

Representations and Compressions

A charcoal or pencil sketch of a landscape. The top half shows a dark, textured horizon line representing a body of water or a distant shore. Below this, a lighter, textured area represents the foreground. In the lower right, a group of five stylized human figures are sketched, appearing to be in conversation or walking. The overall style is gestural and expressive.

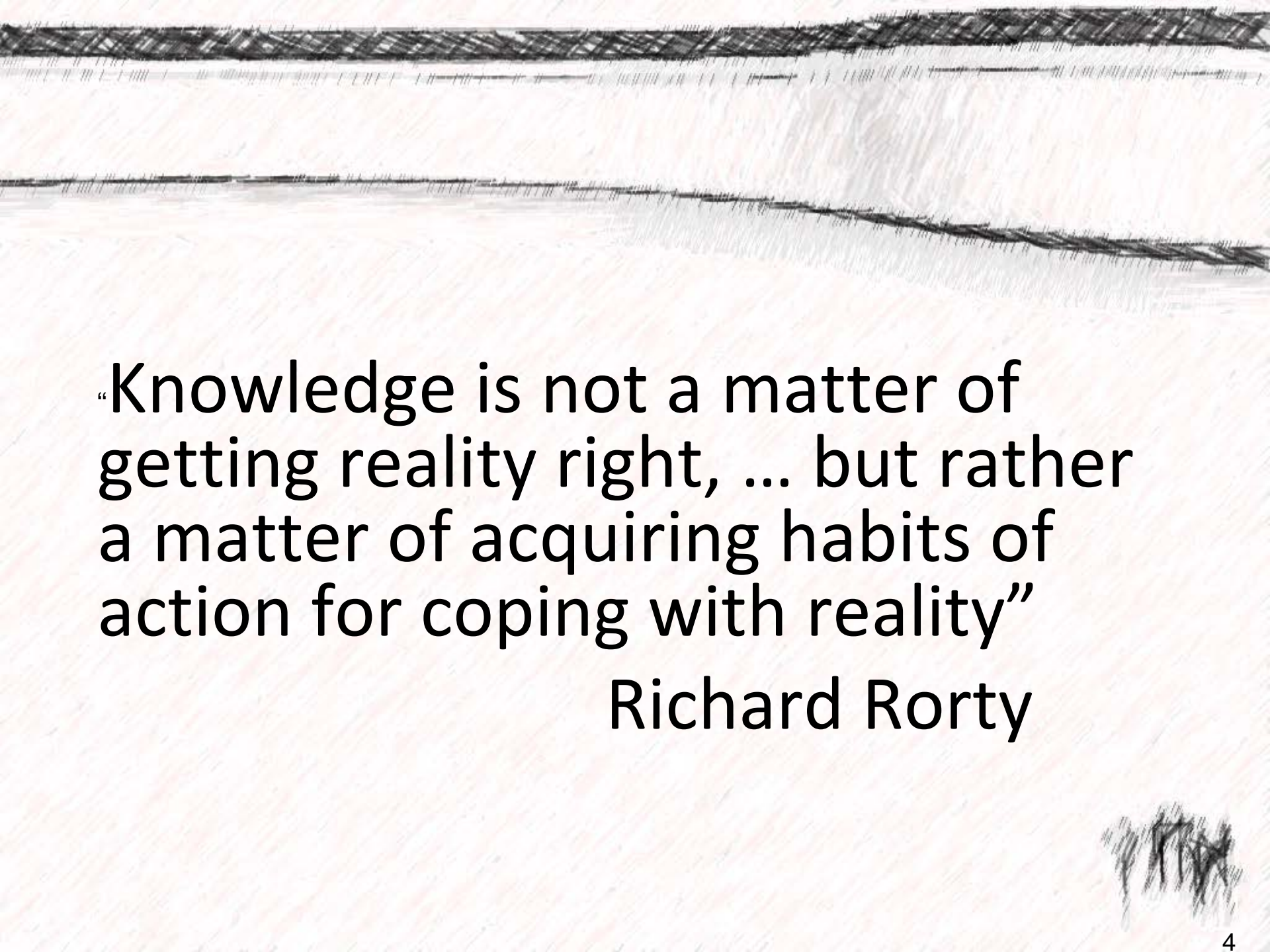
Opportunity/Risk from Heuristic Shortcuts

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“Knowledge is not a matter of getting reality right, ... but rather a matter of acquiring habits of action for coping with reality”

Richard Rorty

Representations

- The action or fact of one item standing for another.
- The substitution of an individual or class in place of another (indexicals)

Representations are labels and sign tokens of membership in a predefined category

Compressions

- Compression is the reduction in size of data in order to save space or transmission time.
- Compressions can be either lossy {some information is permanently lost) or lossless (all information can be restored).

Compressions are stories, models, narratives which allow the user to ask “what if”

What is the Problem?

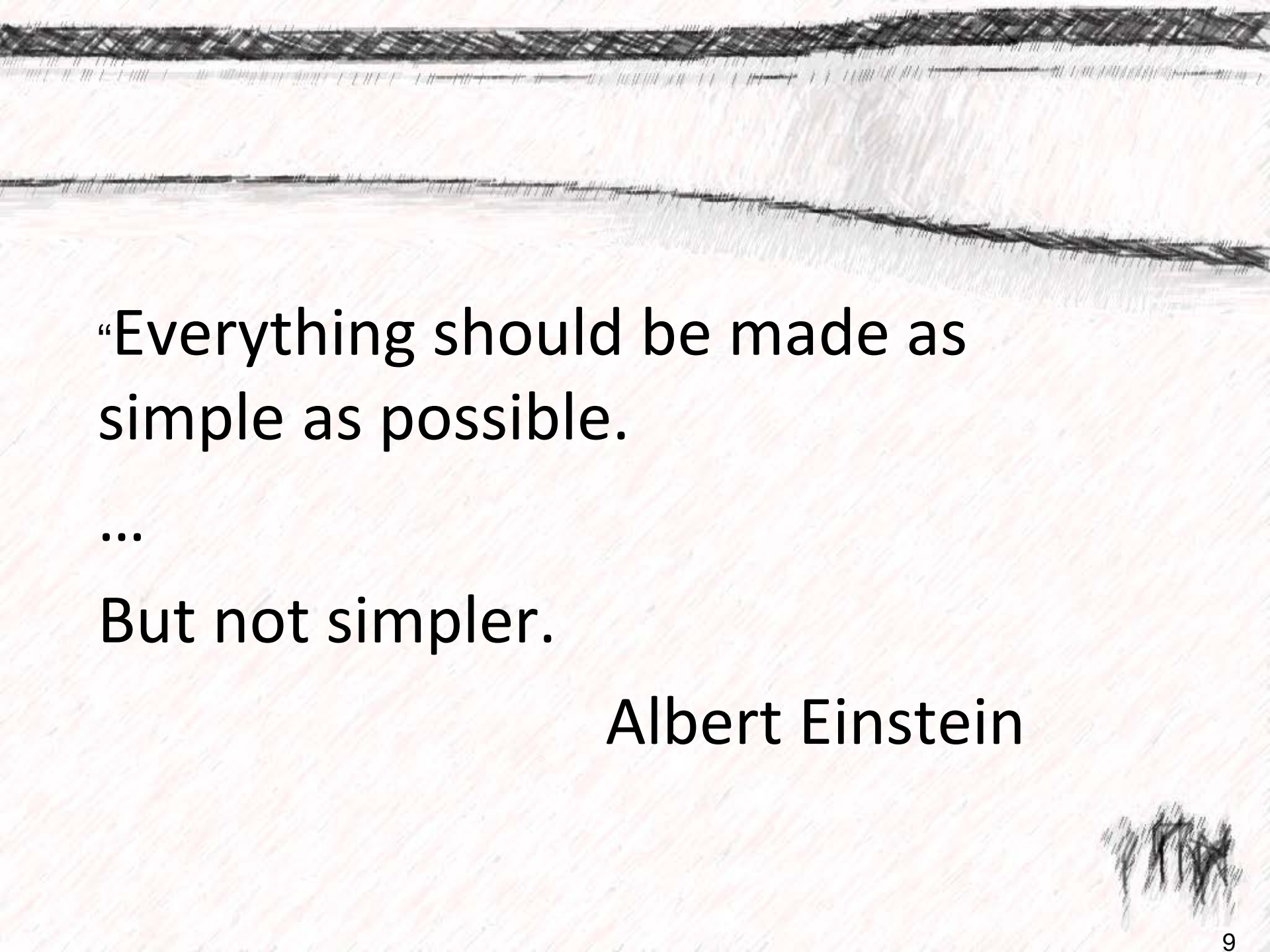
Models based on representations are concerned with reliable prediction

Models based on compressions are concerned with attaining better attunement with affordances

These goals are NOT the same

But all too often the models are confused





“Everything should be made as
simple as possible.

...

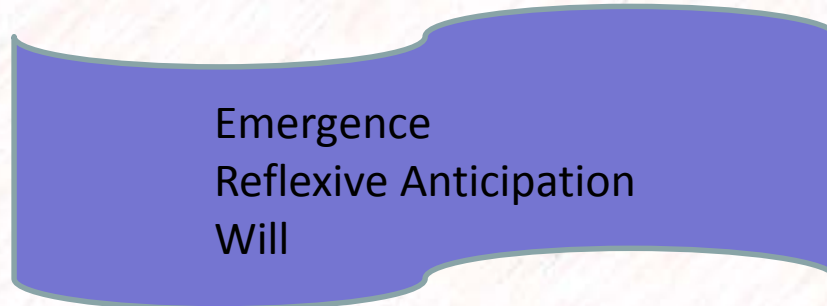
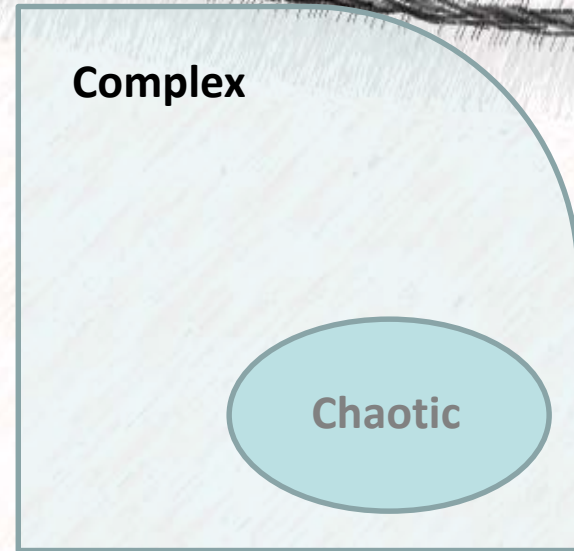
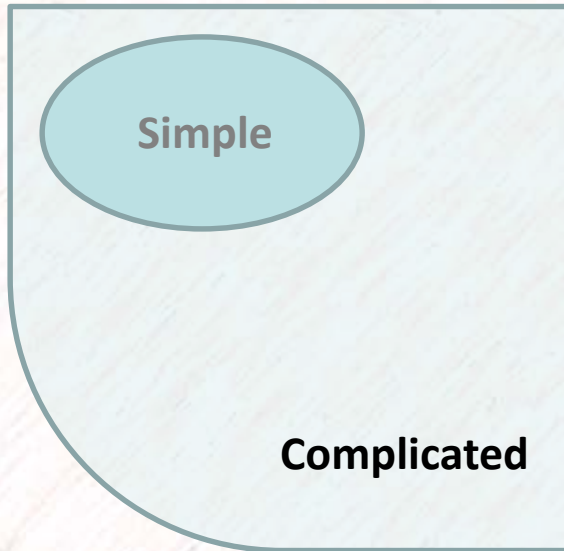
But not simpler.

Albert Einstein

Ontology

Science 1

Science 2



Science I

Simple

Focus is on
Description

Deduction

Complicated

Focus is on Reliable
Prediction

Induction via Probabilistic
Inference



Science II

Complex

Chaotic

Focus is on
Sagacity(Preparedness)
/
Resilience/ Robustness

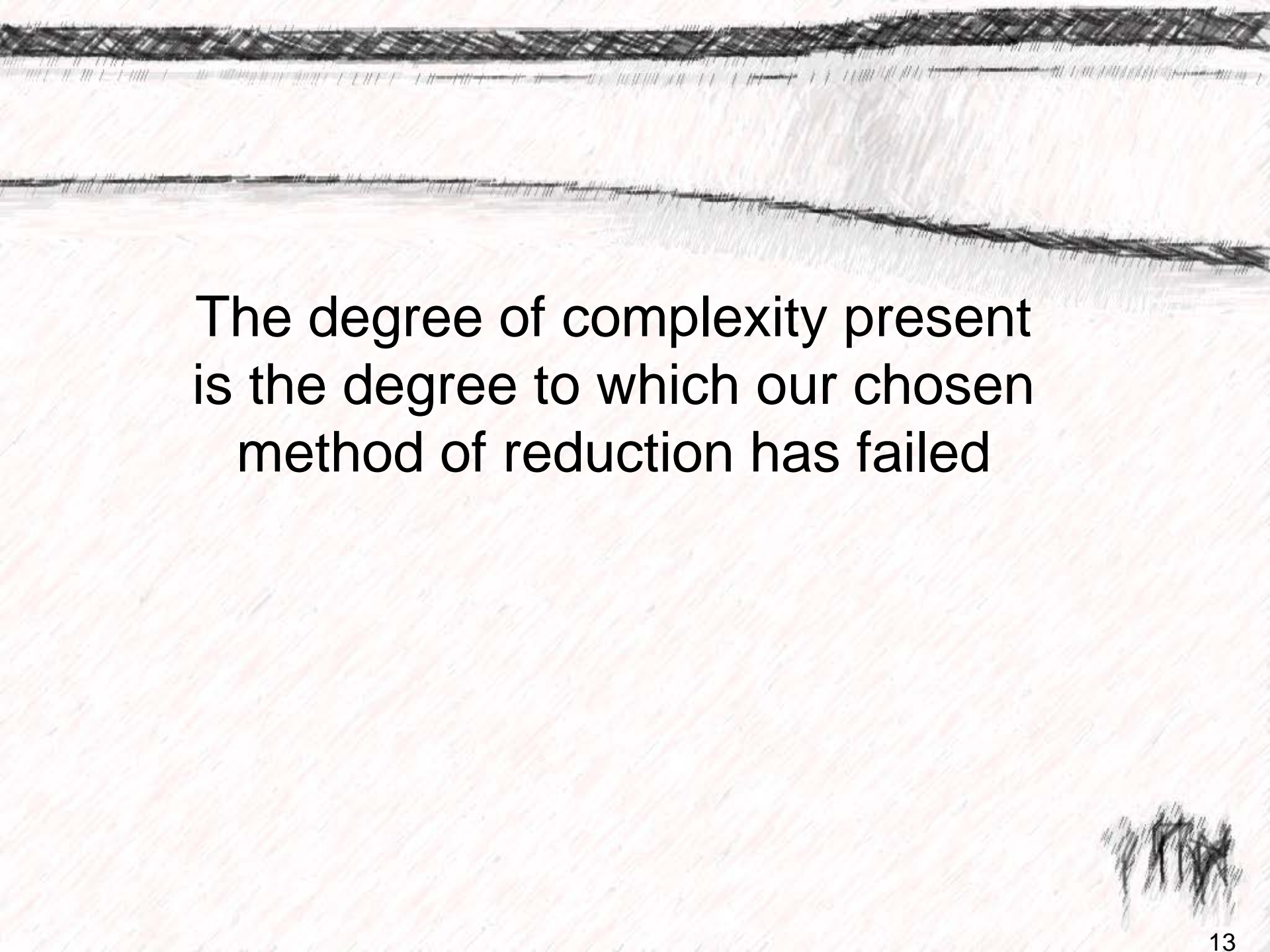


Focus is on Pattern
Recognition/Identity
Assertion

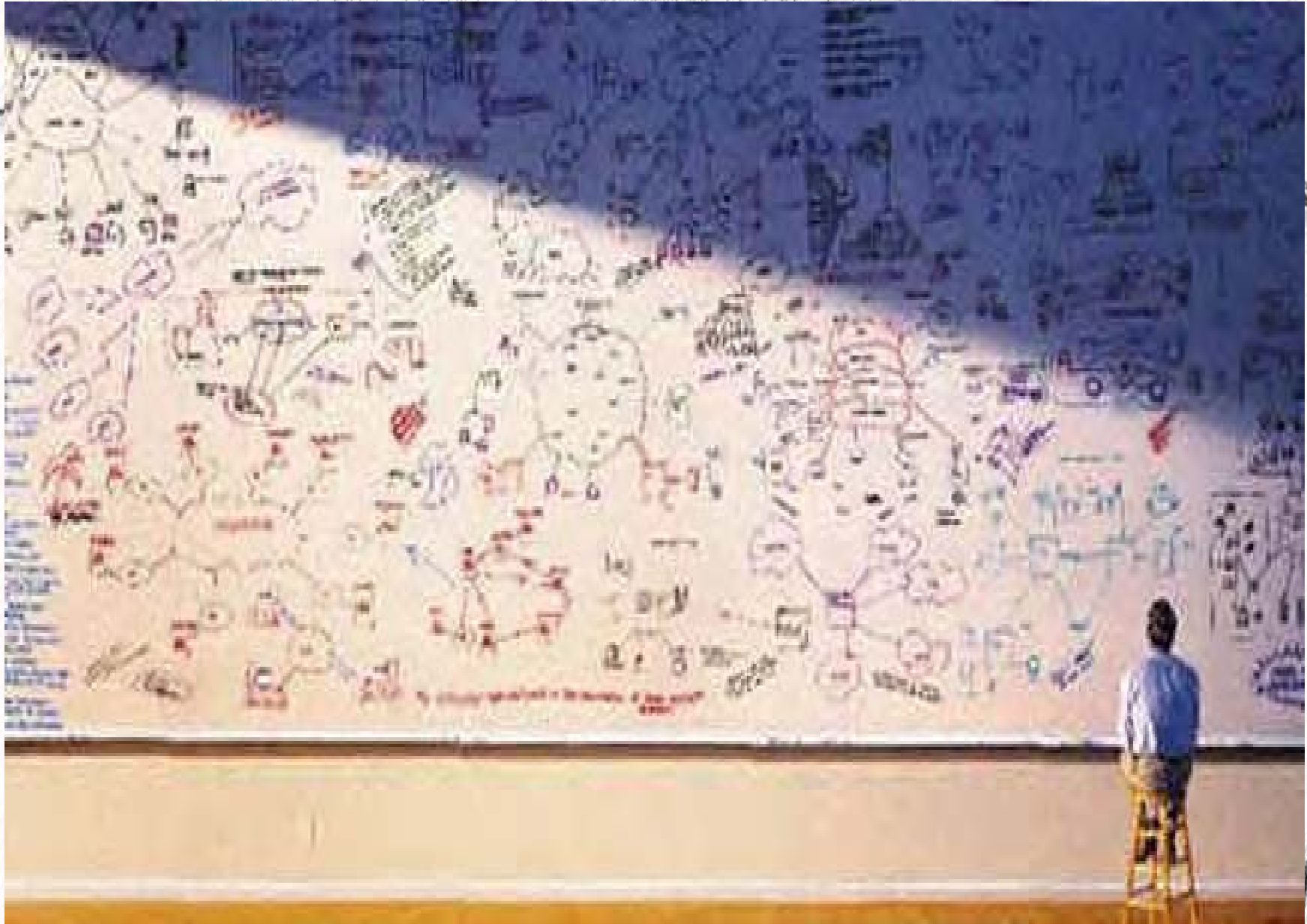
Abduction

Assert Identity





The degree of complexity present
is the degree to which our chosen
method of reduction has failed





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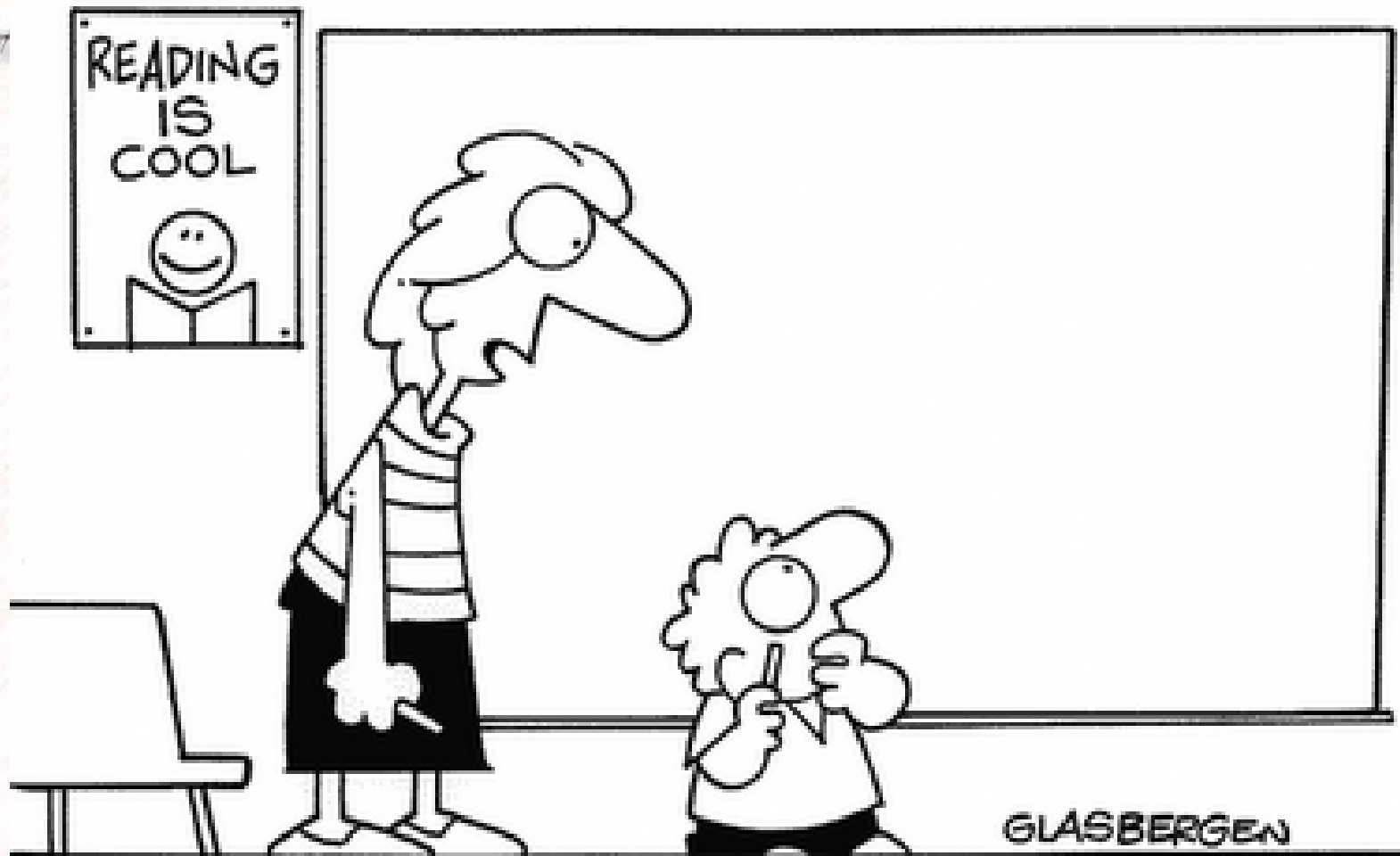


"Are you smoking or jumping?"

17/18



Handwritten signature or mark.



“There aren’t any icons to click. It’s a chalk board.”

This Room Is Equipped With
Edison Electric Light.

Do not attempt to light with
match. Simply turn key
on wall by the door.

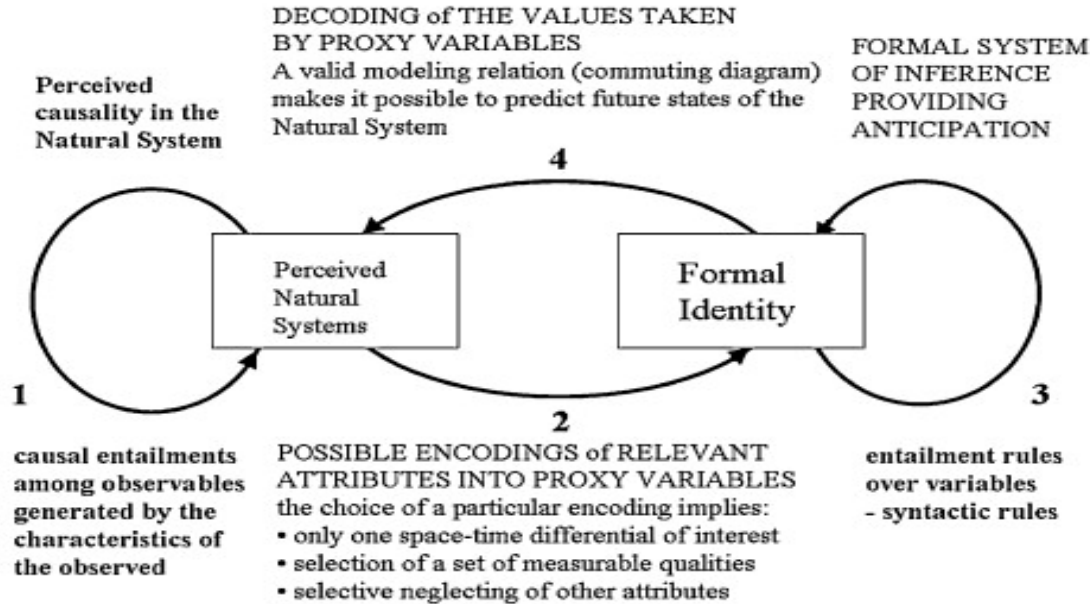
—•••—
The use of Electricity for lighting is in no way harmful
to health, nor does it affect the soundness of sleep.

Challenges to the Representation Model

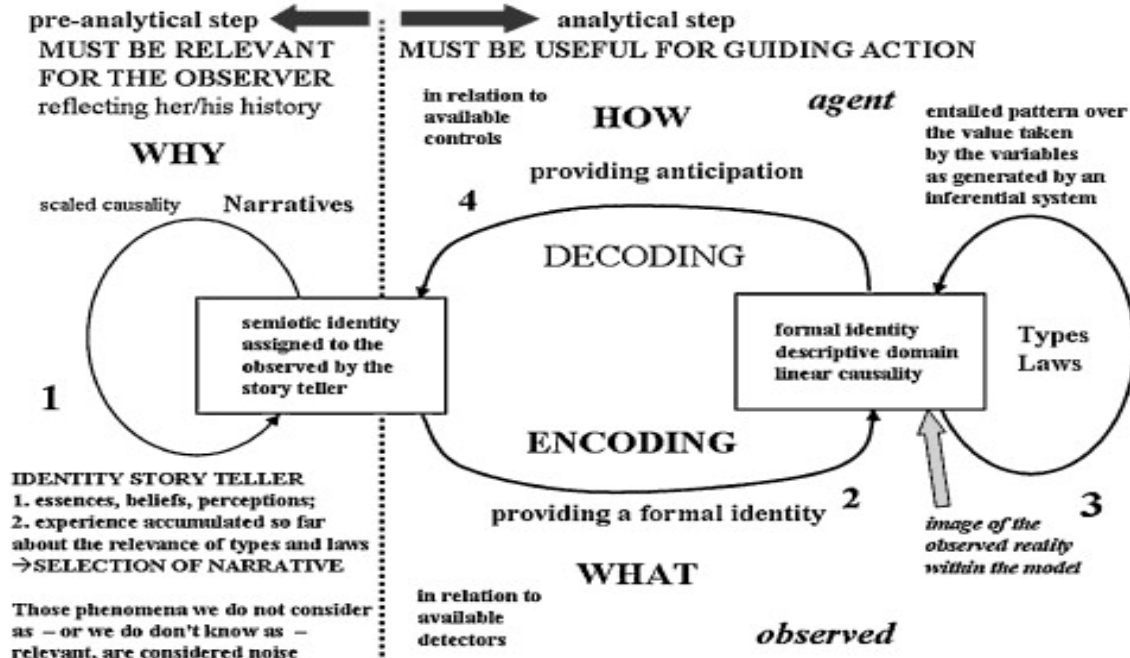
- Anticipation
- Action
- Attention
- Affordances
- Experience
- Learning


(a)

The theory of modeling relation according to Rosen



(b)



A photograph of an elevator control panel on a wall. The panel is dark brown and features two buttons: a silver one on top and a red one on the bottom. To the right of the panel is a white rectangular sign with black text. The sign reads: "There is a possibility that a hand and a leg is pinched by the elevator. Please do not rush into the elevator, when the door is closing." The background wall is light-colored with some faint markings.

There is a possibility
that a hand and a leg is
pinched by the elevator.
Please do not rush into
the elevator, when the
door is closing.

SHERRILL'S
EAT HERE
AND
GET GAS
BILL & ANN--OWNERS


Self Service

- UNLEADED -

297⁹

- UNLEADED PLUS -

307⁹

A yellow rectangular warning sign with a black border is mounted on a blue, textured surface. The sign contains the Chinese characters '小心滑倒' in large, bold, black font. Below the Chinese characters, the English text 'Slip and fall down carefully' is written in a smaller, bold, black font. The background is a blue, crinkled material, possibly a tarp or plastic sheeting, with some dark spots and a small red object visible near the bottom left of the sign.

小心滑倒

Slip and fall down carefully

Takeaways

Codes are NOT Cues

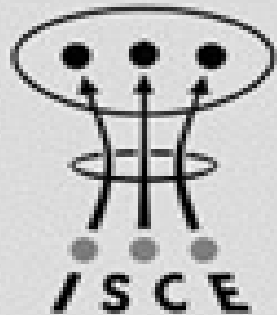
Labels are NOT Stories

Humans are NOT Algorithms

Representations are NOT narratives

Context Matters

Efficiency can be the enemy of Resilience



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