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Applying Knowledge Management and Responsibility: Gödel in Context [Ideas for a New Enlightenment]

(Re-Combining Theories and Practices for a European Competitive Advantage)

Univ.-Prof. Dr. Rainer Born
rainer.born@jku.at / rainer.born@univie.ac.at

Thesis one (justified empirically and theoretically):

One cannot simply reduce the (re-) production of, for instance, entrepreneurial success (nor the parameter values to measure it) to the application of simple rules/routines (or the instantiation of algorithms) in such a way, that some user of those rules does not need to enrich their own BACKGROUND KNOWLEDGE (provided one is not just interested in short-term success or in faking success) to use those rules properly.

Learning is essential! – The assumption of an universal common sense can prove problematic.

Knowledge Management has amongst other things two main tasks:

- 1.) To identify, make explicit and document the knowledge considered to explain and thus to be considered responsible for successful problem solutions (in production and any other relevant contexts).
- 2.) To find persuasive arguments to translate relevant knowledge to the Management in order to successfully enable and support managerial decisions.

Thesis 2)

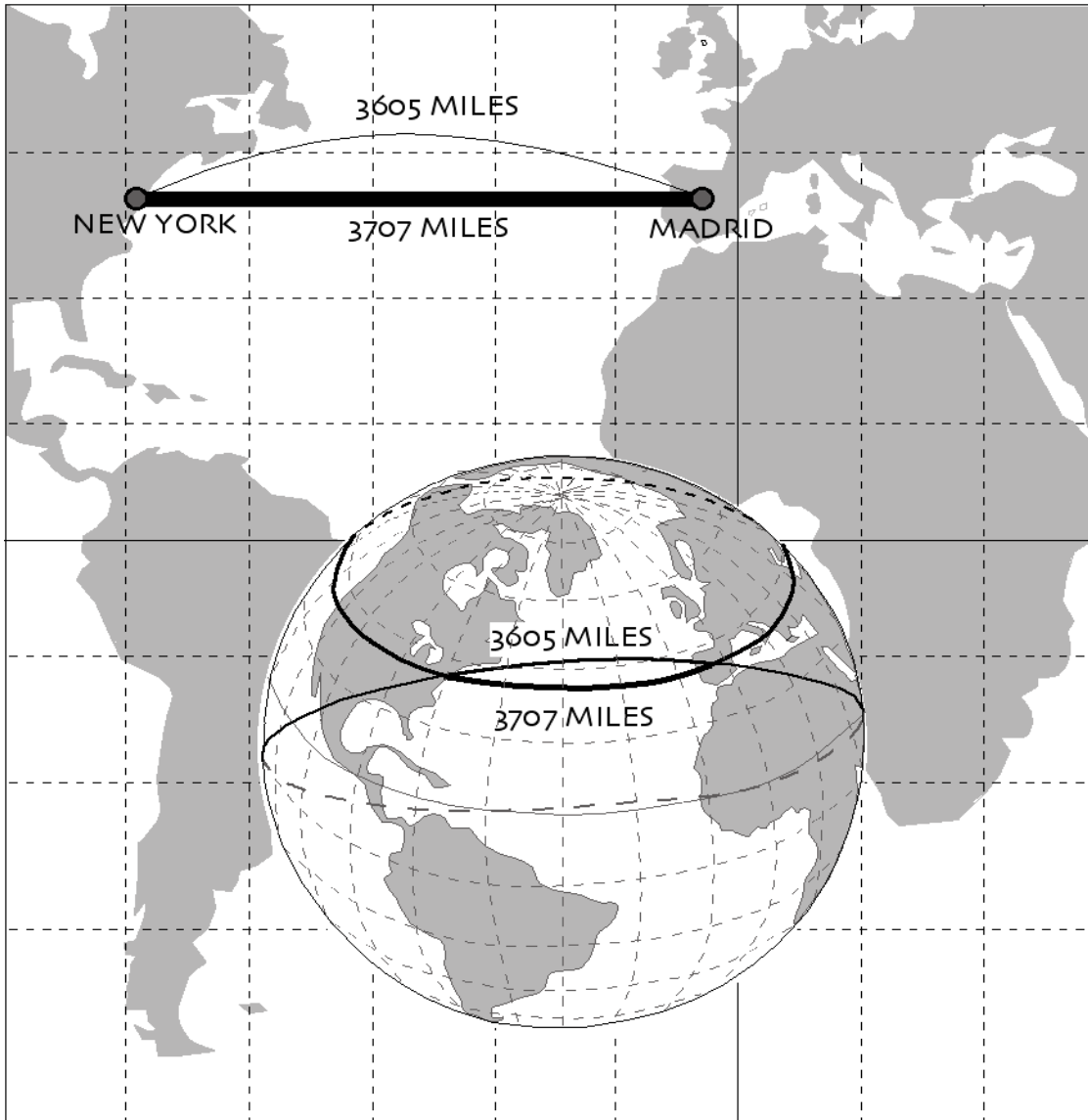
In consequence we must not simply identify the routines inherent in 1 & 2 and apply them mechanically, i.e. without corrective reflection. We need to establish, build up or create extra knowledge for use.

Reflection(s)

„This sentenze contains three mistakes.“

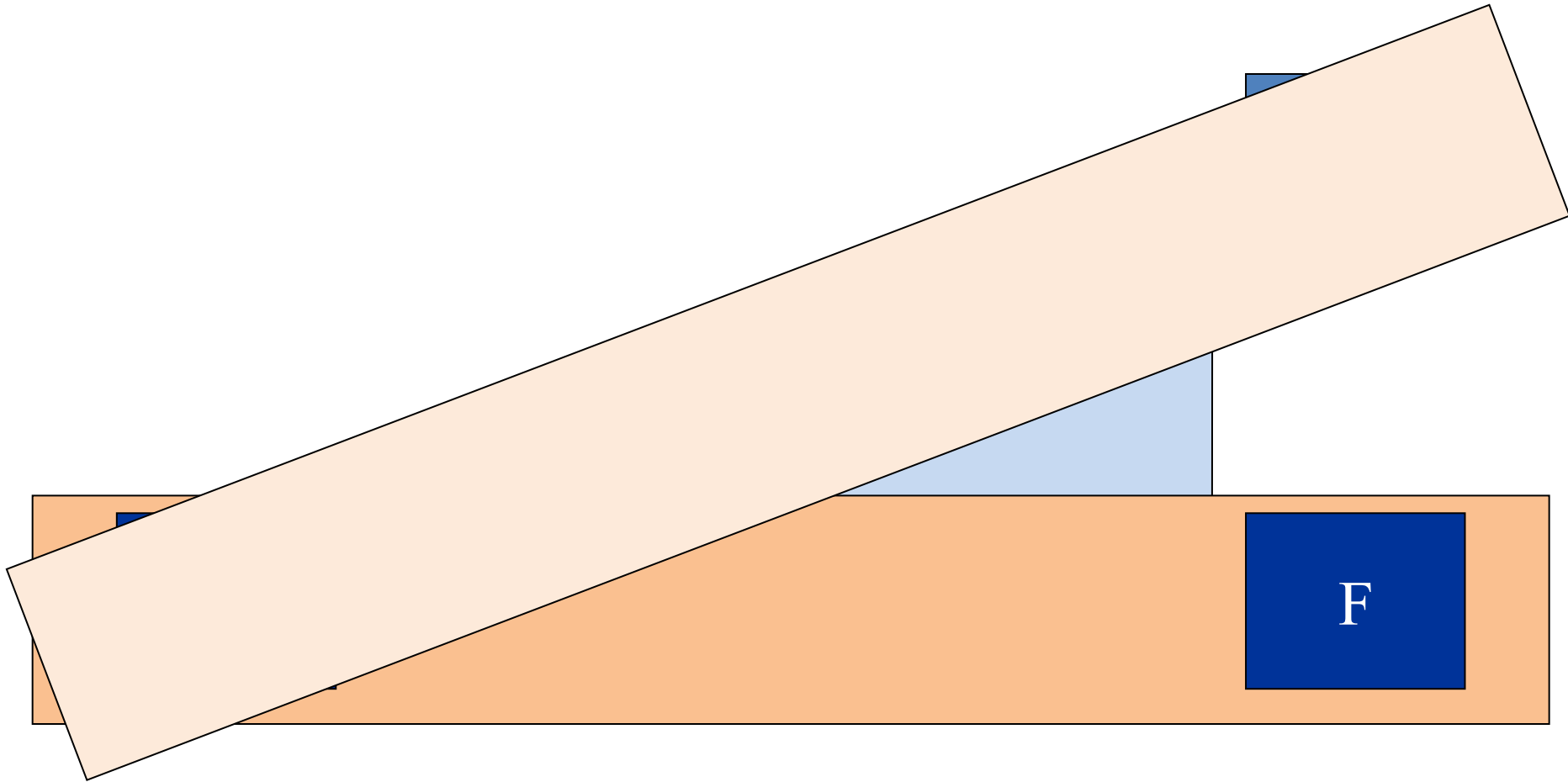
!

**Can you put your finger on the third
mistake ?**



3 Postulates (Axioms)

- **1) Fuzzy Concepts:** Our concepts (in use) are necessarily fuzzy (Limits of Aristotelian Logic).
- **2) Incompleteness of Maps, Models and Theories:** Our maps, models and theories are necessary incomplete and only locally and approximately true to the facts – local applicability vs. generalizability. – Decisions resting upon incomplete information.
- **3) Non Literally action guiding:** Our theoretical explanations and insights are not literally action guiding, i.e., our explanations should not be considered as literally descriptive action guiding suggestions, and we should provide a corrective leeway (by reflection, dialogue and understanding the simplifications inherent in our maps of the world).



Implicit Explanatory Core Idea



EXPERTISE

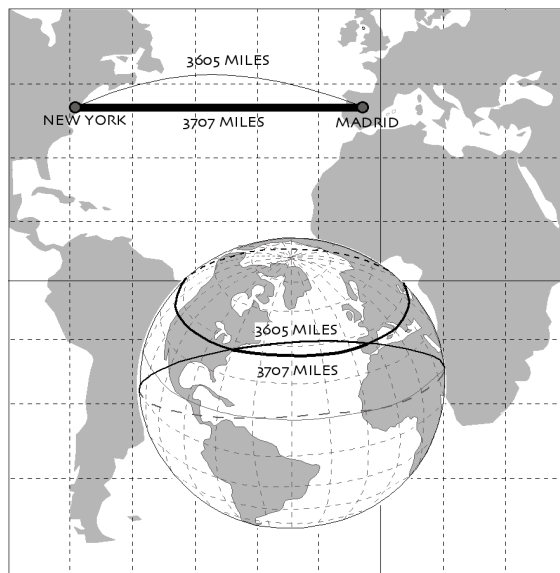
Scissors of
Knowledge & Life (Meaning)

F

ROUTINES

FOLK KNOWLEDGE

Implicit Explanatory Core Idea



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EXPERTISE

Dialogue

Scissors of
Knowledge & Life (Meaning)

F

ROUTINES

FOLK KNOWLEDGE

Implicit Explanatory Core Idea

„The map is not the territory!“
(Alfred Korzybski, Gregory Bateson)



Ceci n'est pas une pipe.

Question(s)

- Can we turn all this into Rules (for a mindless) application, usable independently of any experiential knowledge ?
- Preconception of universal common sense – Example Ford vs Toyota?
- What kind of extra Knowledge is missing, what explains the so called initial successes of digitalization ?

Basic Metaphor

Man is **NOT** [just] a didactic being,
but one that lives and acts and influences.

J. W. v. Goethe

Understanding the **relation between local knowledge (expertise) and the world as a chance** for realizing/actualizing a new competitive/survival advantage

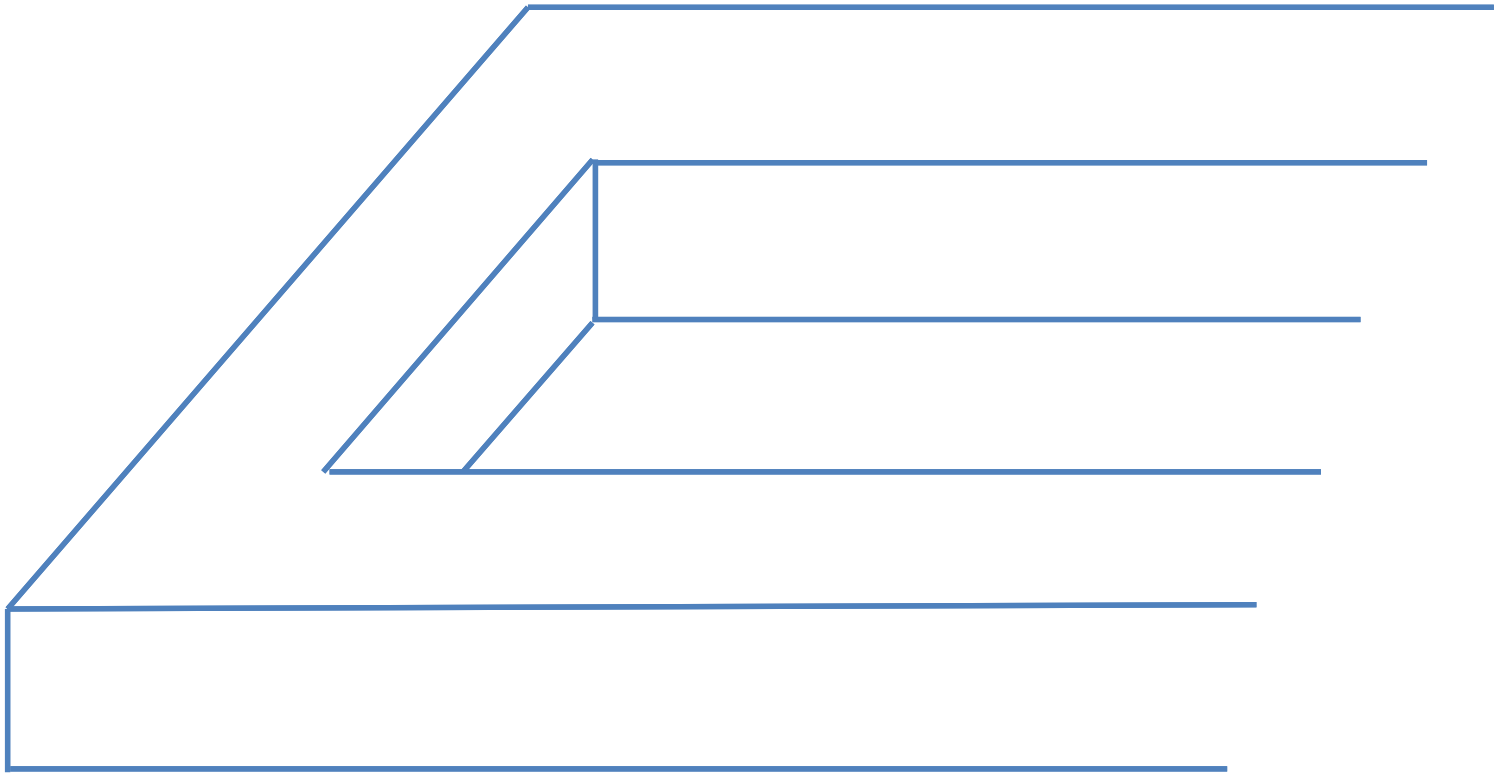
Why (according to Hilary Putnam / Harvard) should we need a new (3rd) enlightenment) ?

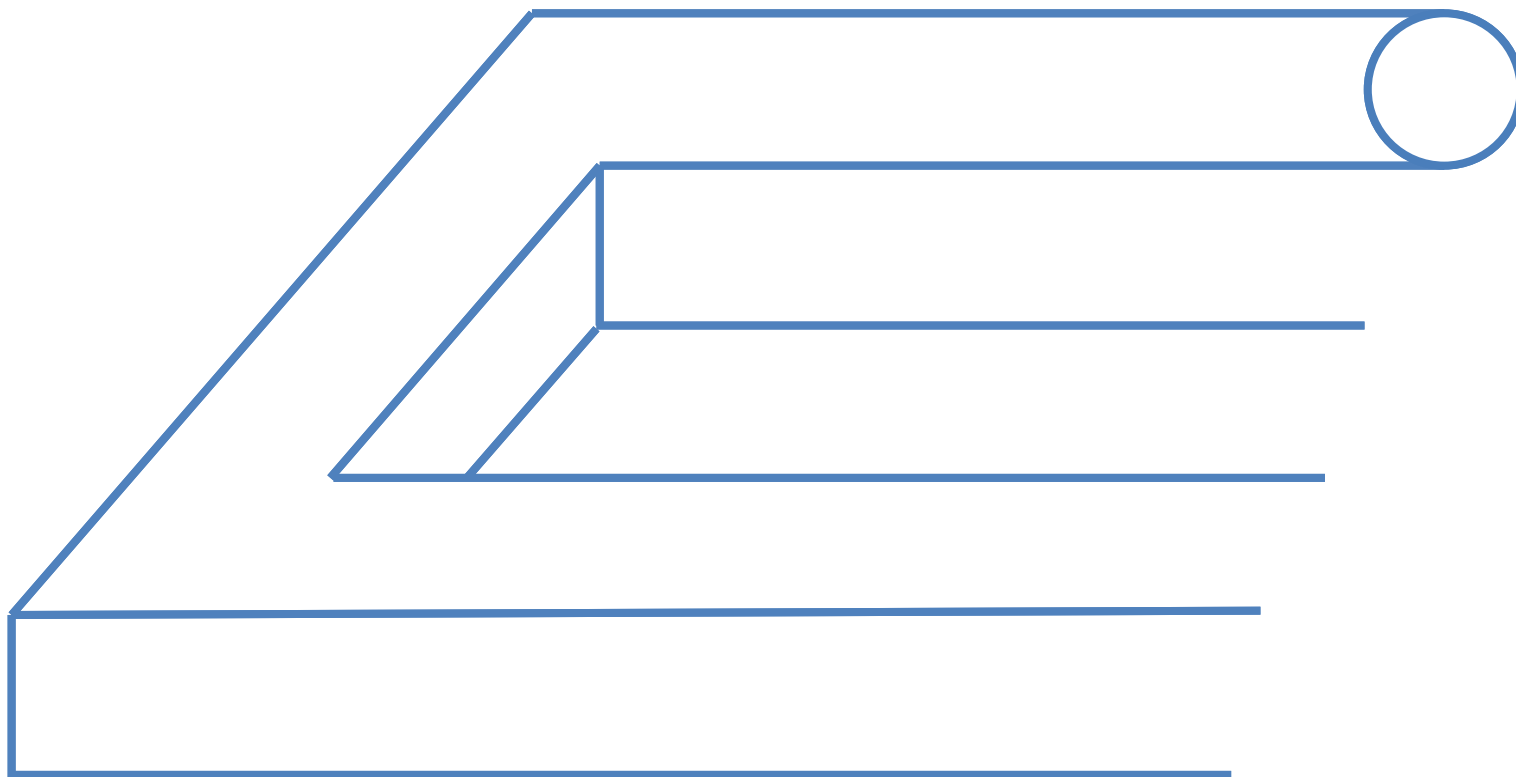
Re-Combining Theories and Practices – by Creating an European Competitive Advantage (Creativity and Innovation via Activating Expertise, Background-Knowledge and Autonomy in „Thinking and Doing“)

Meaning is a means to come to terms with reality.
Crowding out the Meaning of meaning, means to replace the explanatory construction of meaning by an unreflected „processing of information“ – we need to reintegrate pre-knowledge and experience into the use of algorithms/rules to creatively activate means of correction in view of the formal incompleteness of our theories, models and maps to support evolution and create new solutions to survive and adopt in an ever changing environment and world.

Some Metaphors !

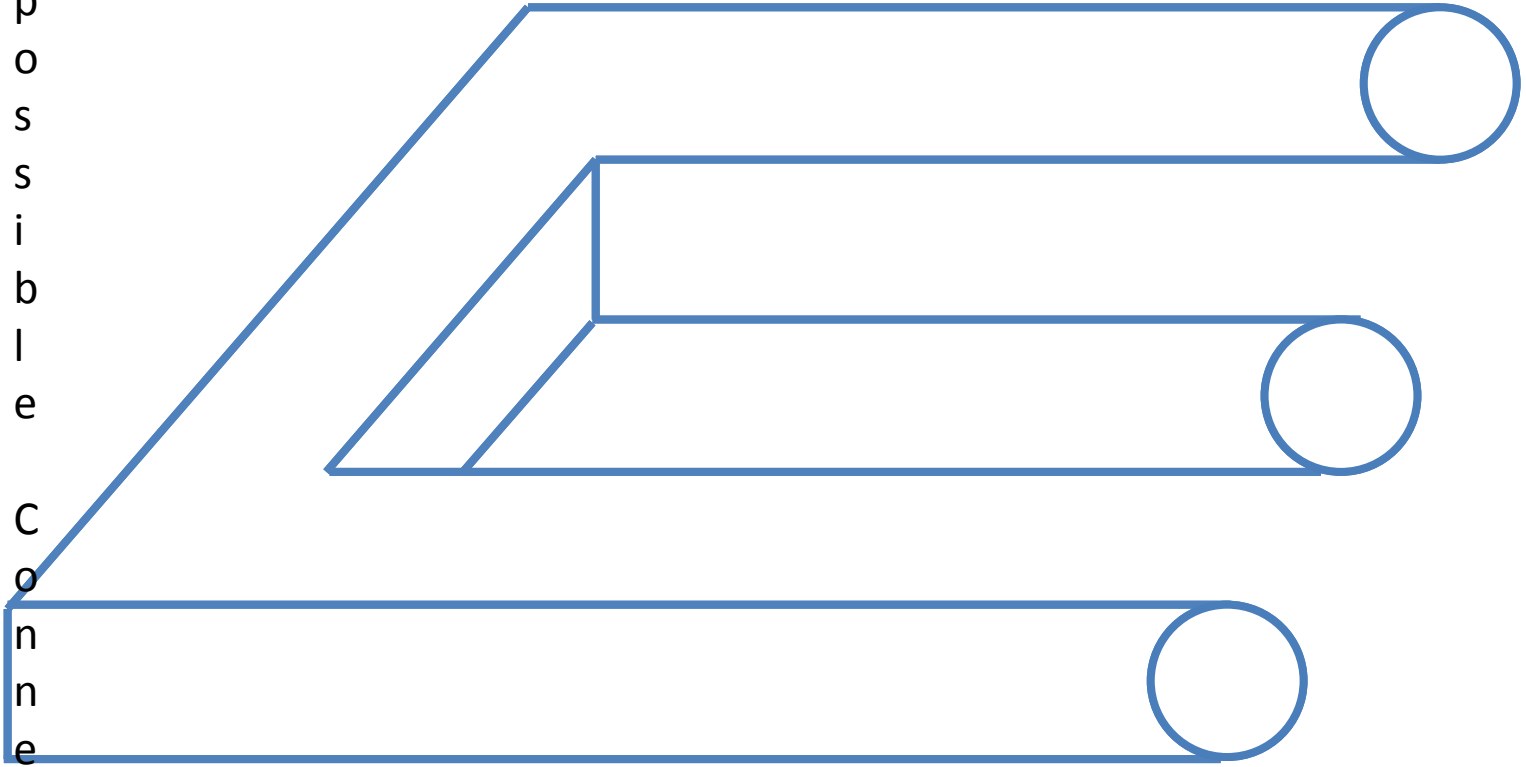






I
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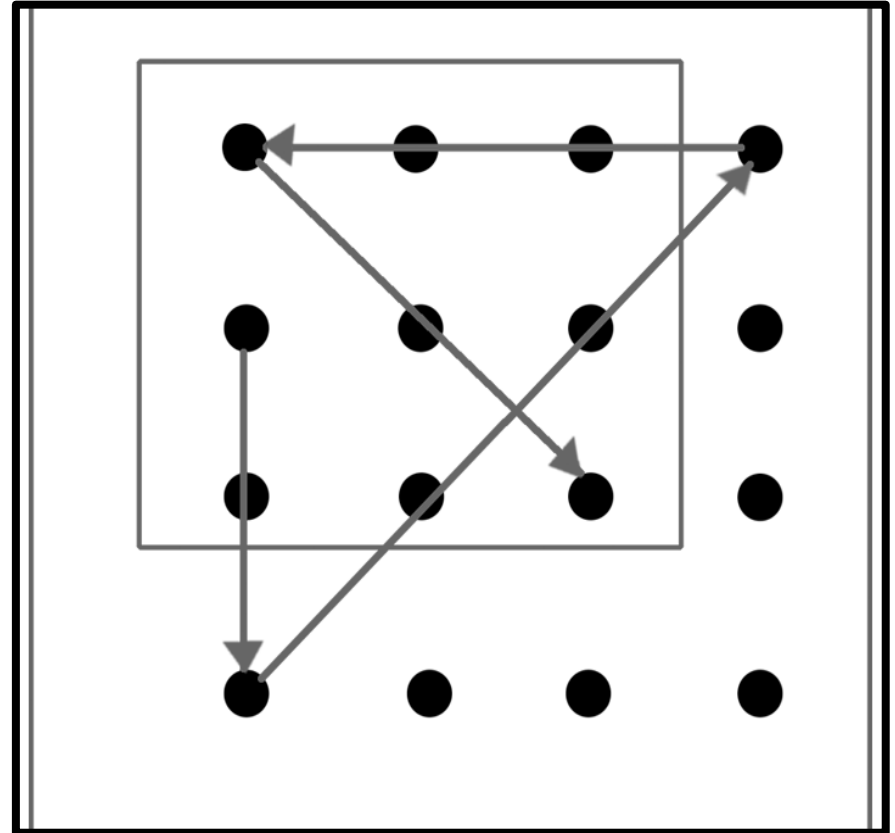
C
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Nine-points-
problem
and solution:
How to step out
of
the system !

Original task:
Connect the 9



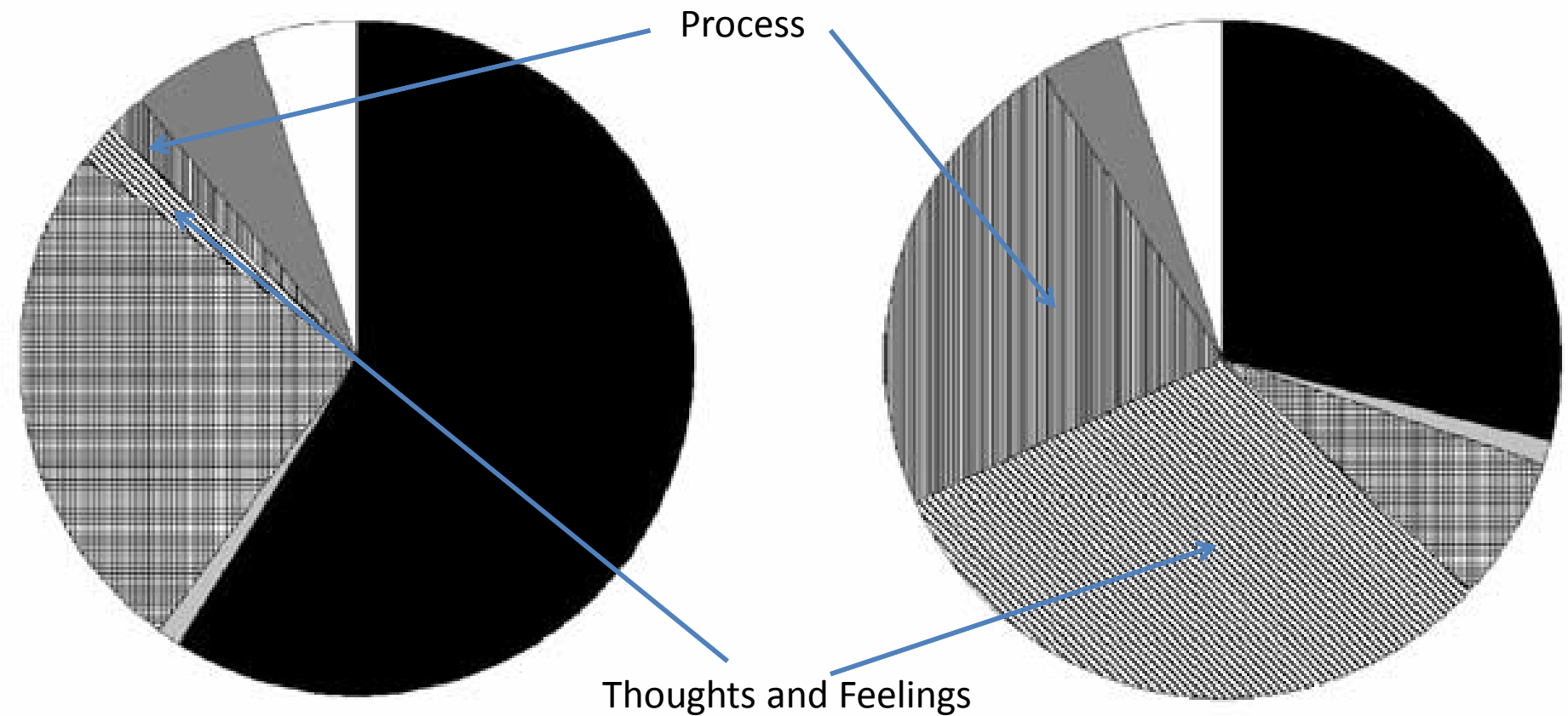
„Our heads are
round
to allow our
thoughts to change
direction“
(Francis Picabia)

Stepping out of the system to support
„Creativity and Innovation“

Illustration:

A masochist approaches a sadist and pleads to
be tortured but the sadist says: "NO!"

Humour versus documentation?



■ Knowledge as something physical

▨ Knowledge as a living organism

■ Knowledge as a process

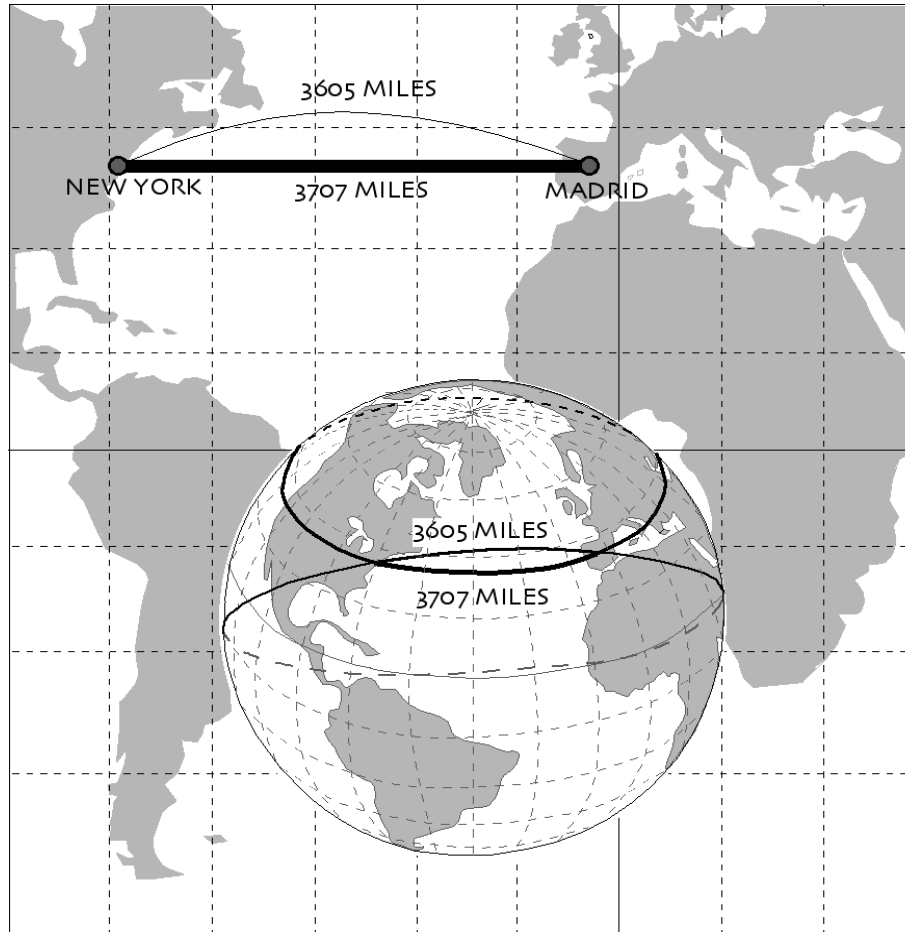
■ Knowledge as a wave

▨ Knowledge as thoughts and feelings

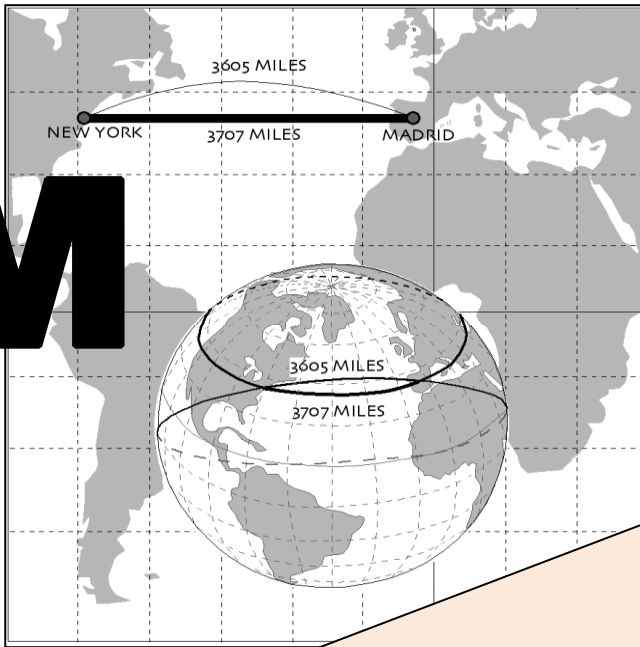
■ Knowledge as a structure

Generations of Knowledge Management:

Difference in metaphors between Davenport & Prusak (1998) and Nonaka & Takeuchi (1995) (Andriessen, 2006).



M

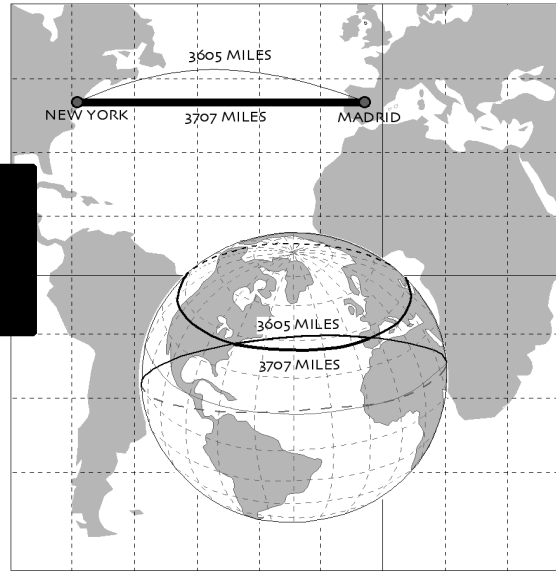


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Knowledge &
Sense Making



M



Dialogue

Scissors of
Age & Life (Meaning)

F

ROUTINES

FOLK KNOWLEDGE

Implicit Explanatory Core Idea

“What Turing disregards completely is the fact that MIND, in its use, is not static, but constantly developing, i.e., that we understand abstract terms more and more precisely as we go on using them, and that more and more abstract terms enter the sphere of our understanding.”

Kurt Gödel, 1972

(Some Remarks on the Undecidability Results. In:
Coll. Works, Vol. 2, p. 306)

Kurt Gödel



Born	Kurt Friedrich Gödel April 28, 1906 Brünn, Austria-Hungary (now Brno, Czech Republic)
Died	January 14, 1978 (aged 71) Princeton, New Jersey, U.S.
Citizenship	Austria, United States
Fields	Mathematics, Mathematical logic
Institutions	Institute for Advanced Study
Alma mater	University of Vienna
Thesis	<i>Über die Vollständigkeit des Logikkalküls (On the Completeness of the Calculus of Logic)</i> (http://journals.cambridge.org/action/displayAbstract?fromPage=online&aid=9079526&fileId=S0022481200026633) (1929)
Doctoral advisor	Hans Hahn
Known for	Gödel's incompleteness theorems, Gödel's completeness theorem, the consistency of the Continuum hypothesis with ZFC, Gödel metric,

What Turing disregards completely is the fact that MIND, in its use, is not static, but constantly developing, i. e. that we understand abstract terms more and more precisely as we go on using them, and that more and more abstract terms enter the sphere of our understanding. -- Kurt Gödel, 1972

“The idea that everything in the world has meaning is, after all, precisely analogous to the principle that everything has a cause, on which the whole of science rests.” (Letter to his Mother : Gödel 1961)

Shortcut of the two-person prisoners' dilemma (without repetition) Description vs Explanation // Prediction

(-x/-y) means A gets x-years & B gets y-years of imprisonment

		B	
		cooperates	defects
A	cooperates	(-2/-2)	(-5/0)
	defects	(0/-5)	(-4/-4)

benefit-matrix for real prisoners
And their dilemma

		Player B	
		+	-
Player A	+	(3/3)	(0/5)
	-	(5/0)	(1/1)

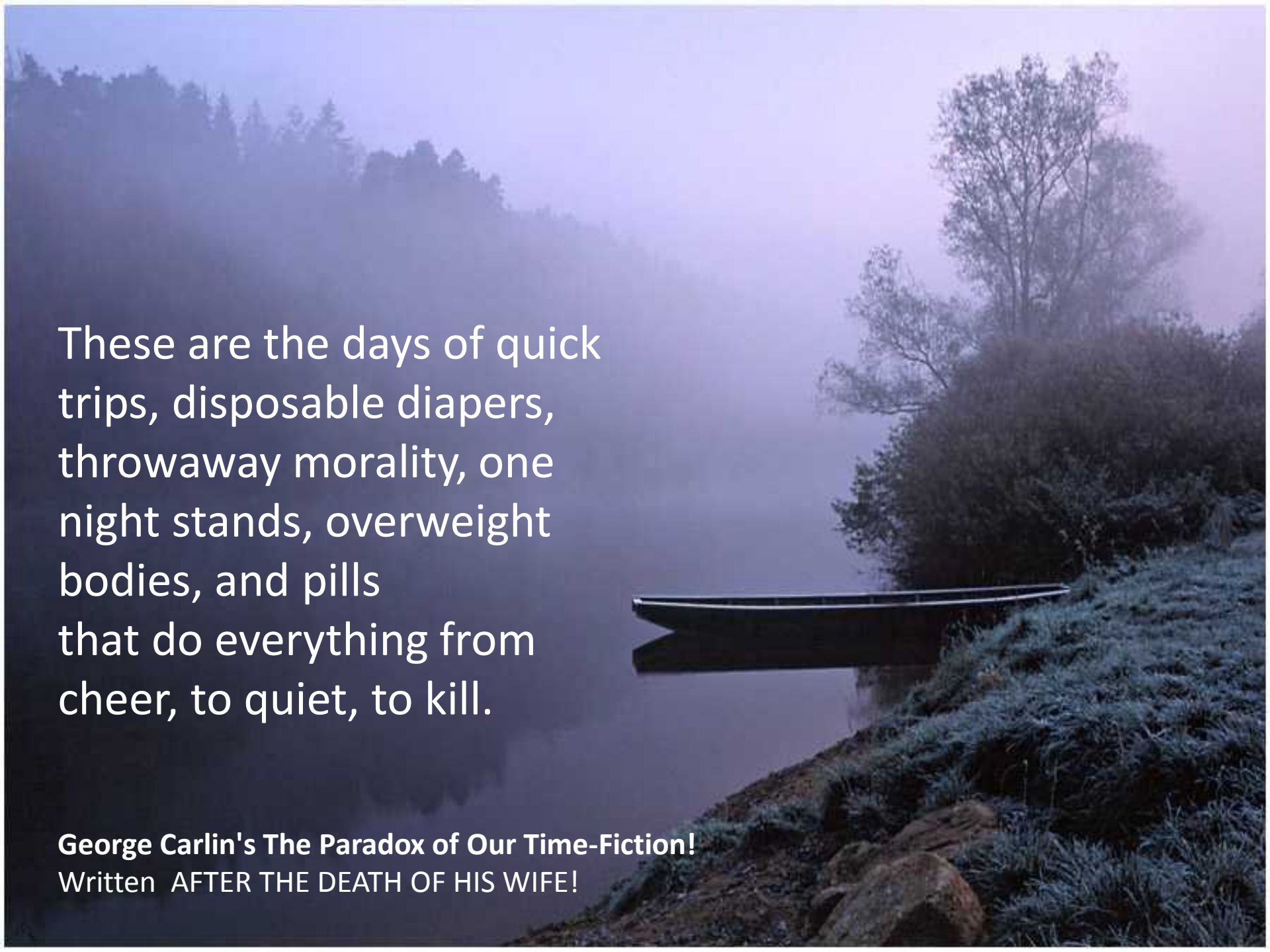
canonical benefit-/pay-off matrix in the two-person prisoners dilemma without repetition

Short version: A and B have committed a crime and are imprisoned but cannot be proven to be guilty. There are however facts that could get them into jail for just two years [(-2/-2) in the matrix above] (i. e. if none confesses). If one acts as prime testimonial he will be free but the other will be imprisoned for 5 years [(0/-5) or (-5/0)].

If both confess, they will get 4 years imprisonment each [in the pay-off or evaluation-matrix: (-4/-4)].

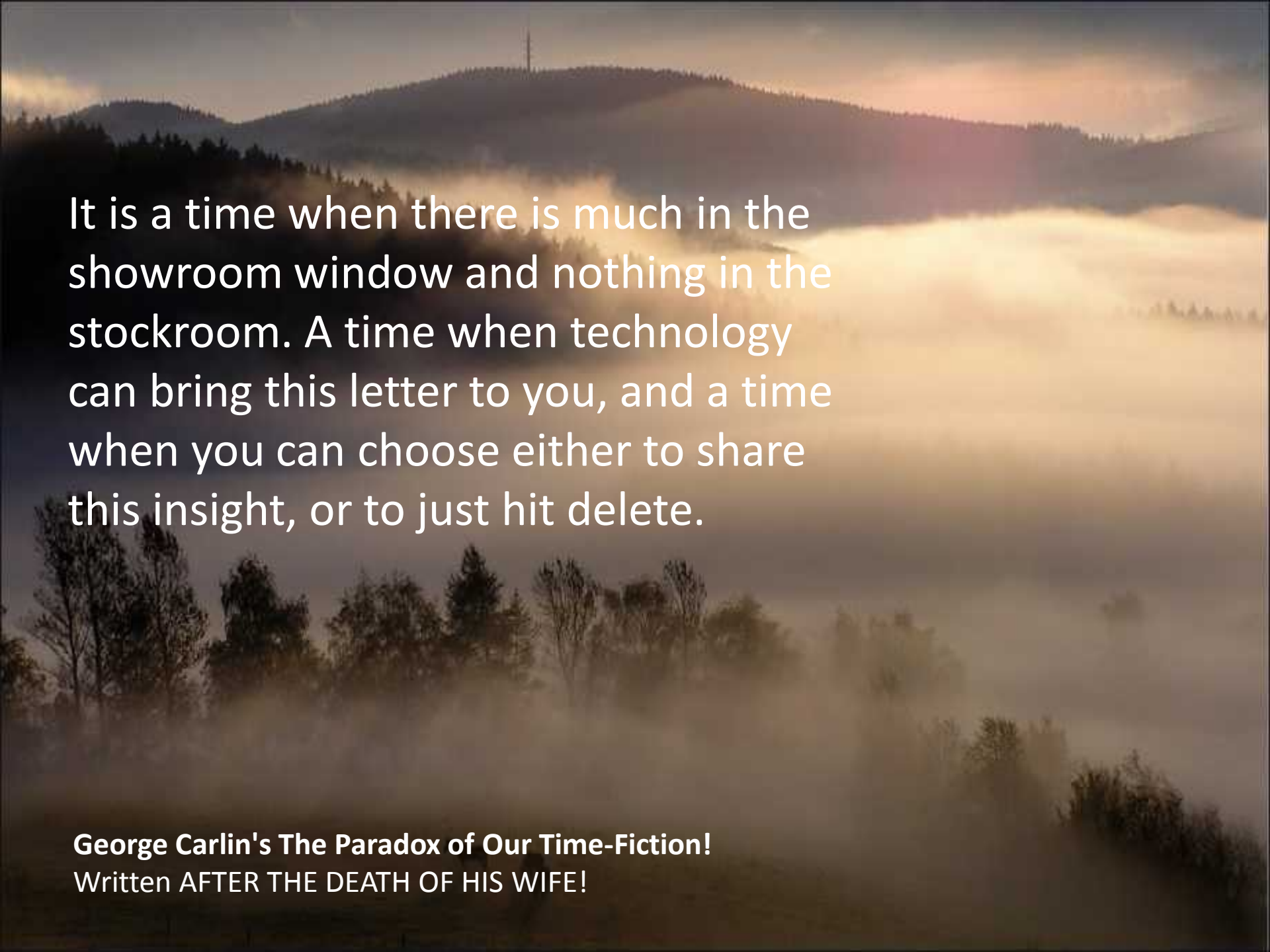
Adding +5 to each number yields the solution (multiplication picture).

,+' means „cooperating“, ,-' means to „defect“.

A misty landscape with a lake, a boat, and a forest. The scene is captured in a monochromatic, blue-tinted style. In the foreground, a dark wooden boat is pulled up on a grassy bank. The water is calm, reflecting the boat and the surrounding environment. In the background, a dense forest of trees is visible, partially obscured by a thick layer of mist or fog. The overall mood is serene and somewhat melancholic.

These are the days of quick
trips, disposable diapers,
throwaway morality, one
night stands, overweight
bodies, and pills
that do everything from
cheer, to quiet, to kill.

George Carlin's The Paradox of Our Time-Fiction!
Written AFTER THE DEATH OF HIS WIFE!

A misty mountain landscape at sunrise or sunset. The sky is a mix of soft pinks, oranges, and greys. A thick layer of white mist or fog fills the valleys and lower slopes of the mountains. In the distance, a radio tower stands on a peak. The foreground shows the silhouettes of trees against the mist.

It is a time when there is much in the showroom window and nothing in the stockroom. A time when technology can bring this letter to you, and a time when you can choose either to share this insight, or to just hit delete.

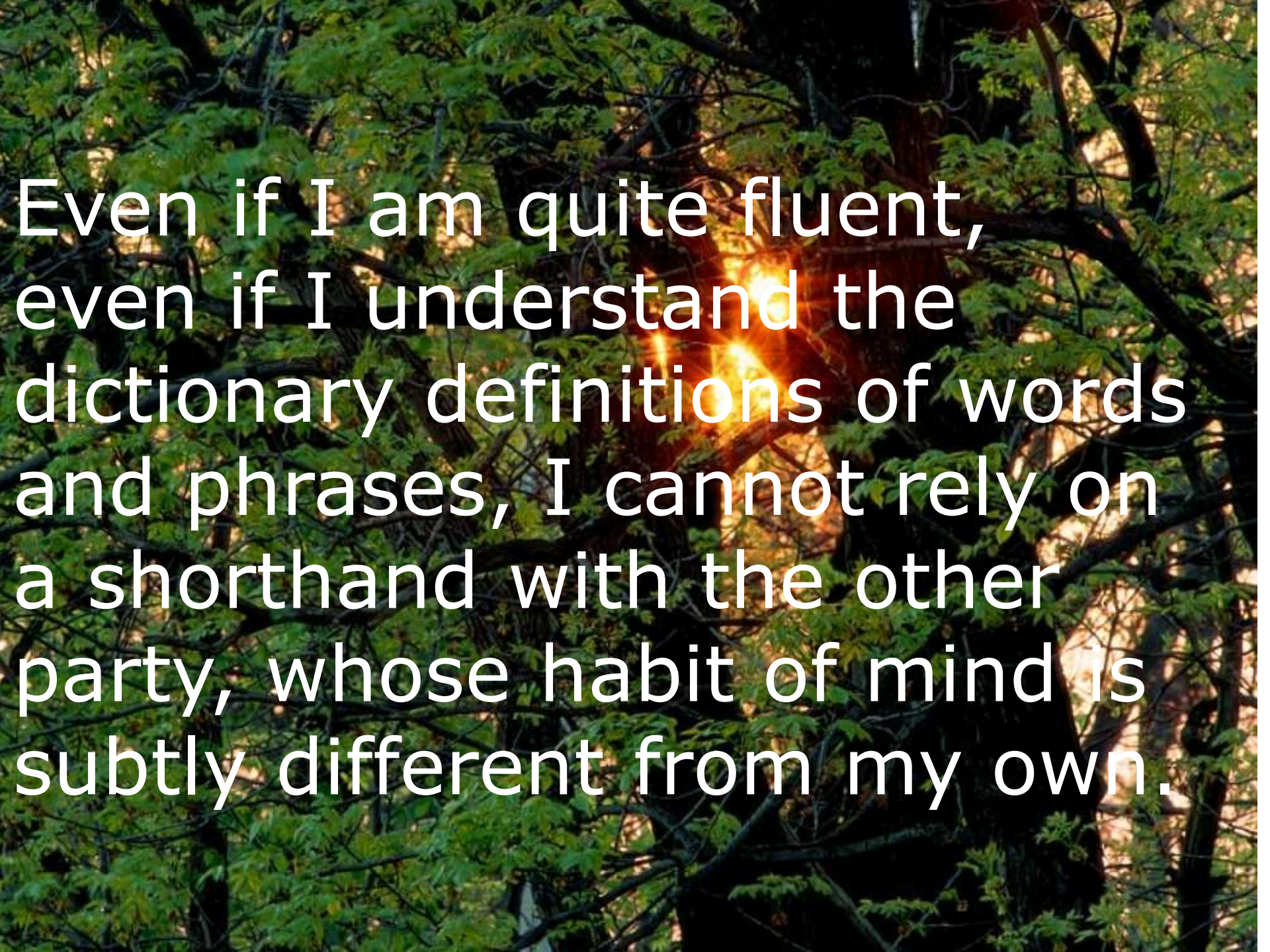
George Carlin's The Paradox of Our Time-Fiction!
Written AFTER THE DEATH OF HIS WIFE!

A scenic landscape featuring a calm lake in the foreground, reflecting the sky and surrounding trees. In the background, there are rolling hills or mountains under a soft, hazy sky, suggesting a sunset or sunrise. The overall atmosphere is peaceful and natural.

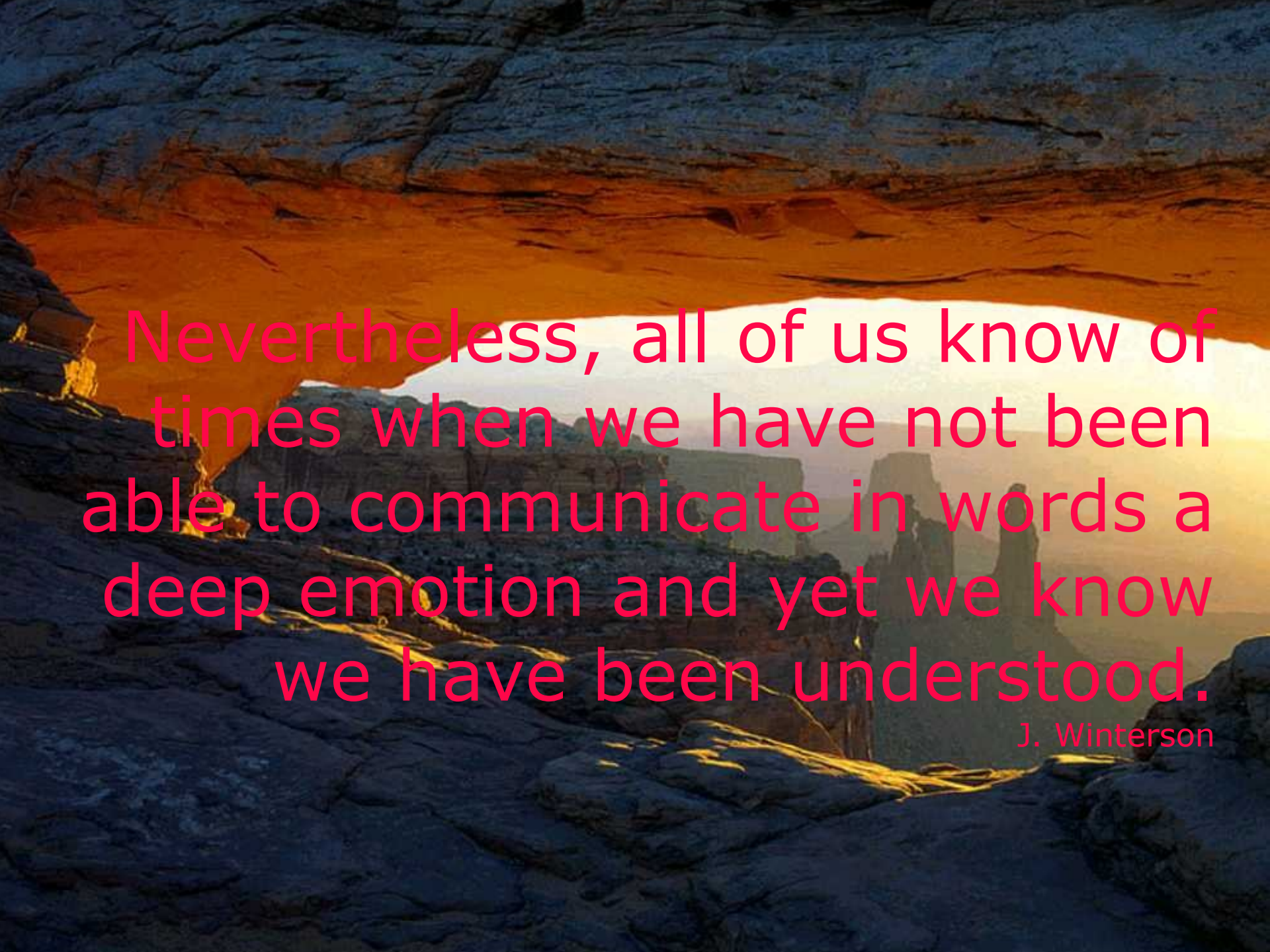
Communication
between you and me relies on
assumptions, associations,
communalities and the kind of
AGREED SHORTHAND, which
no-one could precisely define
but which everyone would
admit to exist.

A vibrant sunset scene over a calm body of water. The sun is a bright, glowing orb on the right side of the horizon, casting a long, shimmering reflection across the water's surface. The sky is filled with layers of clouds, some dark and some illuminated by the golden light of the setting sun. The overall color palette is dominated by warm oranges, yellows, and reds, creating a serene and dramatic atmosphere.

That is one reason **why sometimes
it is an effort to **have a proper**
conversation in a foreign
language.**



Even if I am quite fluent,
even if I understand the
dictionary definitions of words
and phrases, I cannot rely on
a shorthand with the other
party, whose habit of mind is
subtly different from my own.



Nevertheless, all of us know of times when we have not been able to communicate in words a deep emotion and yet we know we have been understood.

J. Winterson

The End

Thanks for not going to sleep / Otherwise, hope you had a peaceful time !

Spezial Folien (Selektion)

The Road Not Taken

Robert Frost, 1874 - 1963

...

**Two roads diverged in a wood, and I --
I took the one less traveled by,
And that has made all the difference.**

Stopping by Woods on a Snowy Evening

...

**But I have promises to keep,
and miles to go before I sleep,
and miles to go before I sleep.**

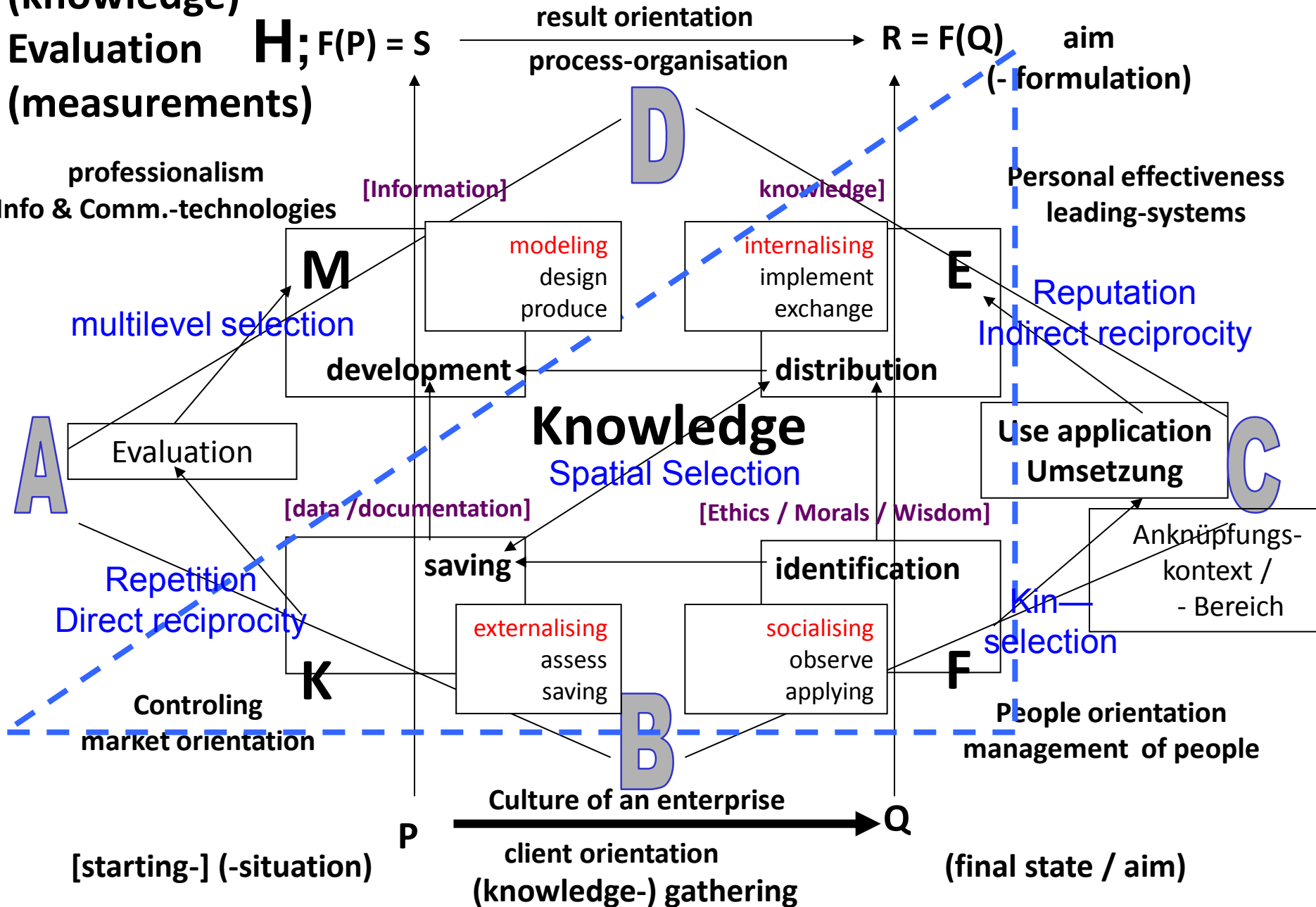
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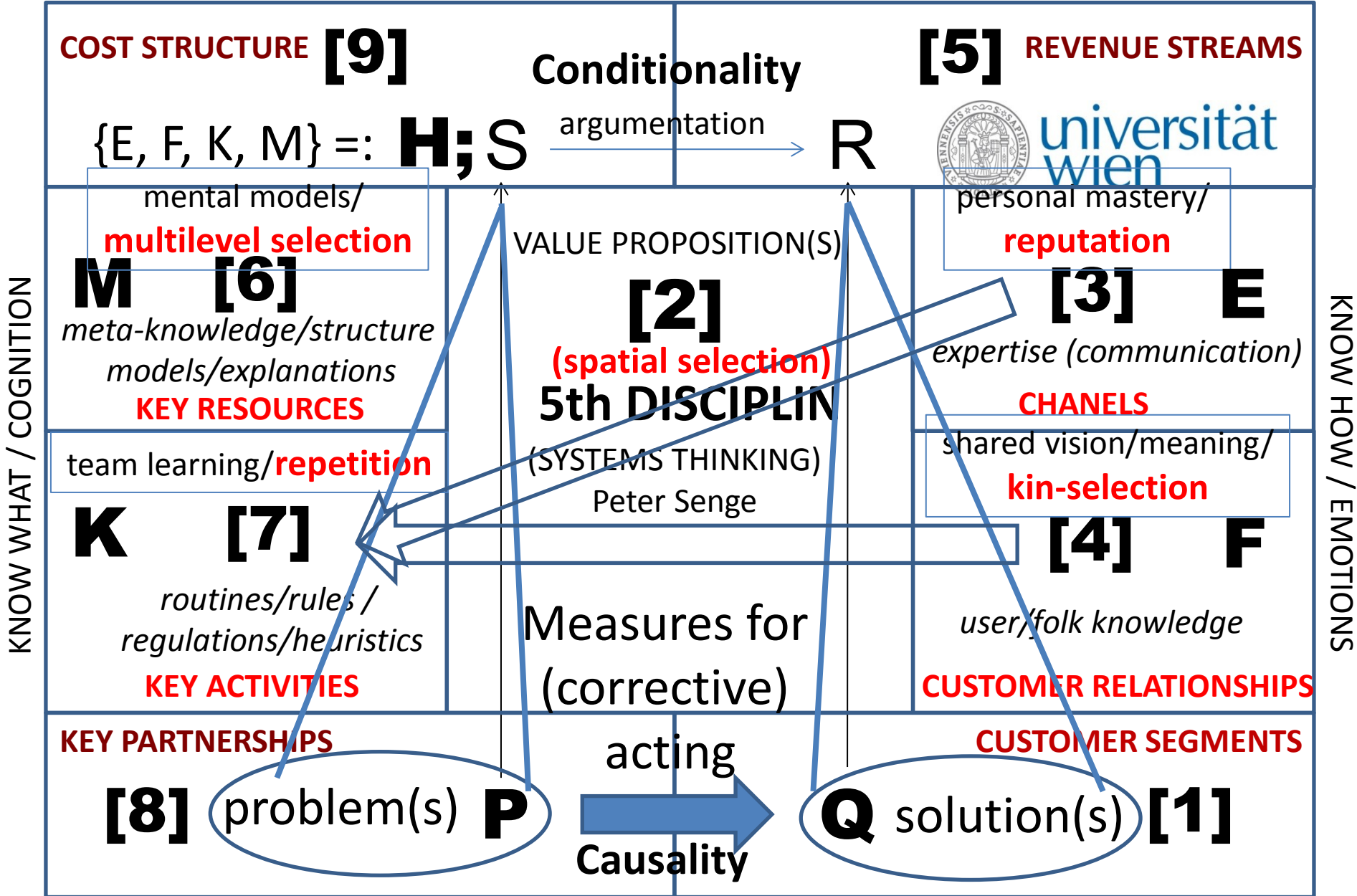
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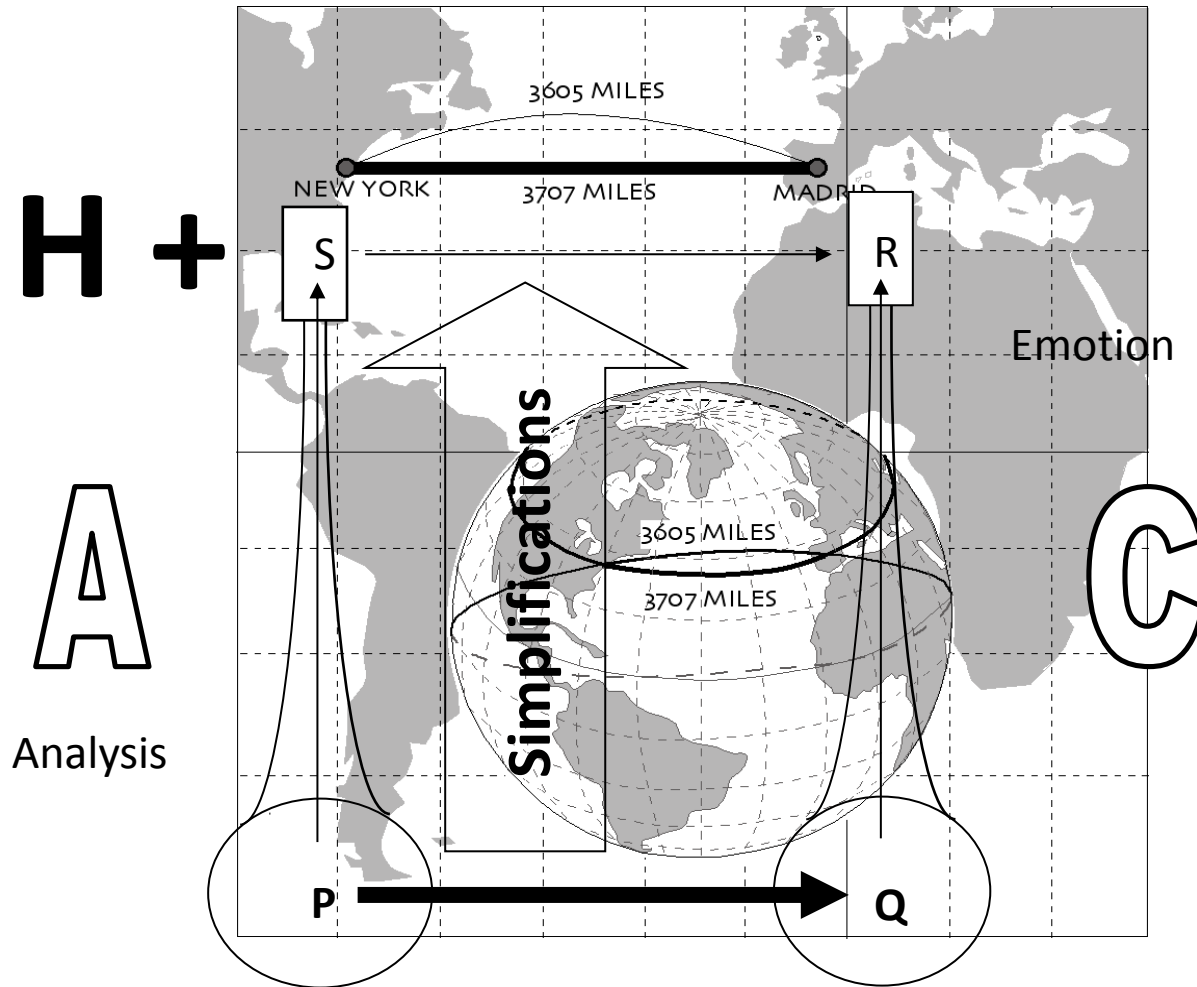
(Gödel 1961)

Overview// Techniques of KM & Mechanisms of Cooperation

(knowledge)-
Evaluation $H; F(P) = S$
(measurements)







Practical relevance of
Industrial Commons:

The sum of the local
optimizations
(the combination of the
two dimensional maps)
is not an optimal result
for the whole as such.
[We need bilateral
cooperation and
corrections
via e. g. dialogue!]



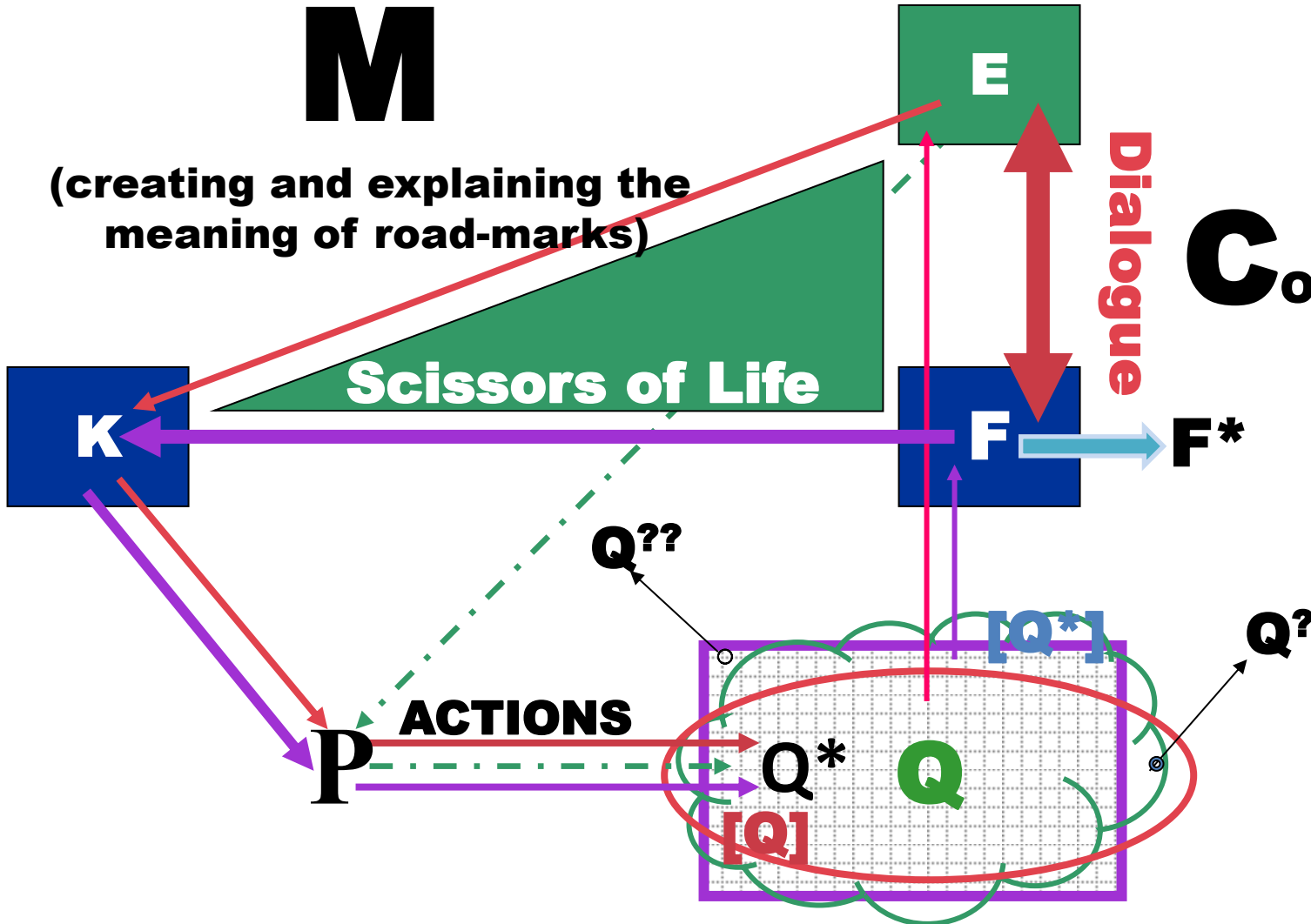
M

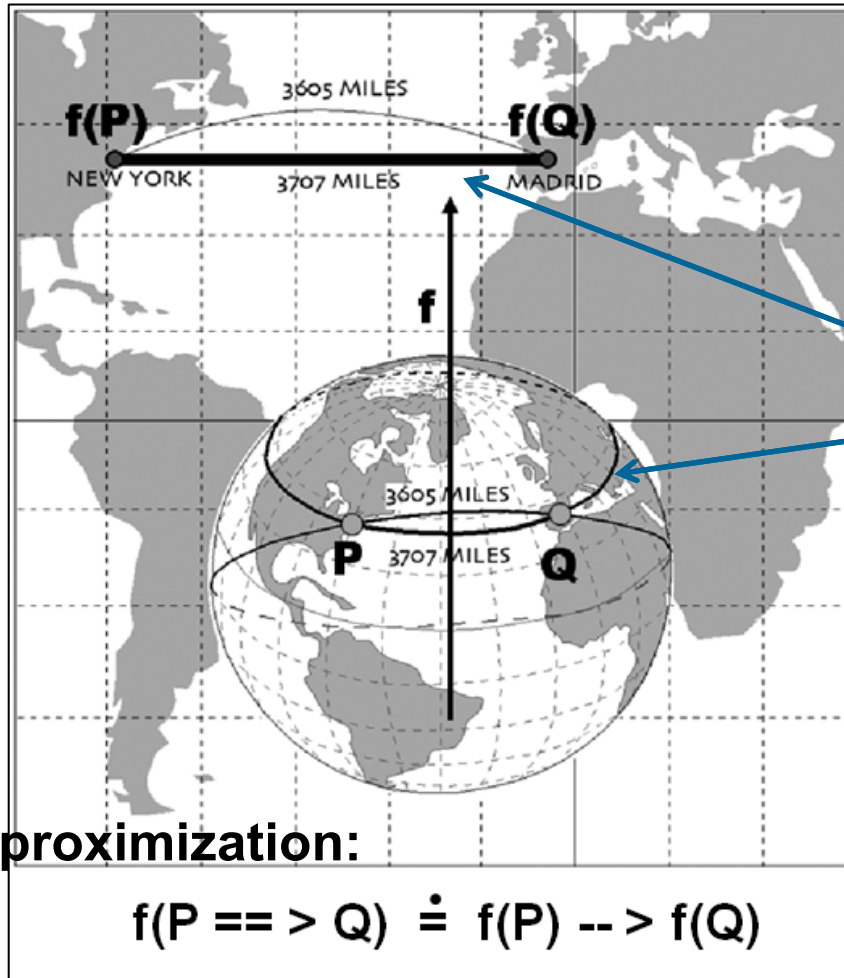
(creating and explaining the
meaning of road-marks)

Scissors of Life

Dialogue

C

OMMONS



Some Introductory Remarks: The Third Industrial Revolution

„...traditional, hierarchical organization of economic and political power will give way to lateral power organized *nodally* (m.e.) across society.“ [Rifkin, J. (2011). *The Third Industrial Revolution*, NY, p. 5].

„...today, however, the collaborative power unleashed by the merging of Internet technology and **renewable energies** is fundamentally restructuring human relationships, from top to bottom to side to side, with profound implications for the future of society.“ (ibid.) [e.g., network economics].

**Which problems should be
(re-) solved?**

Industrial Commons

„are the R&D manufacturing infrastructure, know-how, process-development skills, and engineering capabilities embedded in firms, universities, and other organizations that provide the foundation for growth and innovation in a wide range of industries “

[Pisano, G., & Shih, W. (2012). **Producing Prosperity**. Boston: Harvard University Press, p. 3].

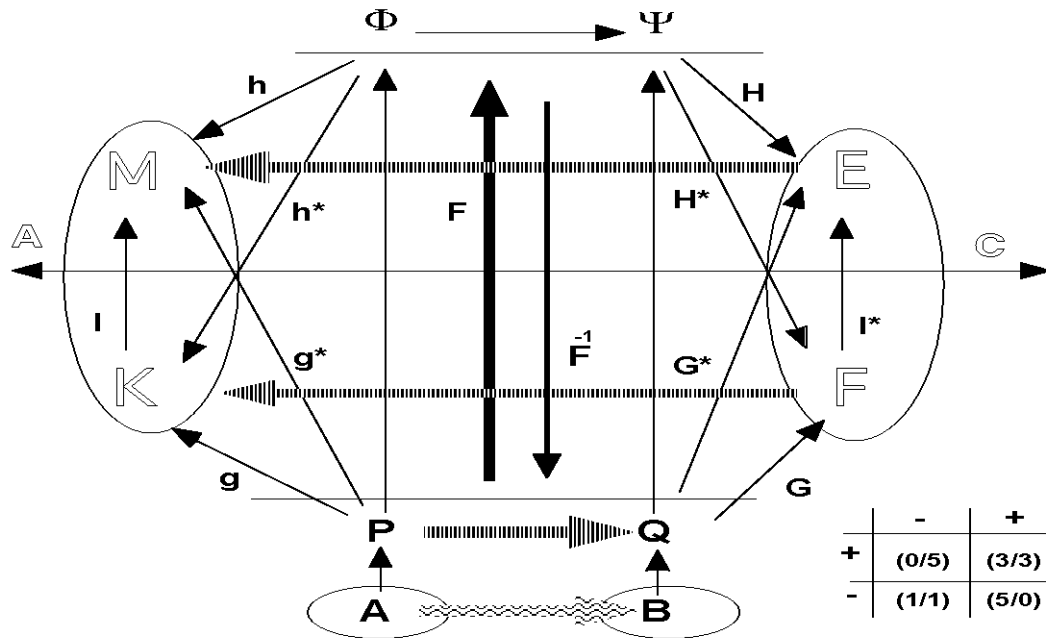
Turings „Universal Machine“ (1936/37) and von Neumann’s implementation of it [*in modern computers*] are direct offsprings of Gödel’s ideas ! -- George Dsyon : Turing’s Cathedral (The Origins of the Digital Universe) pp106/7 London/Penguin, 2012

p107: Where does meaning [**knowledge/epistemology**] come in? If everything is assigned a number, does this diminish the meaning of the world? ... What Gödel (and Turing) proved is that formal systems will, sooner or later, produce meaningful statements whose truth can be proved only [from] outside [of] the system itself. ... It proves ... that we live in a world where higher meaning[-s] exists.

What Turing disregards completely is the fact that MIND [and especially KNOWLEDGE], in its use, is not static, but constantly developing, i. e. that we understand abstract terms more and more precisely as we go on using them, and that more and more abstract terms enter the sphere of our understanding. -- Kurt Gödel, 1972

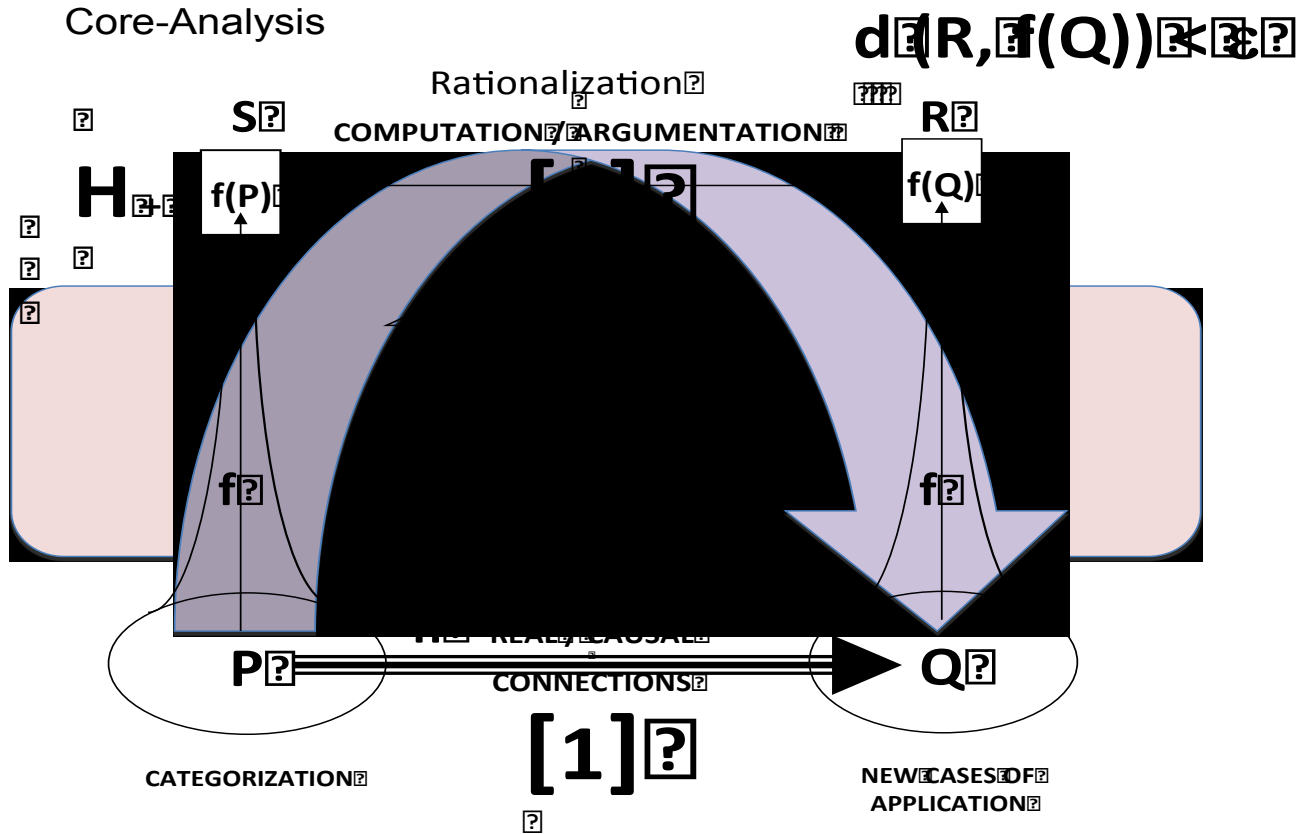
(Some Remarks on the Undecidability Results. In: Feferman, Coll. Works [of Gödel] vol 2, p 306)

[Of the idea of „semantical implication“ as exemplified in Beth Tableaus].



Ψ is to be considered a logical consequence of Φ — corresponding to some causal connection between P and Q -- iff the following is the case:
 If the pair $(g^*(P), hF(P))$ is element of the relation R on \mathbb{A} (resp. just on \mathbb{M} in some cases), then so is the pair $(G^*(Q), HF(Q))$ with respect to some corresponding relation R^* on \mathbb{C} [as operationalization of the original Relation R on \mathbb{A}]. -- Thus Ψ can be said to be a (more or less logical) consequence of Φ which (according to some theory in \mathbb{A}) corresponds to some »causal connection« between P and Q (resp. A and B) iff there is no way to construct a **counterexample** (using the mappings in the graphic) s. t. the first pair is element of the relation R on \mathbb{A} and the second pair is not Element of some corresponding relation R^* on \mathbb{C} .

Levels of Reflection



g after $f(P)$ = ? after $h(P)$

$f(P) = S$ & $h(P) = Q$

?

**(Wissens)-
Bewertung HGW ; s
(Messung)**

-	+
0/5	3/3
1/4	5/6

Ziel - Setzung
Calculation

Result Orientation h

Prozessorganisation
Social / Economical / Political setting (s)

Ziel

(- Formulierung)

Personal Effektivität

(Führungssysteme)

Professionalism
(Info & Komm.-Technologie)

mental model (+)
Key Resources [6]

Plural
(explaining)

A Beurteilung

3rd person
Key Activities [7]
team learning
community context

Controlling
(Market Orientation)

Key Partnerships [8]

cost structure [9]
losses (-)

M [0/5]
modellieren
design
erzeugen

Entwicklung
multi-level selection

K [1/1]
externalisieren
assess
speichern

Bewahrung

D [2]
value proposition
Wissen

internalisieren
implement
teilen

(verteilung)
reputation

WISSEN

[Daten] spatial selection [Ethik / Moral / Weisheit]

F [5/0]
sozialisieren
observe
anwenden

Identifikation
bim selection

Unternehmenskultur

Client Orientation

$h(Q)$
Result

R

Info? (+)

3/3 E

Indirect reciprocity

5/0

F

6

Outcomes (o)

$h(P) = 1/4(1)$

R

Info? (+)

3/3 E

revenue streams [5]

Indirect reciprocity

5/0

F

6

Outcomes (o)

$d(h(P), h(Q)) < \epsilon$

R

Info? (+)

3/3 E

revenue streams [5]

Indirect reciprocity

5/0

F

6

Outcomes (o)

$h(P) = 1/4(1)$

R

Info? (+)

3/3 E

revenue streams [5]

Indirect reciprocity

5/0

F

6

Outcomes (o)

$d(h(P), h(Q)) < \epsilon$

R

Info? (+)

3/3 E

revenue streams [5]

Indirect reciprocity

5/0

F

6

Outcomes (o)

$d(h(P), h(Q)) < \epsilon$

R

Info? (+)

3/3 E

revenue streams [5]

Indirect reciprocity

5/0

F

6

Outcomes (o)

$d(h(P), h(Q)) < \epsilon$

R

Info? (+)

3/3 E

revenue streams [5]

Indirect reciprocity

5/0

F

6

Outcomes (o)

tät

revenue streams [5]

Personal Effektivität

(Führungssysteme)

personal mastery
Channels [35]

1. Person npl/pl
(Ich/W/12)

C Nutzung /
Umsetzung

Customer-Relationships [4]

Anknüpfungs-
kontext /-Bereich

2nd P.
Du

People Orientation
(Personalmanagement)

customer segments [1]

Business Model Canvas (Zustand)

Resource System (RS)

Resource Units (RU)

Resource Type (RT)

Resource Unit (RU)

Brain? $h(P) = 1/4(1)$

$h(P)$
Substitution

losses (-)

multi-level selection

repetition
direct recip.

Input/Interaction (I)

Neuralität

Outcomes (o)

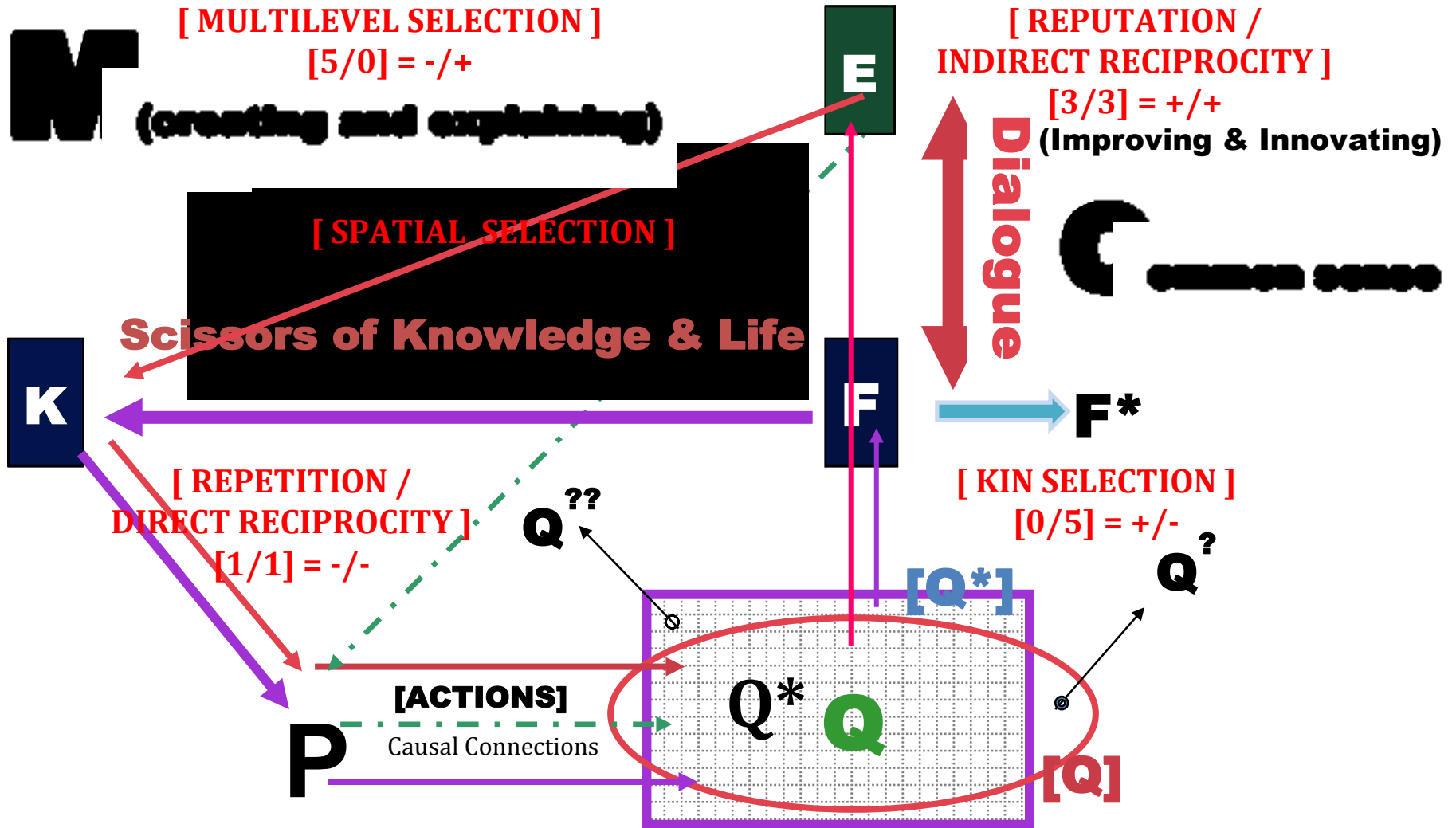
Business Model Canvas (Zustand)

Business Model Canvas (Zustand)

On Applying LIR++

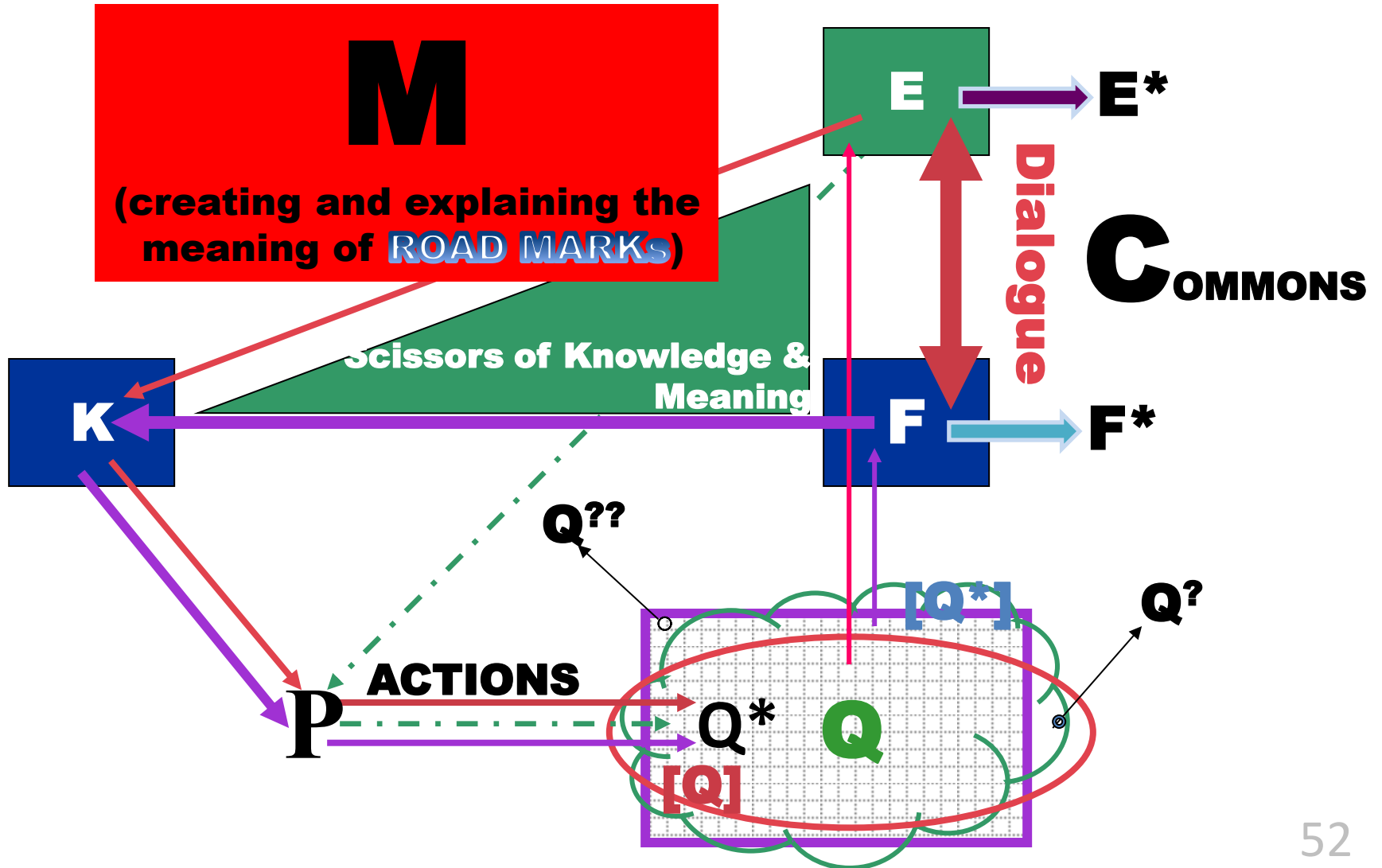
- Improving interdisciplinary discourse, understanding knowledge and transfer of expertise: One can achieve not only a better way of understanding each other but one can also improve the culture of dialog and mutual ways to deal with errors and reflect the limits of any “rule system”, i.e., any method to *generate* results.
- How the idea of proactive, constructive dialogue can lead to local improvements of knowledge nodes in a network patchwork of knowledge: The point is that in/between small and therefore survey-able units common aims and insights (by means of sharing expertise) can lead to local mutual corrections of and within knowledge nodes and thus can help to prevent an excessive overuse/exploitation of resources as a consequence of maximizing local profit unreflectively.

DECISION-SUPPORT



Practical Consequences

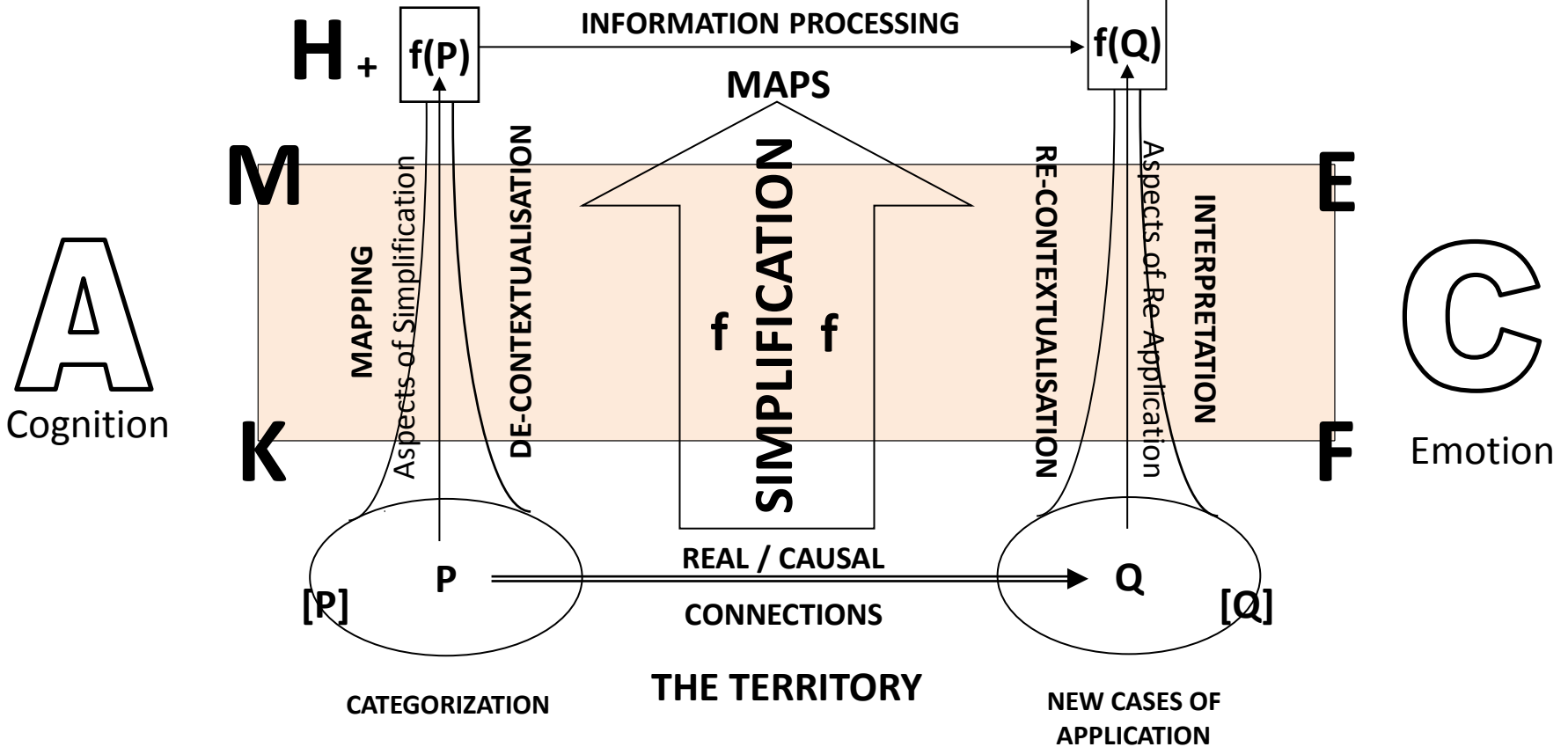
- 1) Questioning and correcting the unrestricted action guiding use of local correspondences between causal relations $P \rightarrow Q$ in (segments of) reality and logical (or conditional) relations $f(P) \rightarrow f(Q)$ in language (Gregory Bateson: “The map is not the territory”; see also Haridimos Tsoukas)
- 2) Overcoming this (locally valid or successful) identification as a source of insufficient scientific/practical achievements by plain practitioners
- 3) Re-establishing dialogue as a means for evaluating and correcting actions, i.e., as mediator between the micro- and macro- level



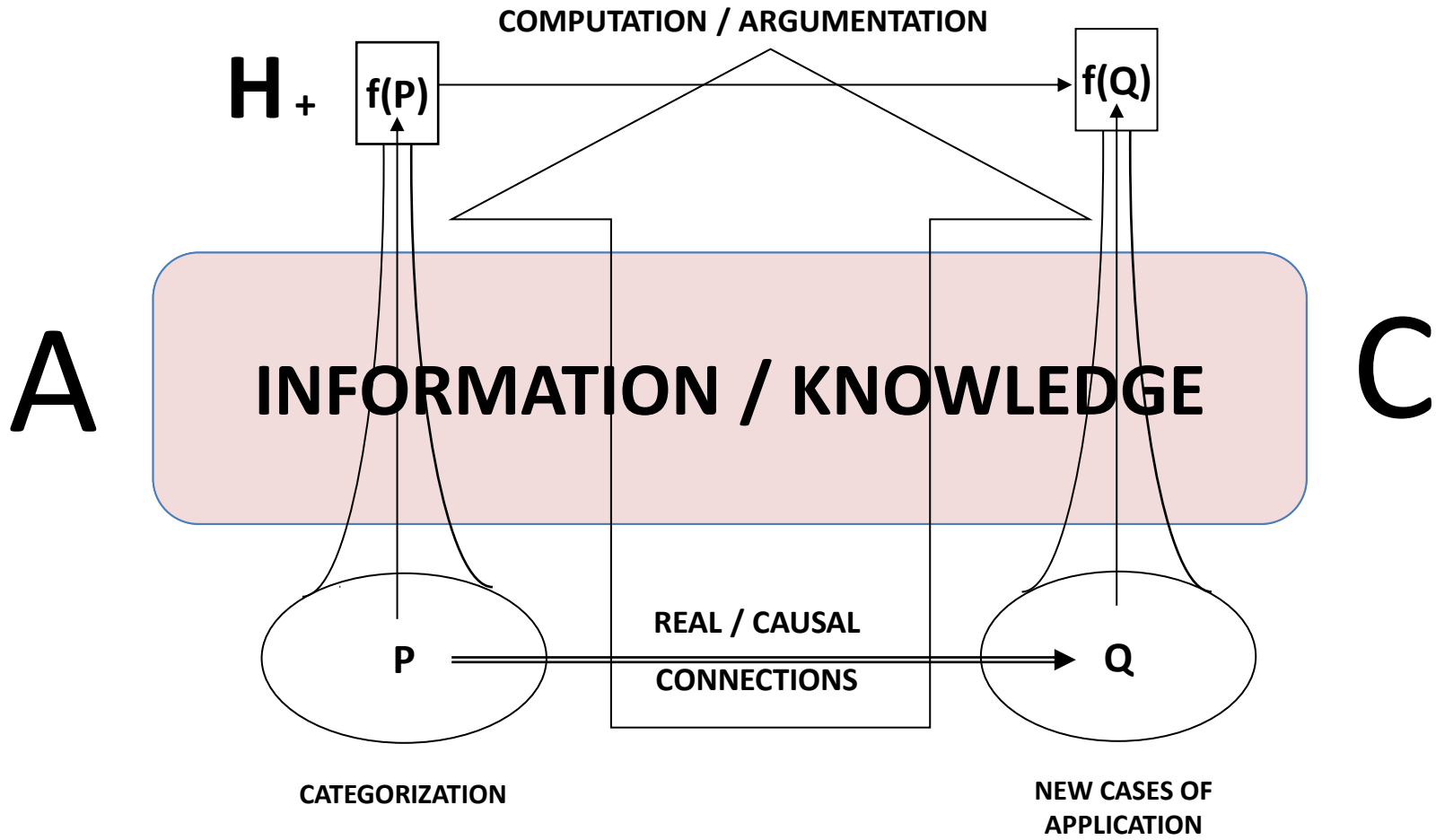
Local Approximization(s):



„Managerial Rationalizations“
COMPUTATION / ARGUMENTATION
INFORMATION PROCESSING



„If, then ...“ $f (P \implies Q) \doteq f (P) \dashrightarrow f (Q)$ „If, then ...“

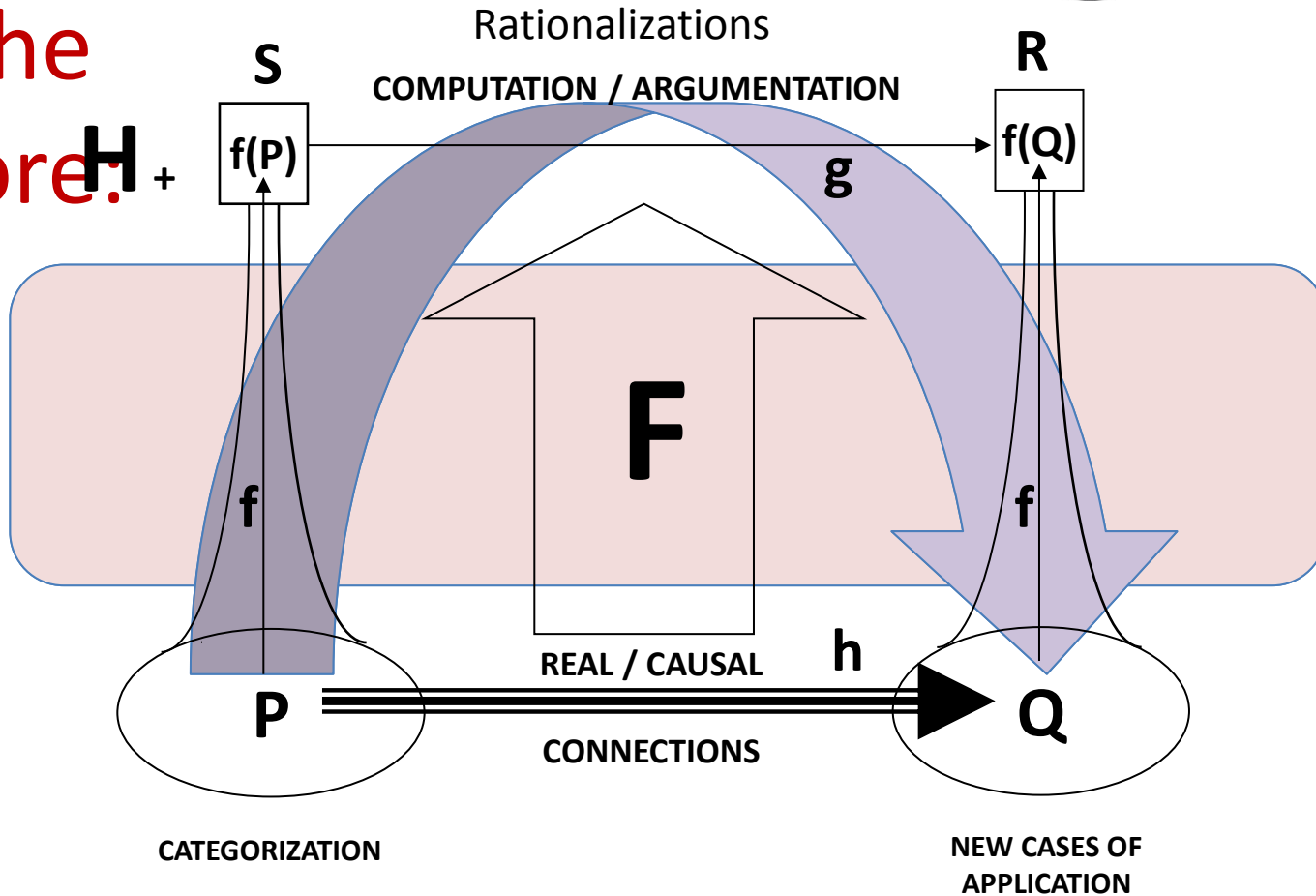




The
Core: H_+

A

C



$$g \text{ after } f(P) \stackrel{=}{=} f \text{ after } h(P)$$

$$[f(P) = S \quad \& \quad h(P) = Q]$$