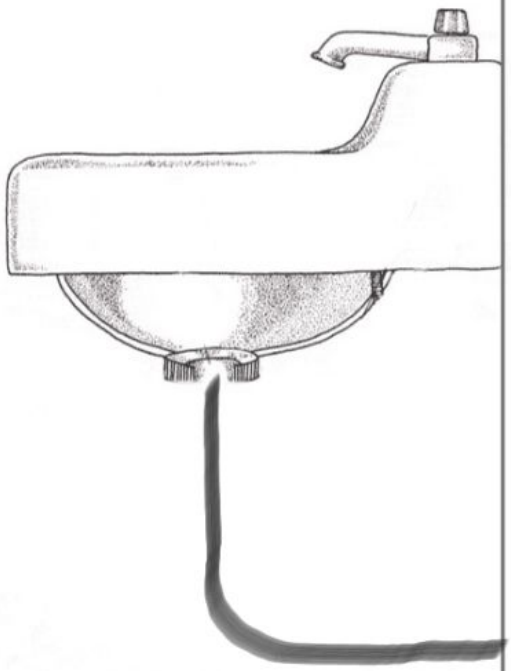

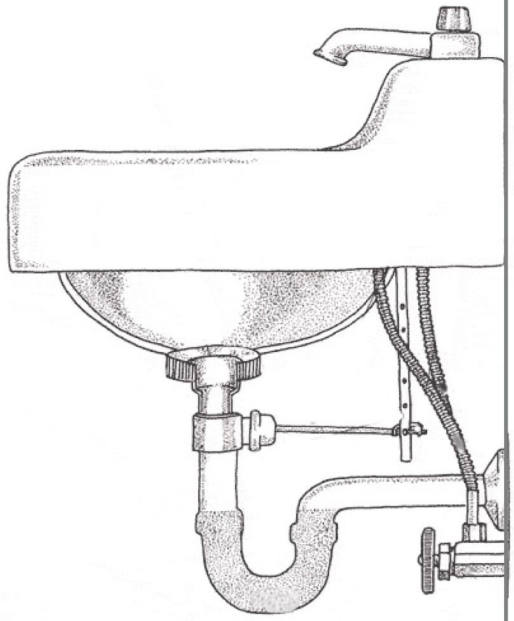

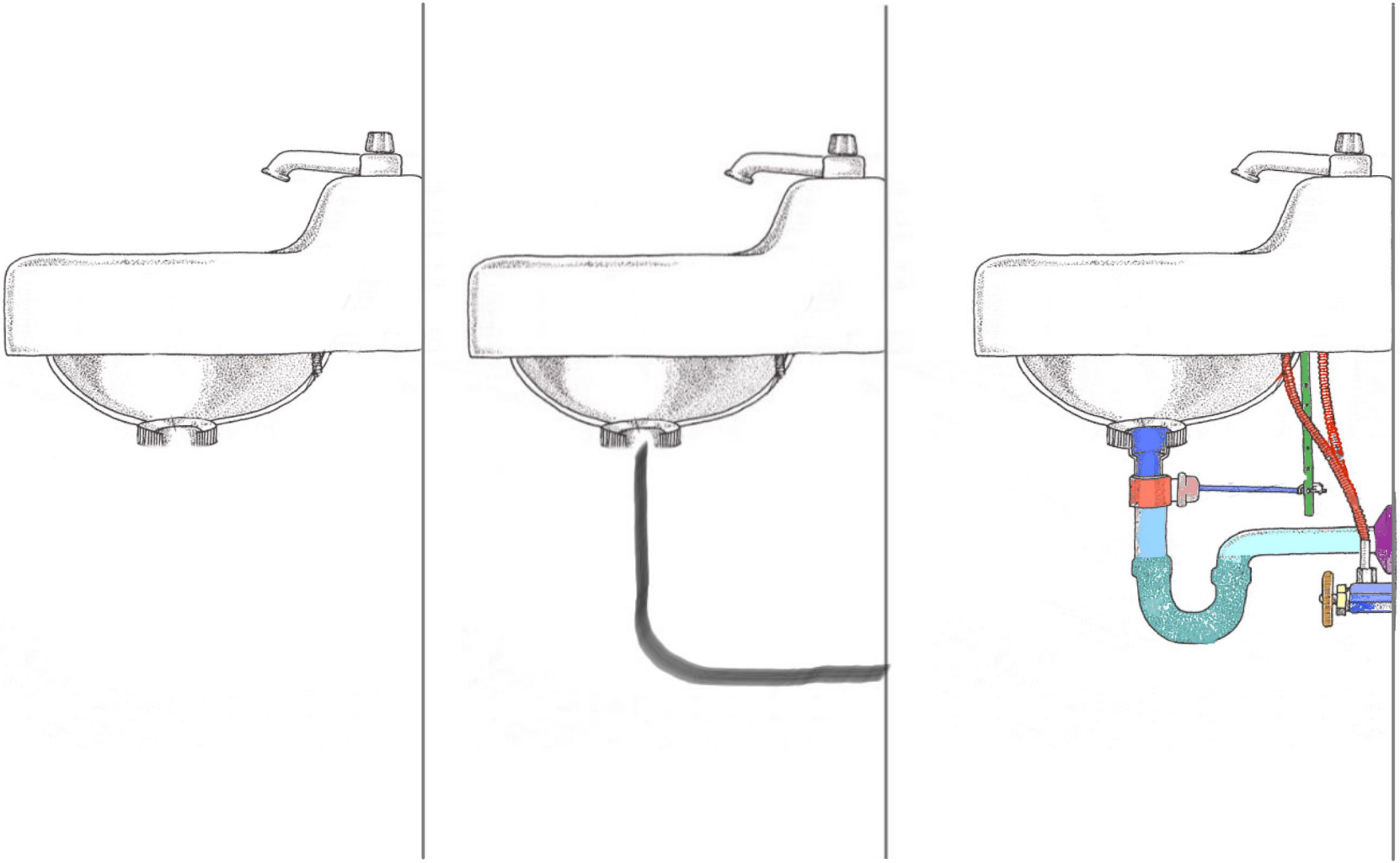

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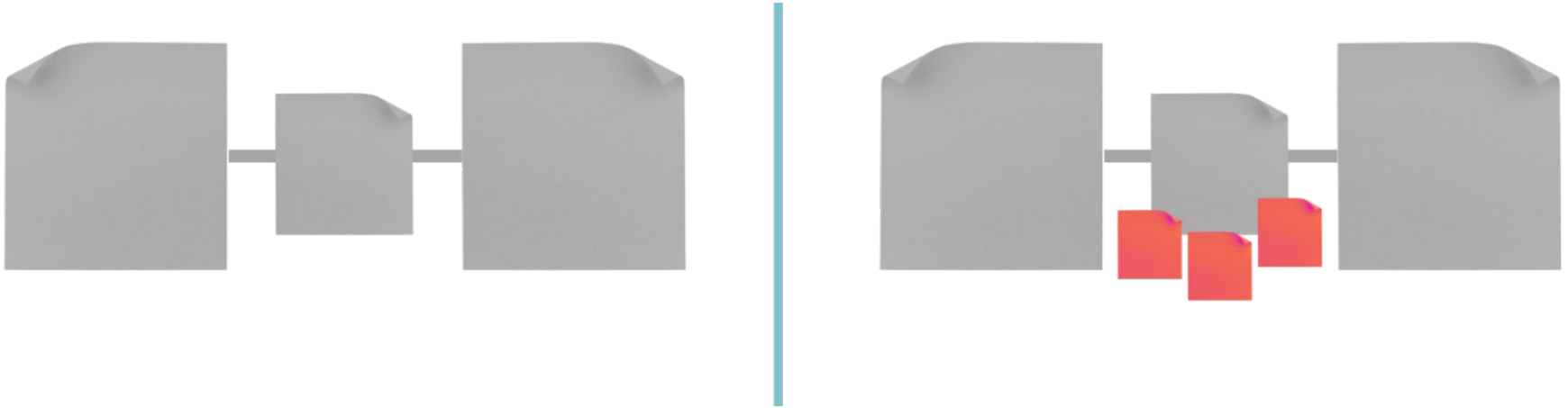


R-D-S

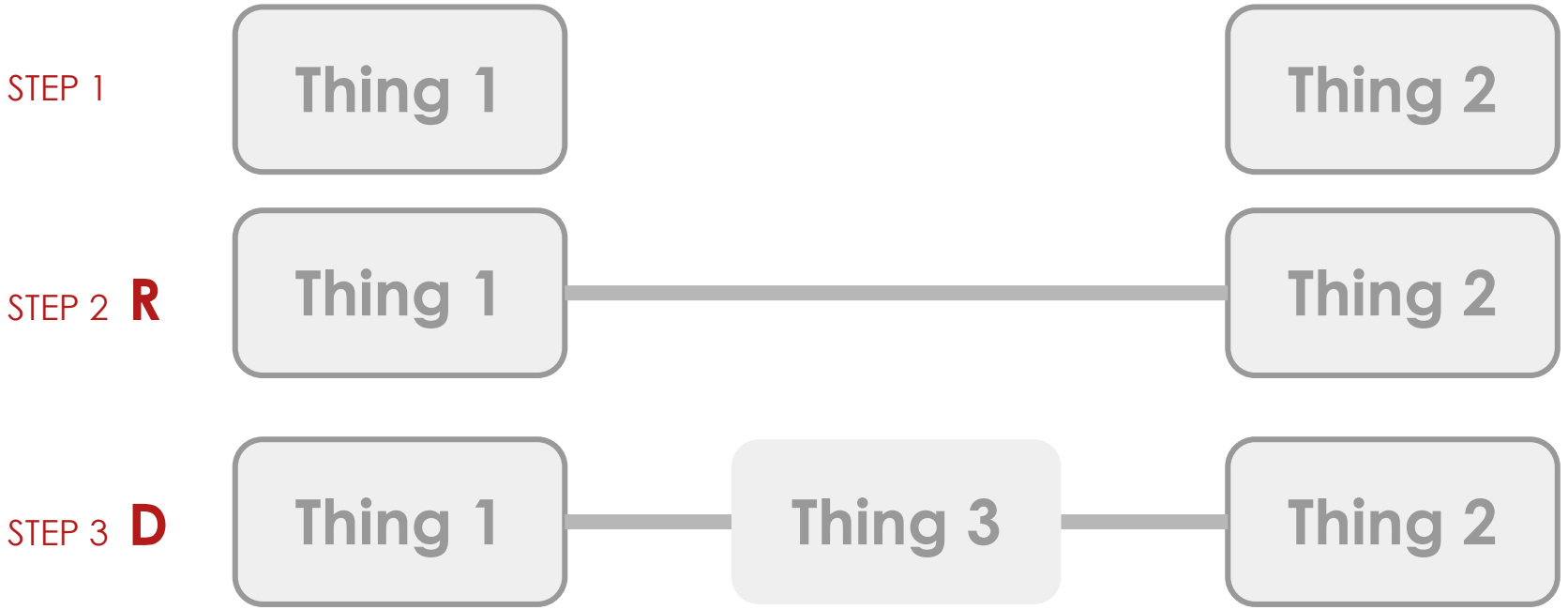
1. **Relationship:** relate two things or ideas
2. **Distinction:** name this relationship
3. **System:** zoom into the parts of this relationship

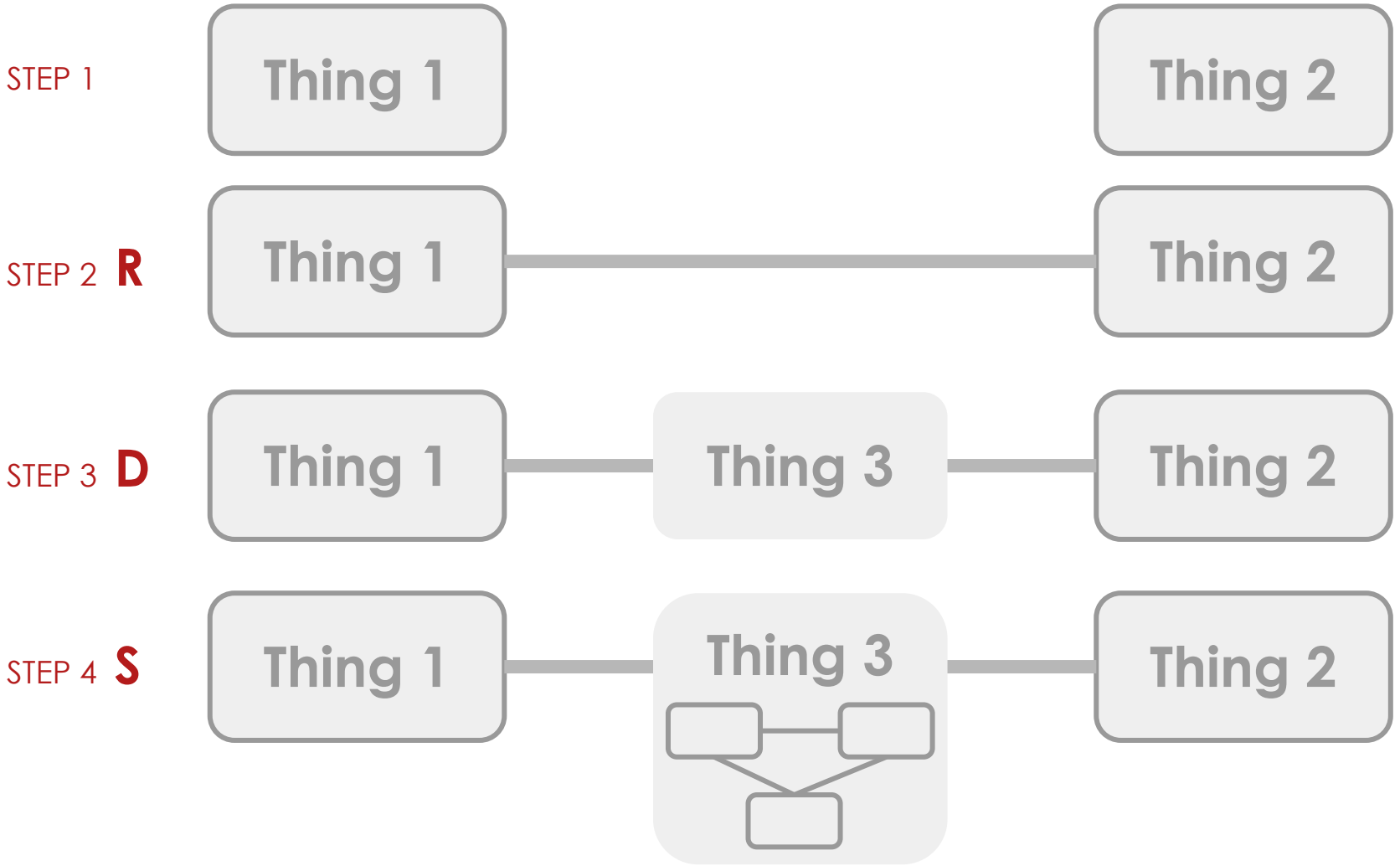
STEP 1

Thing 1

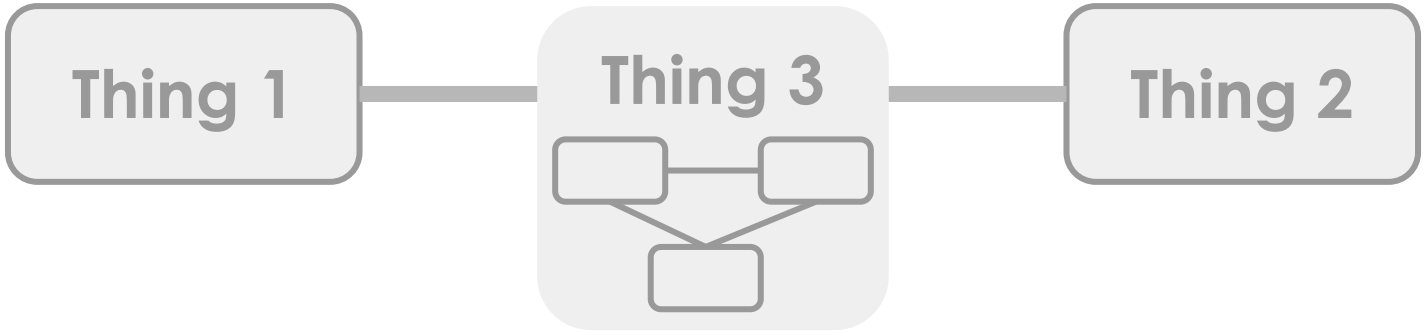
Thing 2

STEP 1
Thing 1
Thing 2
STEP 2
R
Thing 1
Thing 2

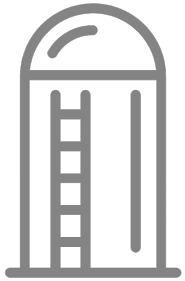

STEP 1
Thing 1
Thing 2
STEP 2 R
Thing 1
Thing 2
STEP 3 D
Thing 1
Thing 3
Thing 2


STEP 1
Thing 1
Thing 2
STEP 2 R
Thing 1
Thing 2
STEP 3 D
Thing 1
Thing 3
Thing 2
STEP 4 S
Thing 1
Thing 3
Thing 2

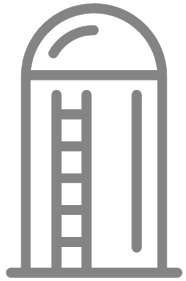
RDS



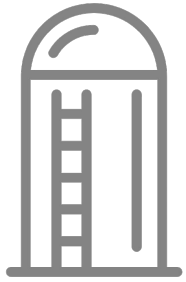
Engineering



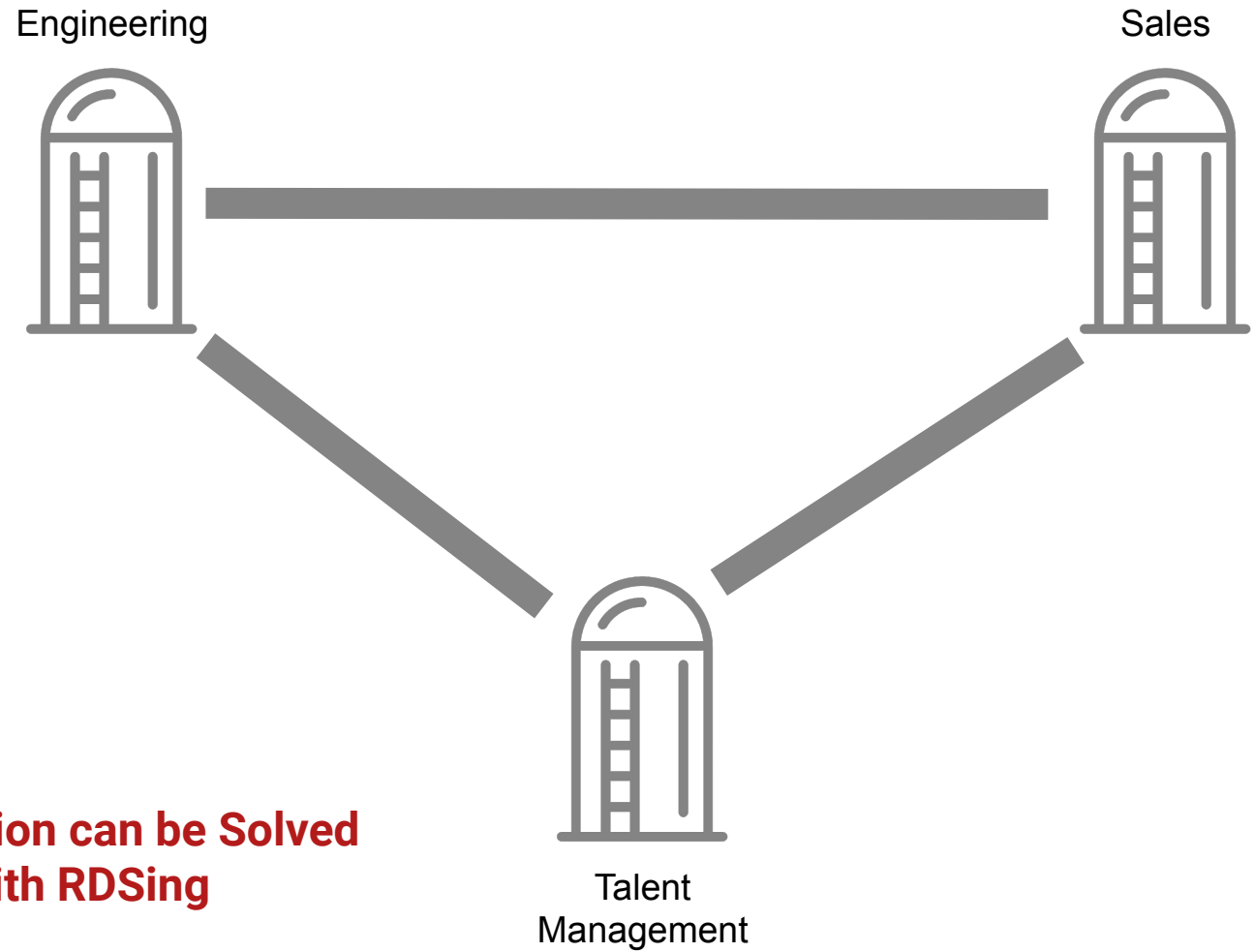
Sales



Siloification can be Solved with RDSing



Talent Management



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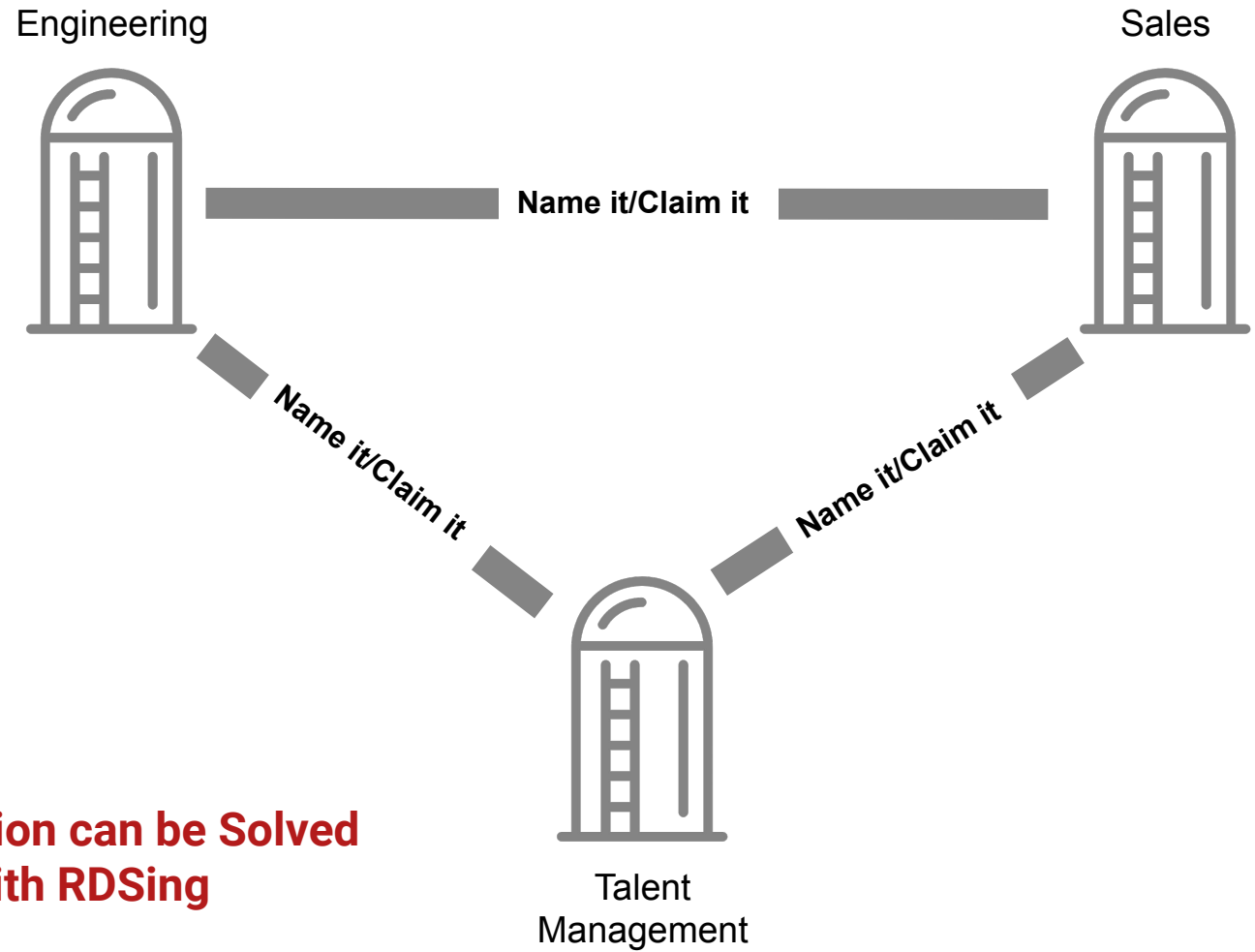

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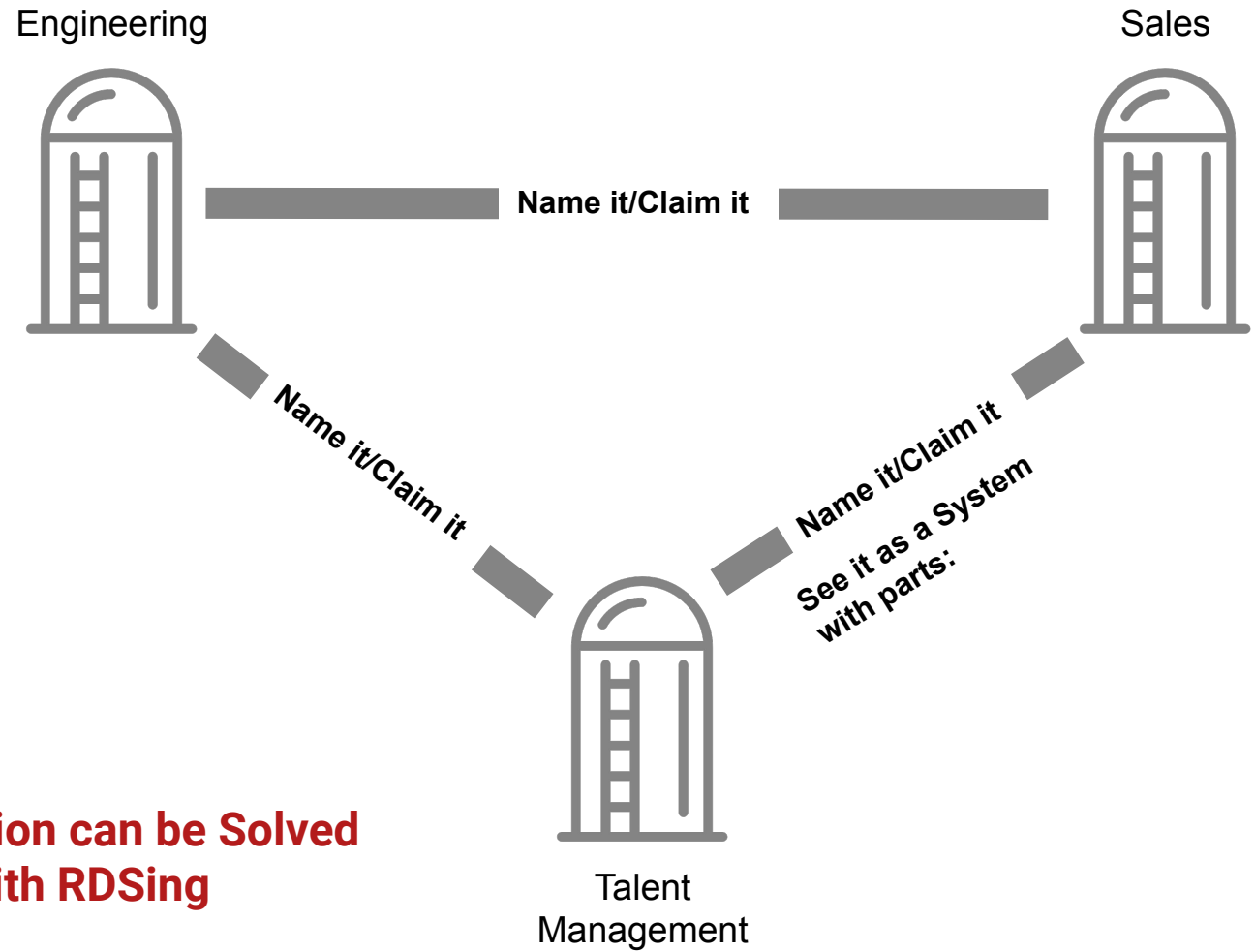

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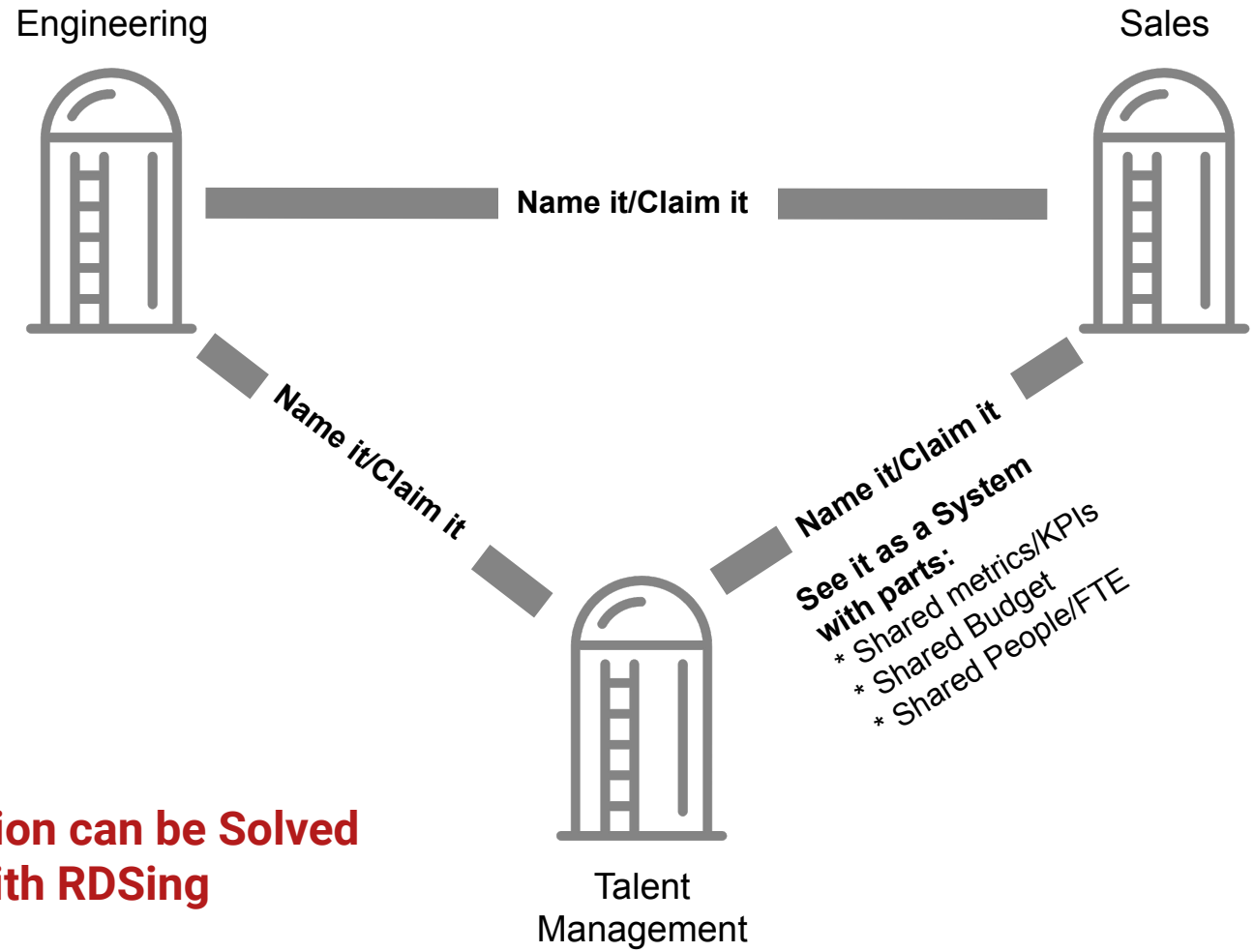
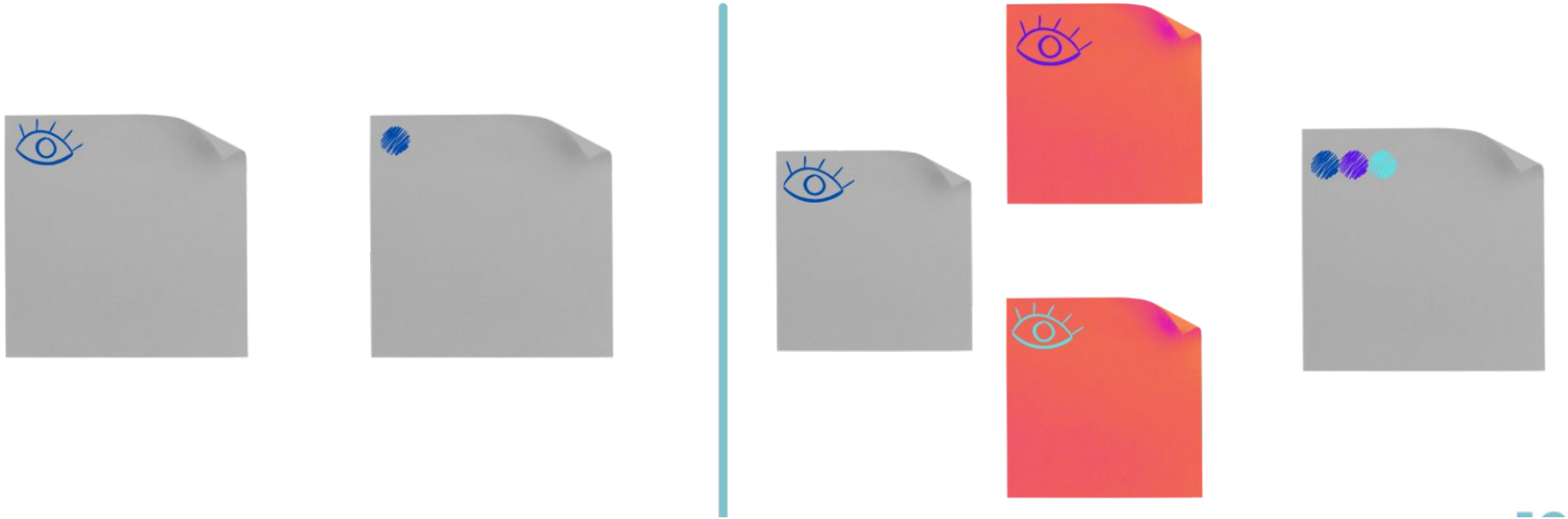


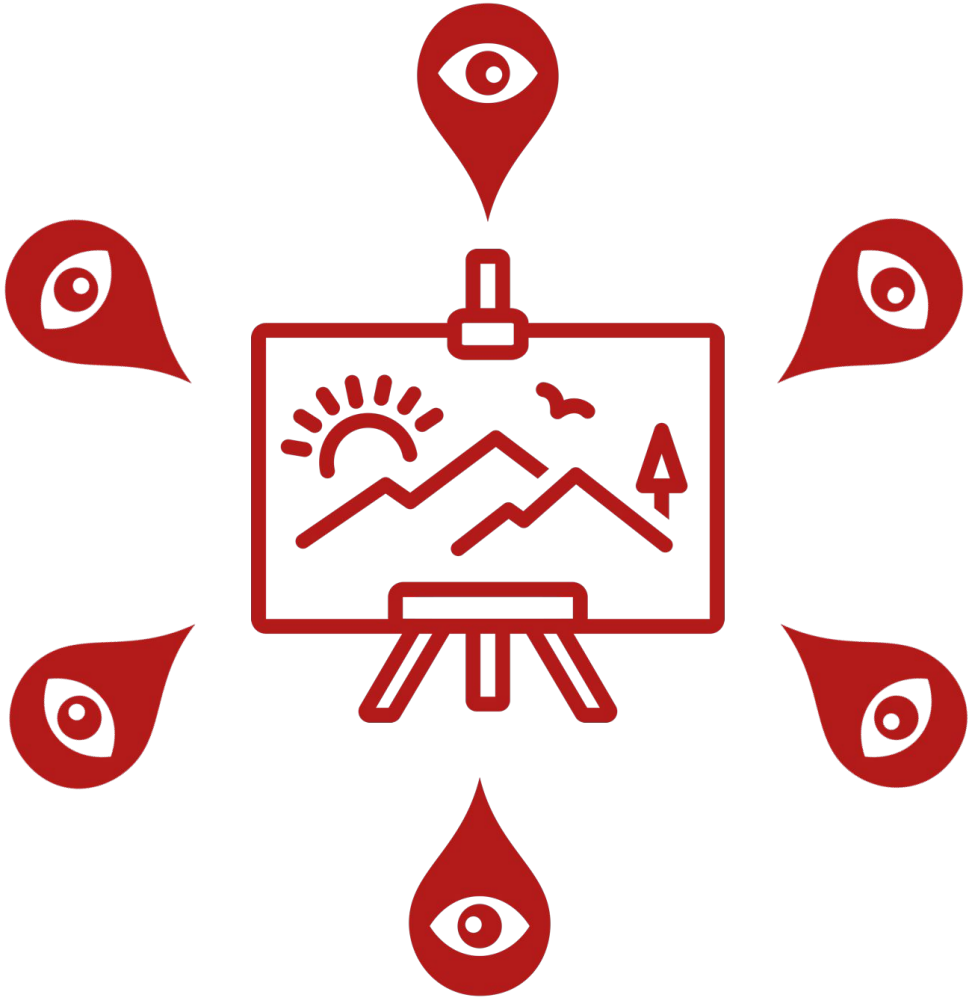
Siloification can be Solved with RDSing

A Deeper Dive into Silos

PROBLEM	SOLUTION
Individual people on a single team are siloed	RDS the *people*
Individual teams that need to work together are siloed	RDS the *teams*
A family of products and services are siloed	RDS the *products*
Separate initiatives within a department are siloed	RDS the *initiatives*
Functional departments within a division are siloed	RDS the *departments*
Separate divisions within an enterprise are siloed	RDS the *divisions*
Several enterprises belonging to a partnership are siloed	RDS the *enterprises*

How do things change when we take different perspectives? [P-circle]





Partners: WHO, World Bank, UNICEF…
State-level Authorities
Ministry of Health
Many more…
Civil Society Organizations
Any missing???

Economic

Historical

Health & Safety

Emotional

Security

Cultural

Organizational

Technological

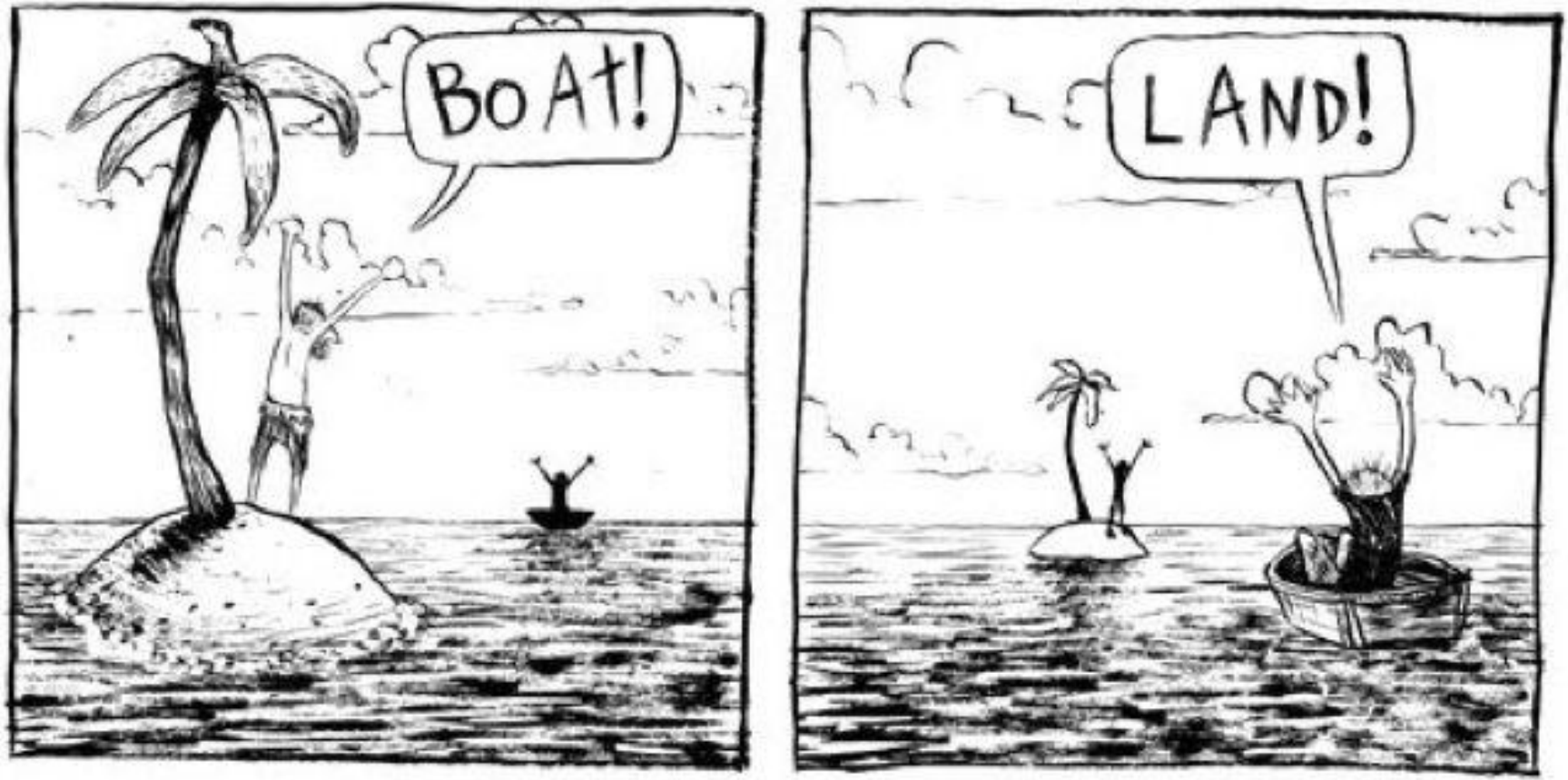
Social

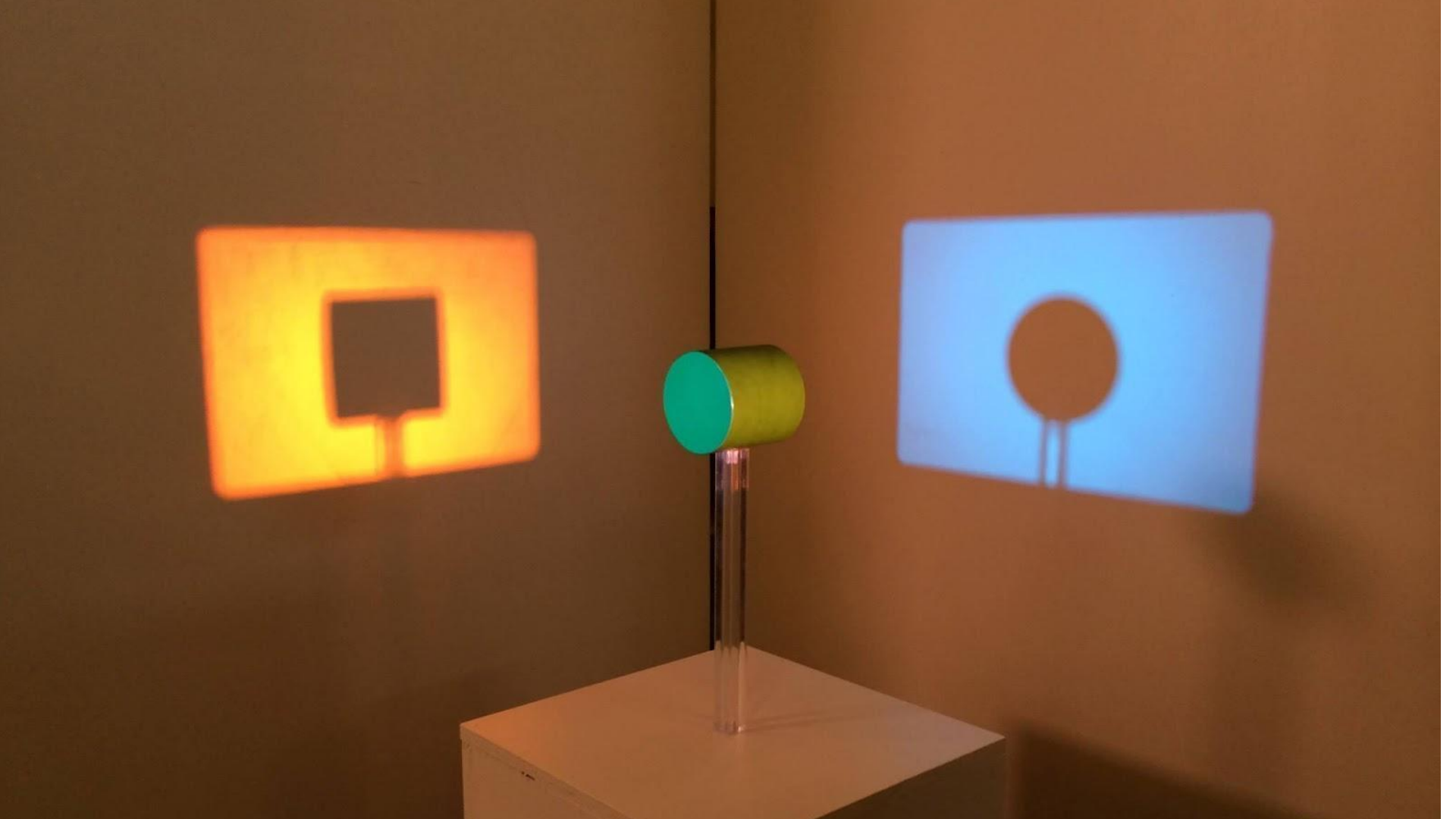
Political

Moral/Ethical

Ecological

Legal


BOAT!
LAND!



5 Mental Moves Research Shows Help Solve Problems

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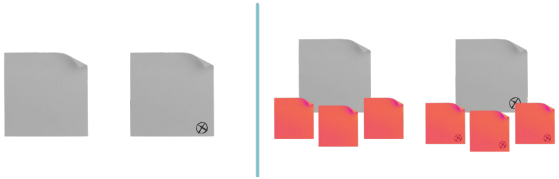

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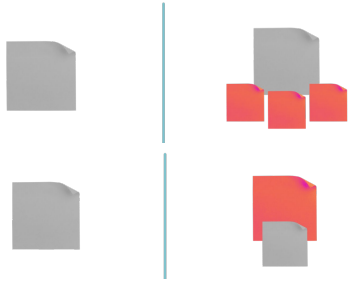

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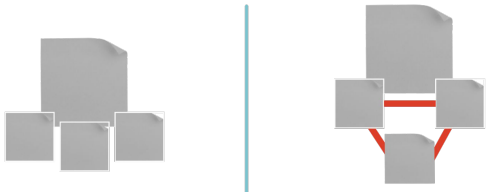

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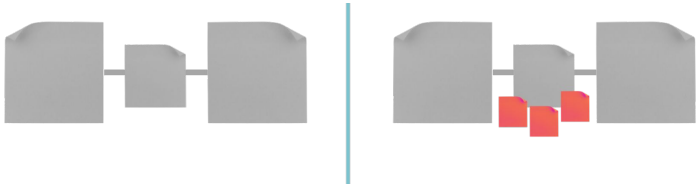

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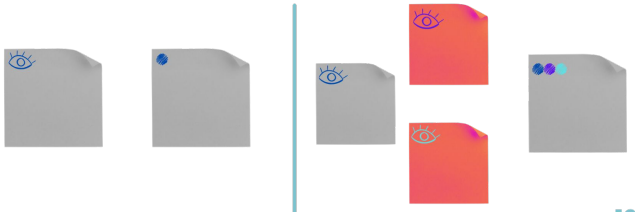


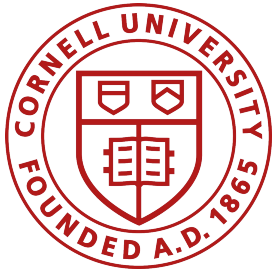
Steps to Falling in Love with Reality

1. Be insatiably curious, understand systems before you solve problems

2. Learn to Love **mental models** and recognize bias (DSRP Loop)

3. Memorize DSRP Rules (4) and Elements (8)

4. Develop a Daily Practice of DSRP Moves (start with top 5)



SYSTEMS THINKING MADE SIMPLE

Derek Cabrera, PhD
Laura Cabrera, PhD
Cornell University
Cabrera Research Lab
lac19@cornell.edu
dac66@cornell.edu

We're on...

#systemsthinking
#DSRP
#VMCL

Thanks!

NSF
USDA
SANTA FE INSTITUTE