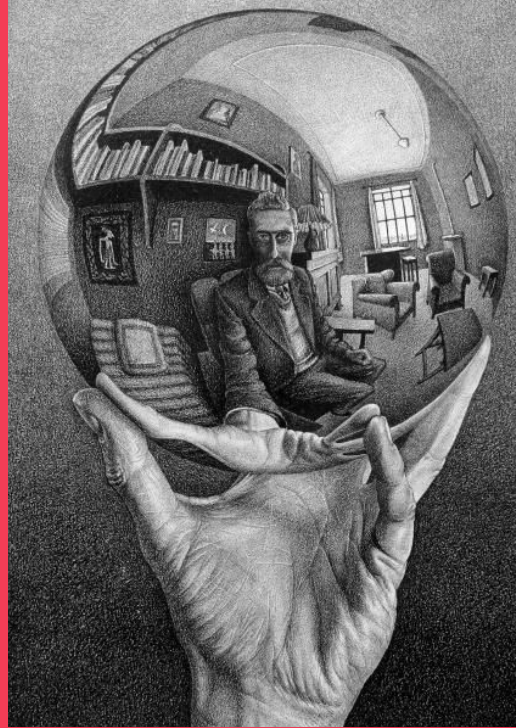


**IDS-Wittenberg 2023**



# **From Causal Worlds to Utopian Horizons**

## **The emergence of intentional cooperation**

*Dr. José María Díaz Nafría*  
(Madrid Open University, Spain)

**udima**

**Lebensprojekt  
Psychohistorik**

INSTITUT  
FÜR  
**Design  
Science**

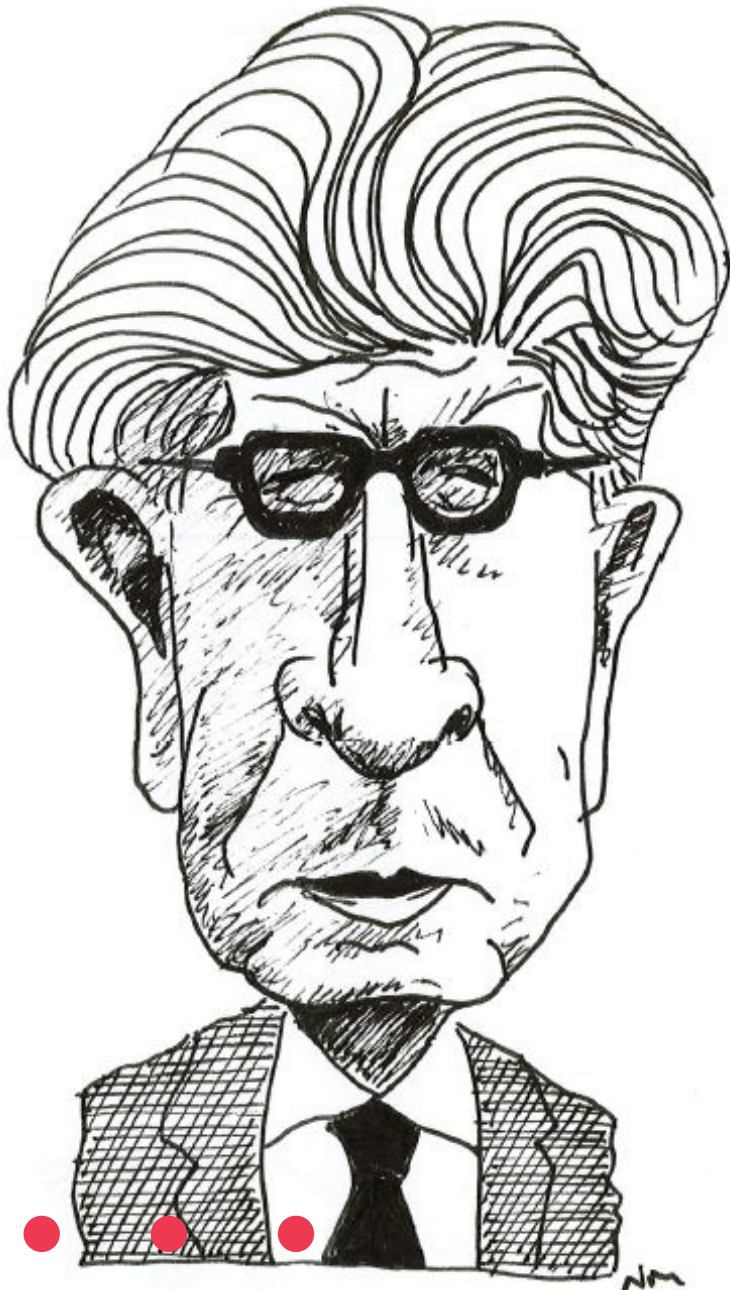
# Agenda

## Table of contents



- I. The pillars of philosophy
- II. A new way of dealing with these pillars (networks, systems and agents)
- III. Addressing the pillars through networks, systems and agents.





## Ernst Bloch

---

*“Denken heißt  
Überschreiten. So  
jedoch, daß  
Vorhandenes nicht  
unterschlagen,  
nicht überschlagen  
wird.”*

(Das Prinzip Hoffnung, 1938-1959)

“Thinking means transcending.  
But in such a way that what  
exists is not misused, is not  
skipped.”

(*Das Prinzip Hoffnung*, 1959)

# Ortega y Gasset



**“I am I and my circumstance;  
and, if I do not save it, I do not  
save myself.”**

*(Meditations on Quixote, 1914)*

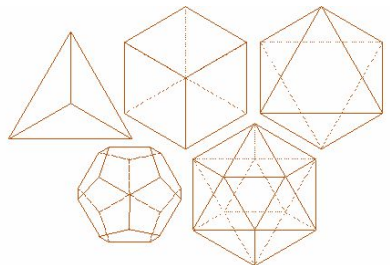


# The pillars of philosophy

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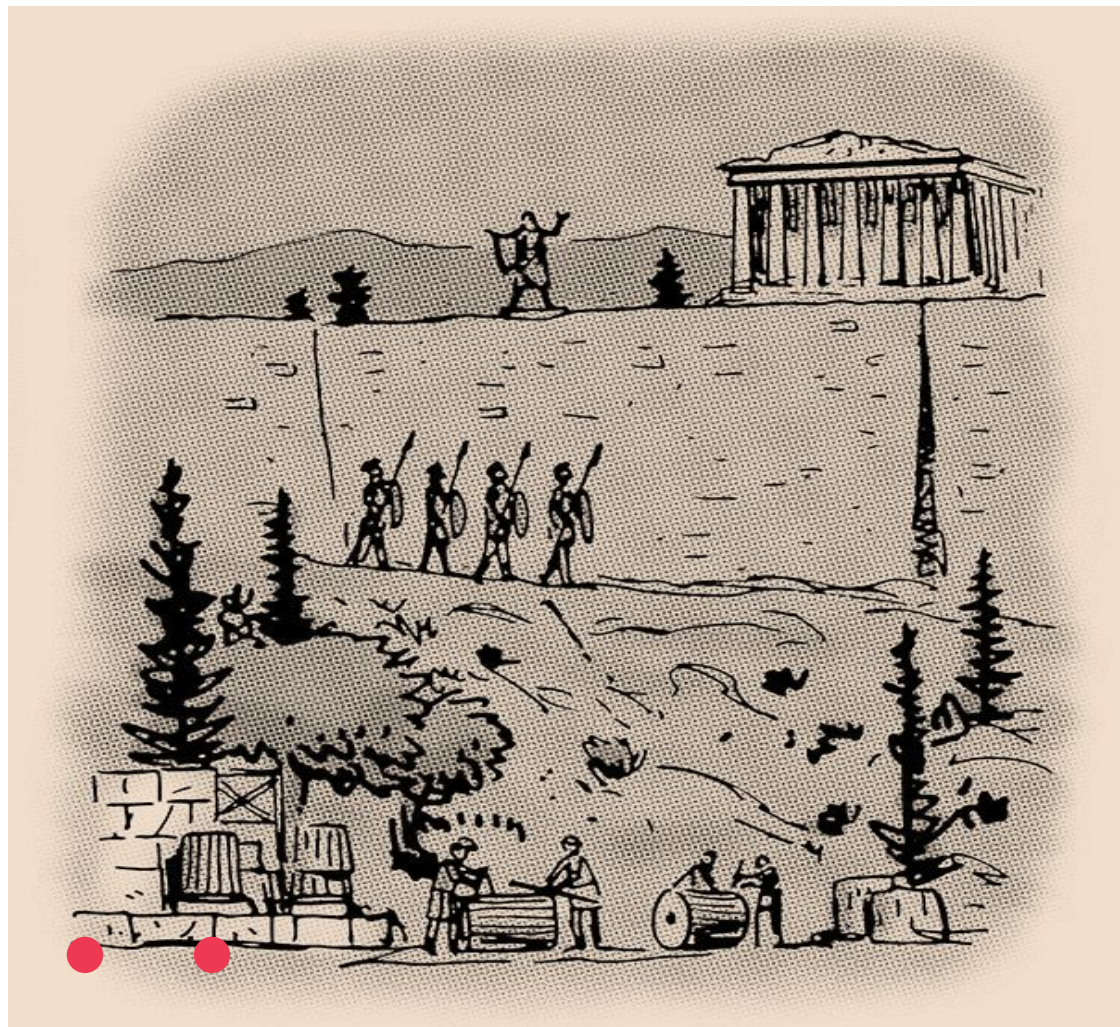
- 1) The pillars of philosophy
- 2) What there is?
- 3) What should we do?
- 4) How do we know?



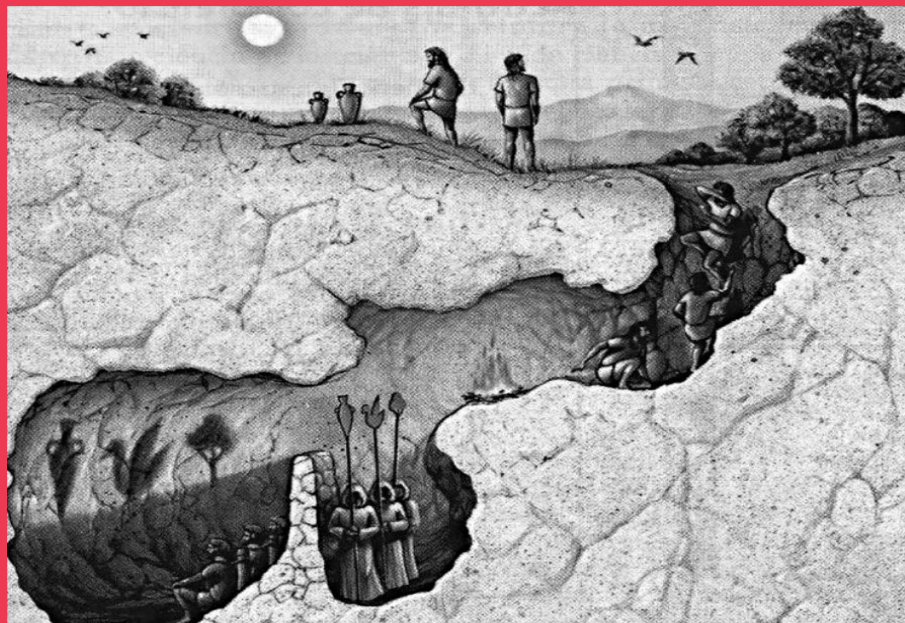


# I. Pillars of philosophy

## Plato: *τί ἐστί;*



- Three pillars of philosophy:
  1. What should we do?
  2. What there is?
  3. How do we know?
- Political utopia
- The cave: transcending phenomena



# What there is? From pre-cambric to holocene



(MediaWiki)

- Precambric: the different structures that enabled the develepment of life as we know it emerged.
- Procaryote and eukaryote as basis for the multiplication of species in the *fanerozoic*.

# What should we do?

## From anthropocene to symbiocene



- The human footprint in the geological register is remarkable: existence of species, climatic change, materials...
- What can follow the Anthropocene? The *Symbiocene*?

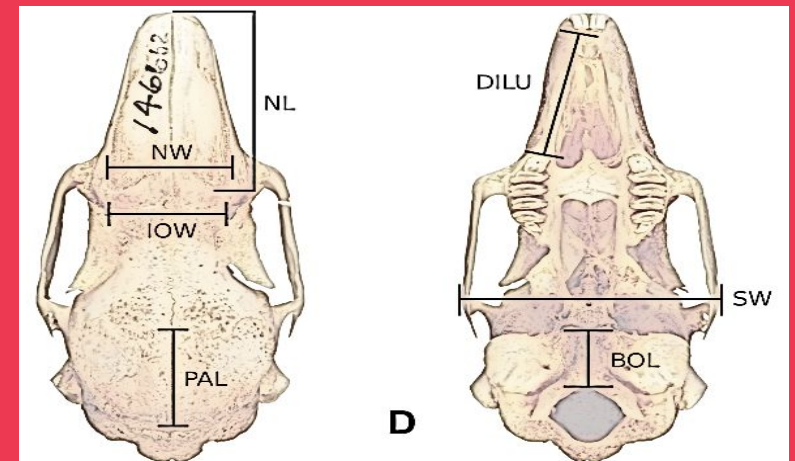


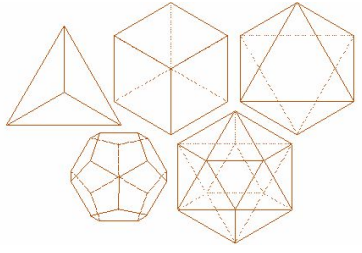


# How do we know? Rabbit or hare?



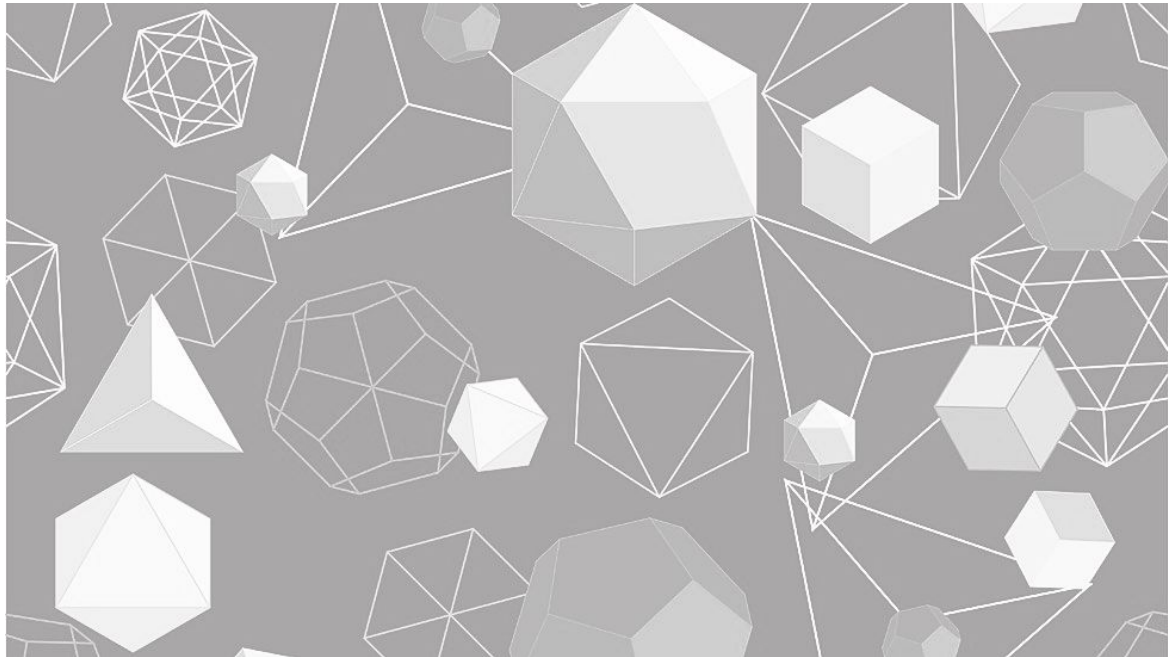
- Do we have an stable concept for the hare and the rabbit, or we need to cook a new one?
- Two classical solutions to the problem: **Plato vs Aristotle**



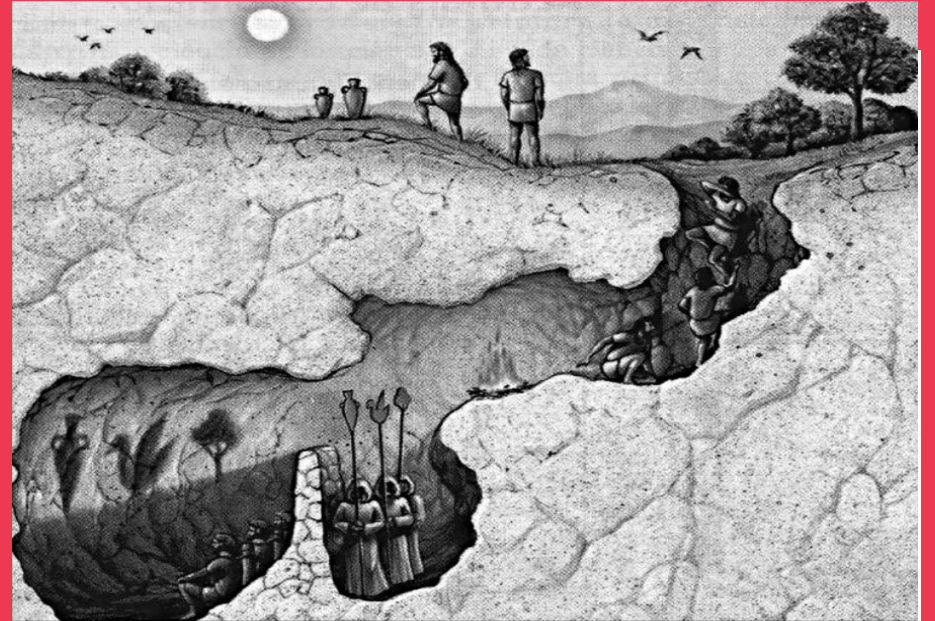


# How do we know?

## Plato: forms (intellective intuition and deduction)



- If concepts already pre-exist (als form/structure) we can deduct the characteristics and observations.
- The concept is a *(re-)generator*.  
(Matter: epiphenomenon)



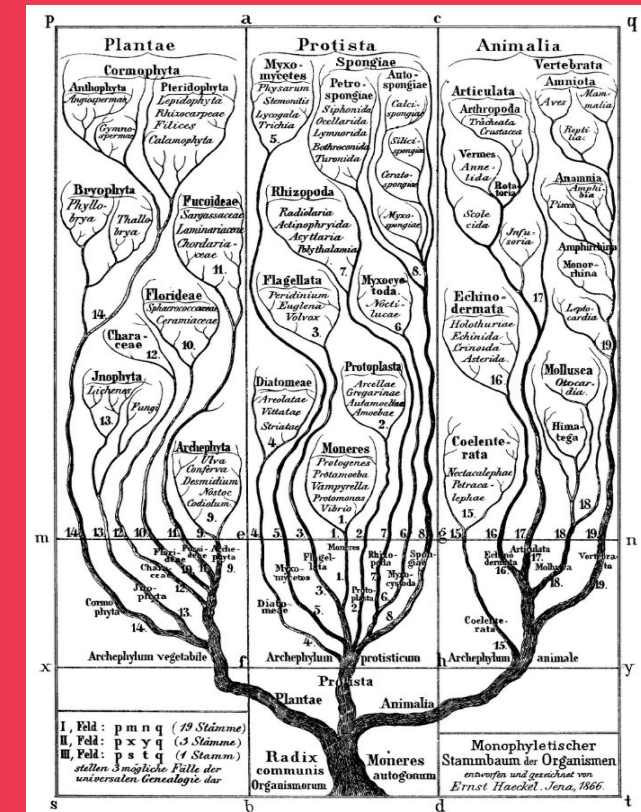
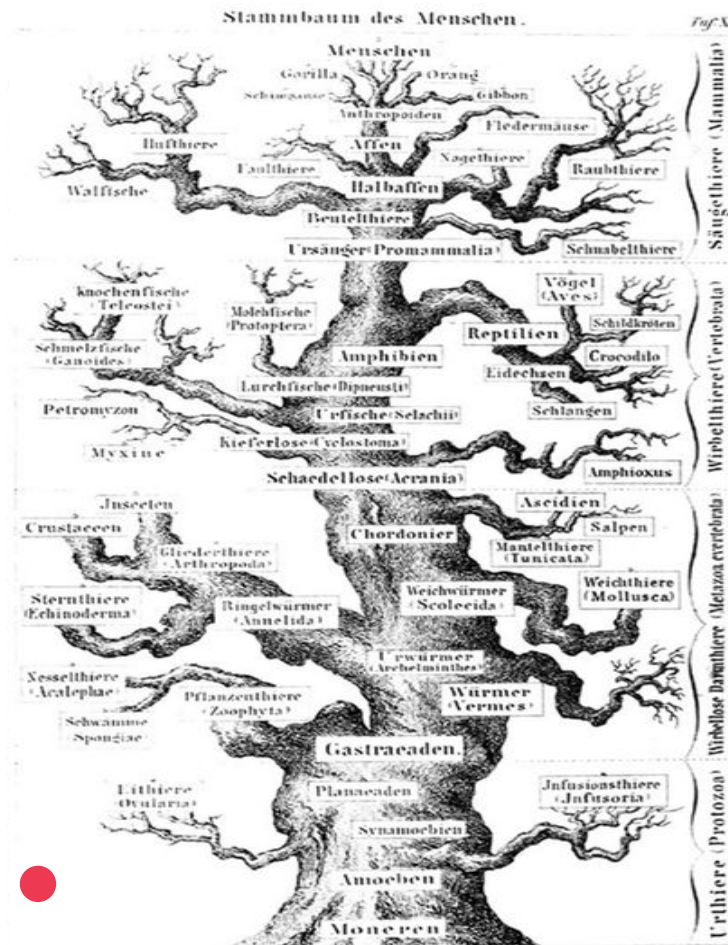
(Giambrone, 2017)



# How do we know?

## Aristotle: Matter and Form (induction)

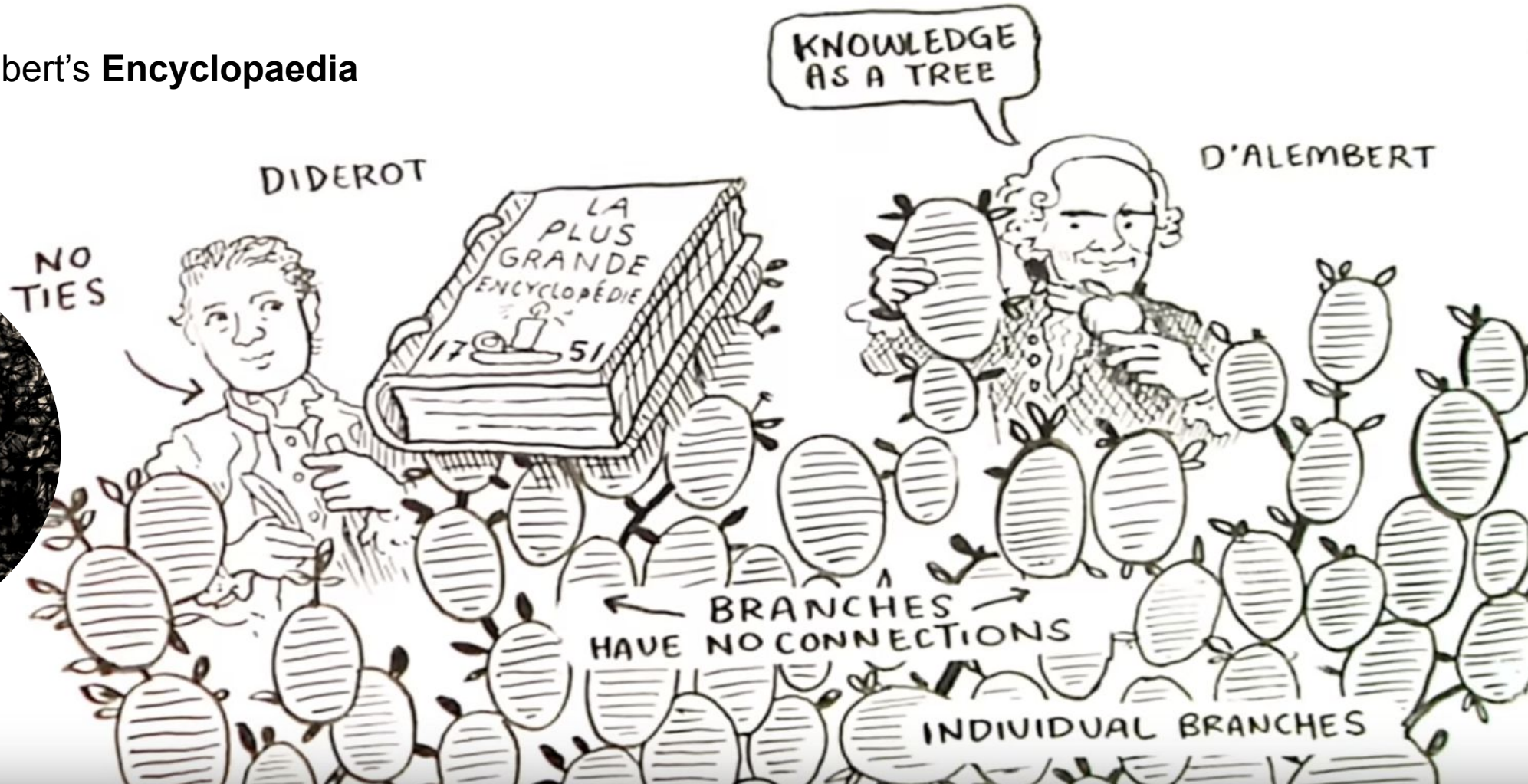
- *Matter* represent the potentiality of the possible forms
- *Form* is an actualisation



# How do we know?

Conflicting tendencies of modernity: analysis vs synthesis

Diderot & D’Alambert’s **Encyclopaedia**  
(XVIII C.)



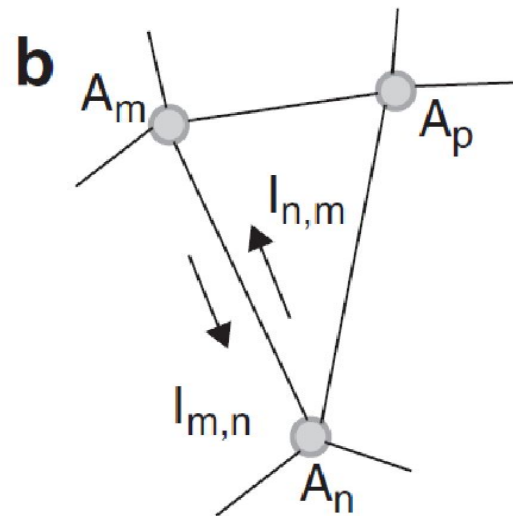
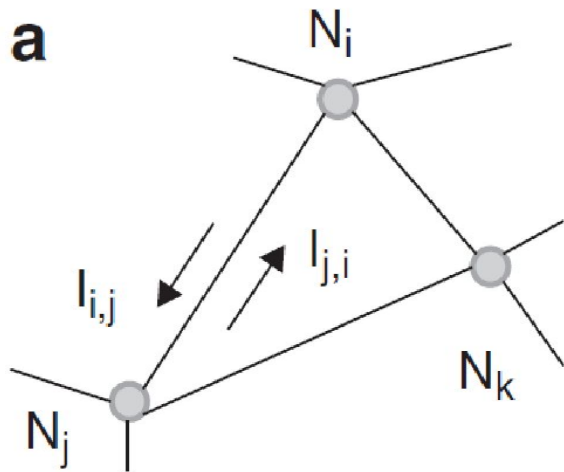
# A new way of dealing with these pillars

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- 1) Networks, information, agents
- 2) Active and passive networks
- 3) Network vs system
- 4) Subsidiary information model: levels of complexity



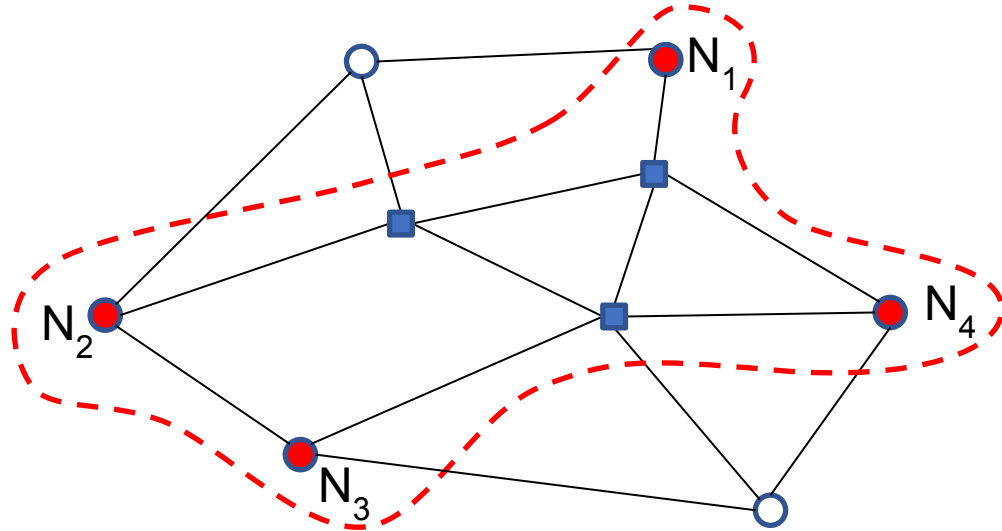
## II. A new way of dealing with these pillars Network, information and agent



- The network provides a successful link to all complex reality no matter its nature.
- When we map reality **information** equates INTERACTION between (generalised) agents, then we can map real interaction of any nature (physical, biological, human, technical)



# Active and passive networks

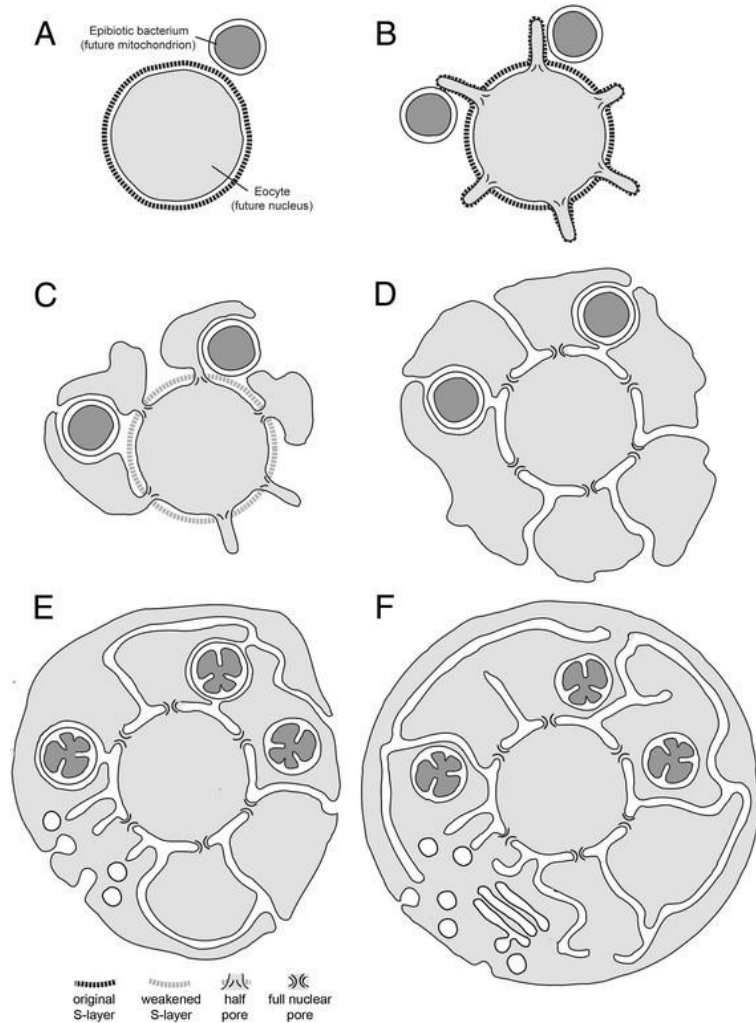


- It depends on the type of node:  
Does it act or not by itself? Active / passive
- Active node: **autonomous agent**
- What is it? System capable to perform thermodynamic cycles to provide its existential needs



# Network vs System

Origin of eukaryote cell



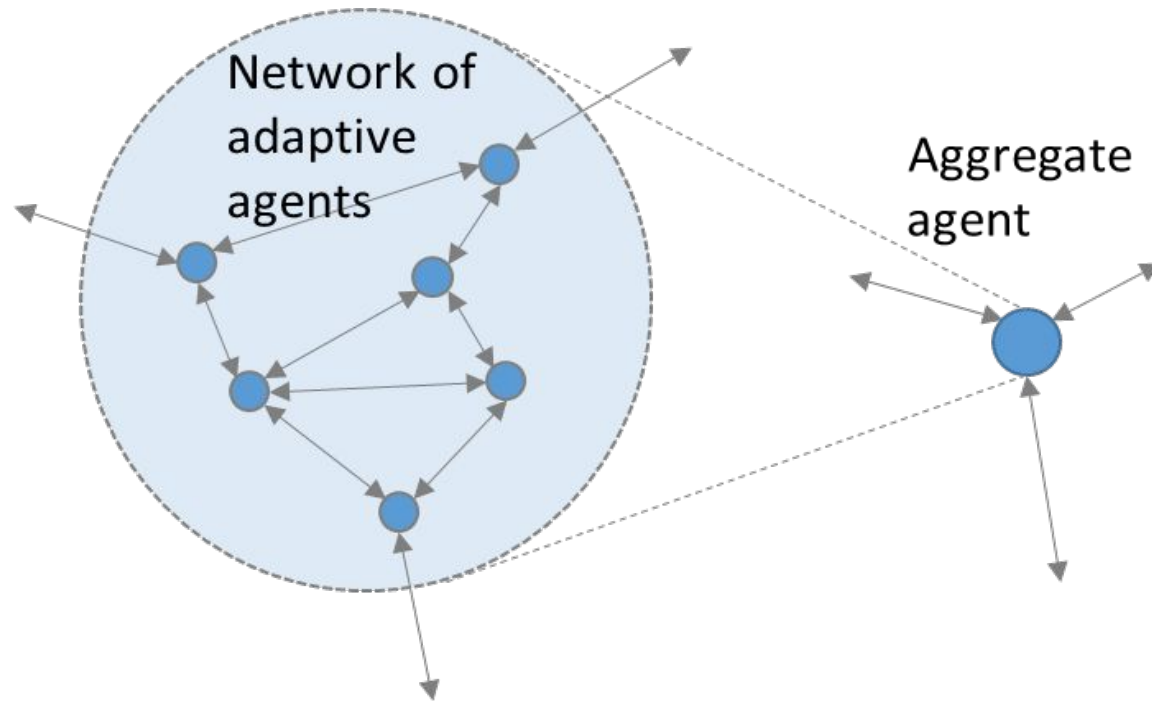
- An **stable frontier** offers a difference in the regulation capacity.
- It will be a sustainable system or autonomous agent if it is able to survive in its environment.





# Subsidiary Information Model

Addressing the dynamics of complex systems as networks of adaptive agents interacting with other agents and the environment.



- The information exchanged among the parts of the autonomous agent (efficiently networked) and with the environment perform successful cycles to preserve the adaptive identity of the system and its capacity to act autonomously [Kauffman 2000].
- The inner information exchange can be abstracted as the grounding for the agent's identity and capacities.

# Addressing the pillars through networks, systems and agents

---

- 1) Network of events (Causal theory of views)
- 2) Network of life
- 3) The networks of human interaction (a historical perspective)
- 4) Networks of knowledge



# III. Lets use these tools:

## What there is? The Network of Events

### Principles for fundamental physics (Smolin)

- I. Background independence
- II. Relational Space and Time
- III. Principle of *causal completeness*
- IV. Principle of *reciprocity*
- V. Principle of *identity of indiscernibles*

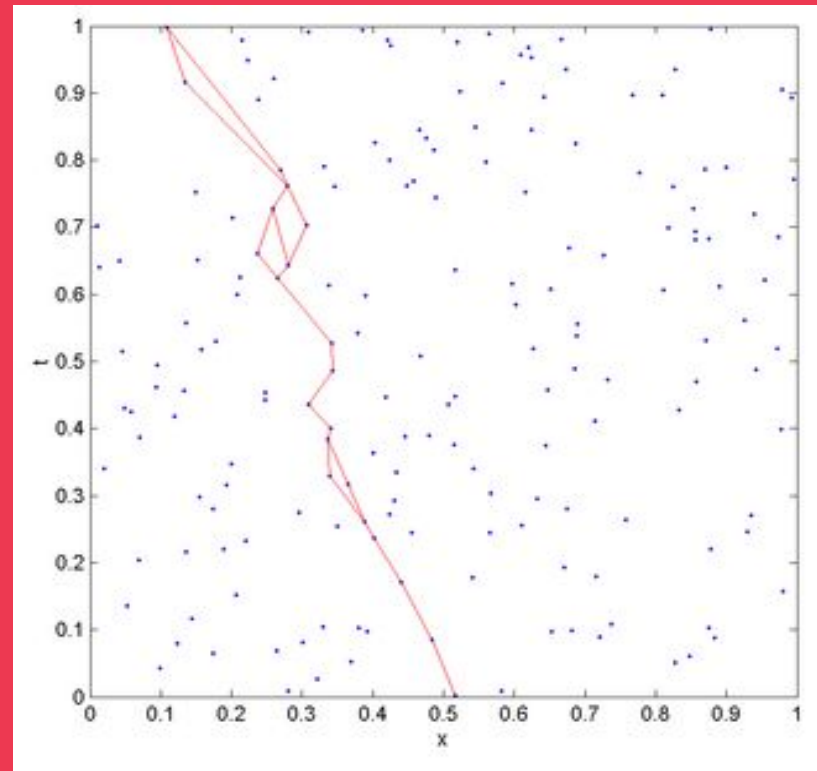
{I,... V} aspects of the Princ. of **sufficient reason**

(after Leibniz)



### Hypothesis to go beyond the quantum

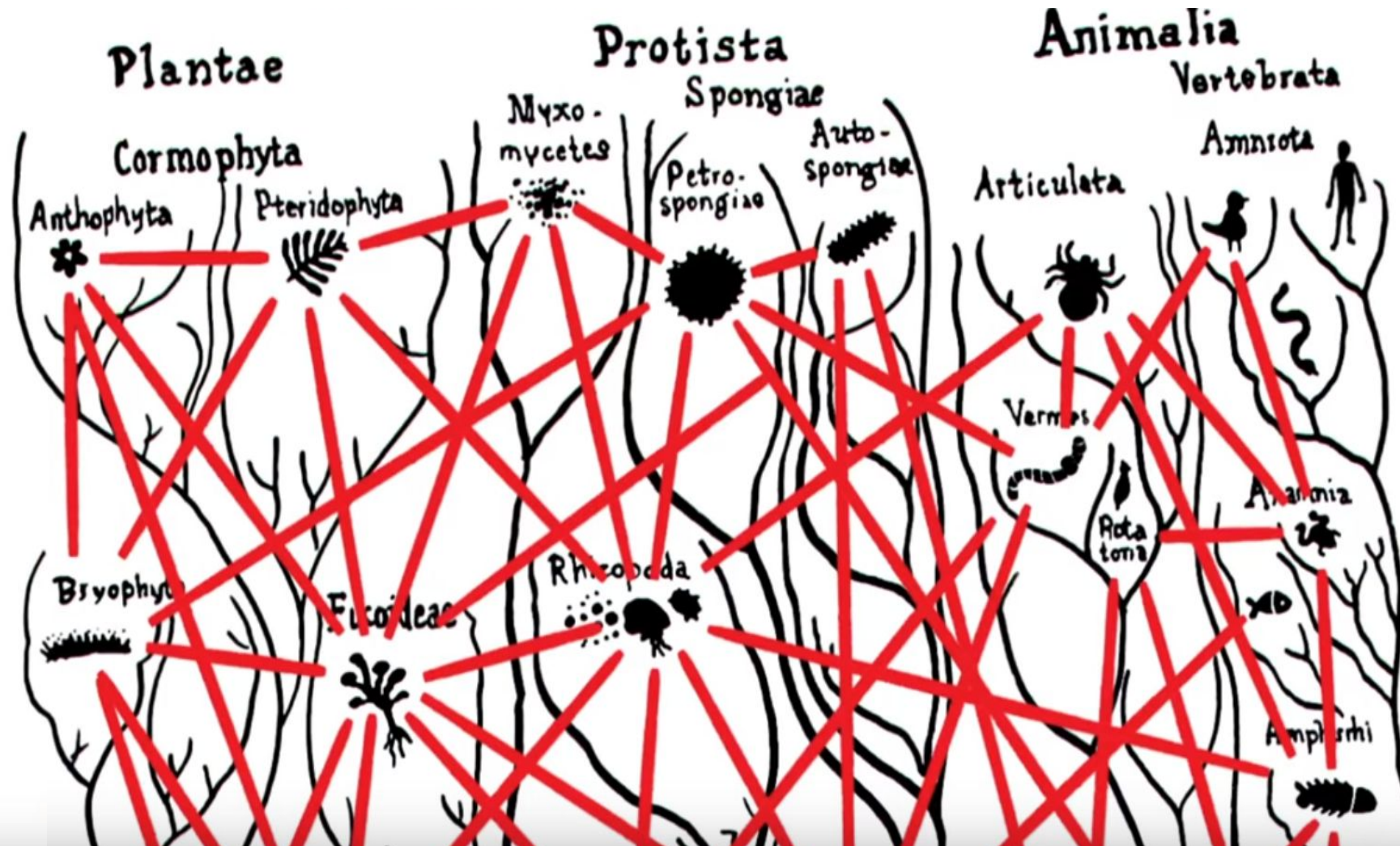
- I. Time in the sense of causation is fundamental
- II. Time is irreversible
- III. Space is emergent (coarse-grained result of the network of relationships between events)



**Causal theory of views:** the universe consists of views of itself, each from an event and its history and the laws to make the U. as diverse as possible.

# What there is? The Network of Life

(Lima, 2012: The Power of Networks)



THERE IS A DENSE NETWORK OF BACTERIA TYING VERY DISPARATE SPECIES TOGETHER

**What there is? What should we do?**  
Beyond determinism: diversity of living  
forms, intentional futures

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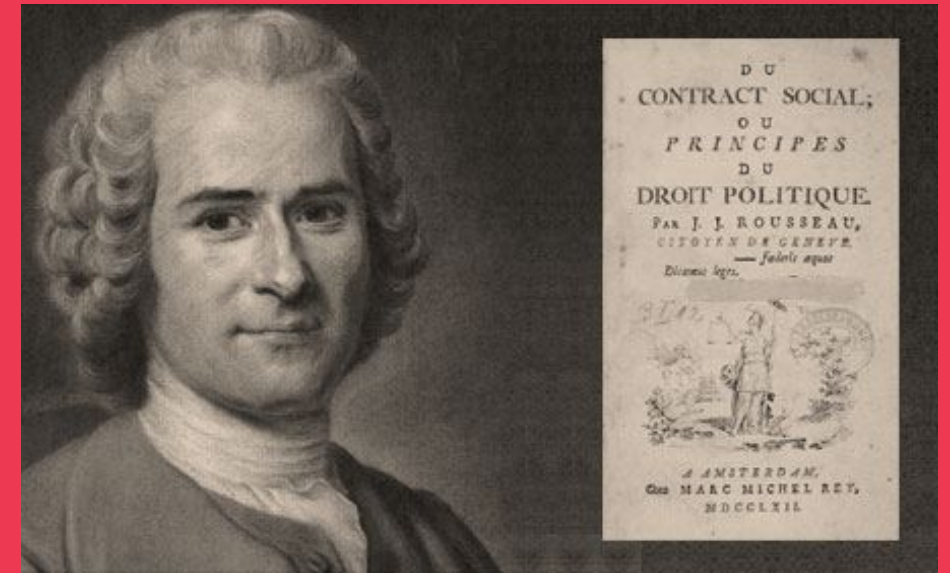
# THE DAWN OF EVERYTHING

A NEW HISTORY OF  
HUMANITY

DAVID GRAEBER AND  
DAVID WENGROW

*Graeber (anthropologist and activist) &  
Wengrow (archaeologist) (2021).*

# Human history and political theory: Between Leviathan and the noble savage



# The prehistoric origin of the city

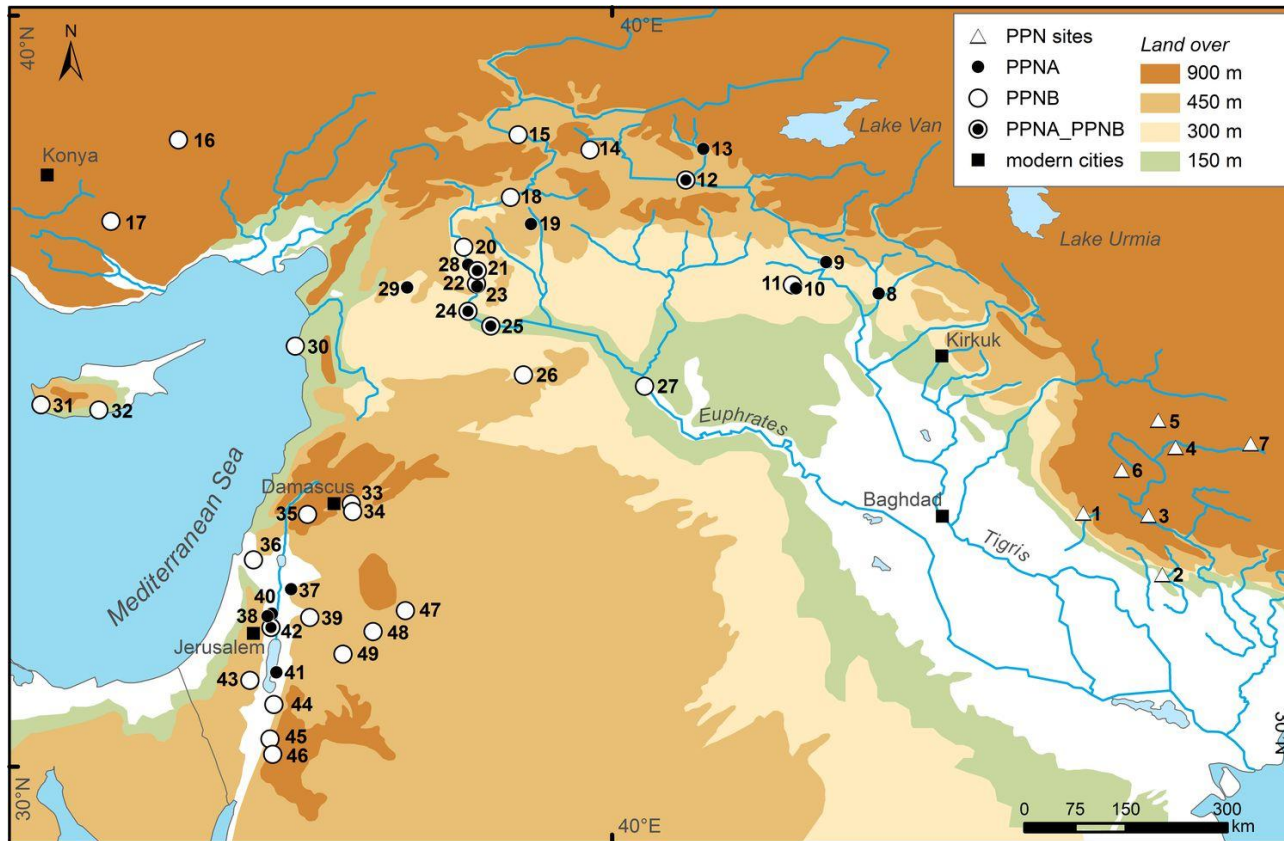
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- Elias Canetti (Mass and Power):  
Cities start in the mind of ancient hunter-gatherers, thinking in much larger collectives than those to which they were living.
- A group above 2000 people starts to be abstract: symbolic relations.



# The prehistoric origin of civilisation



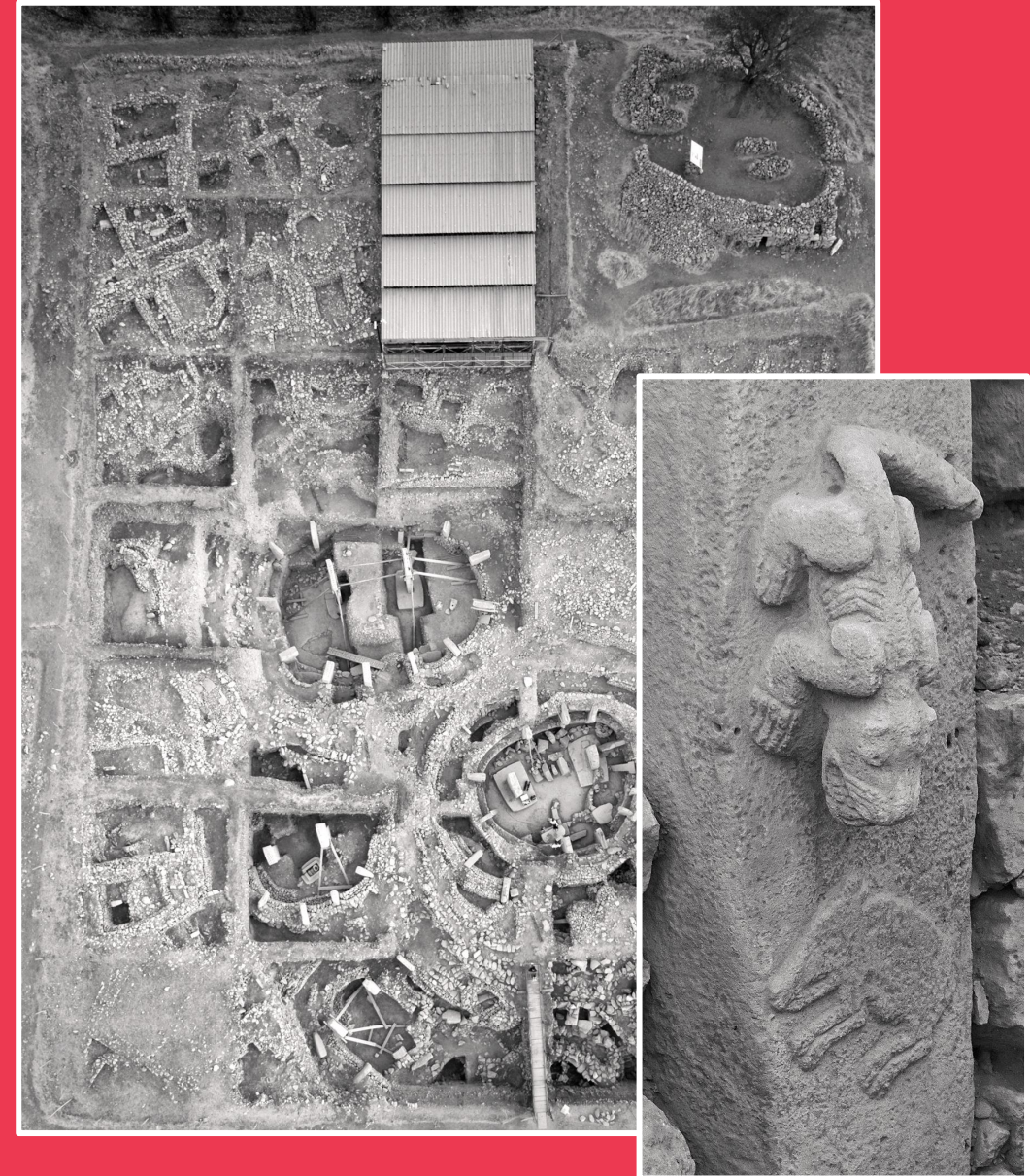
- Coincidence of the development of agriculture in hunter-gatherer societies.
- Experimentation and transcendence of living conditions.
- The fundamental role of women in the technical and scientific development (fabrics, mathematics, calendars, medicine, domesticating plants, etc)





# The prehistoric origin of civilisation

- Göbekli Tepe (ca. 9000 BCE)



# Politics before the states

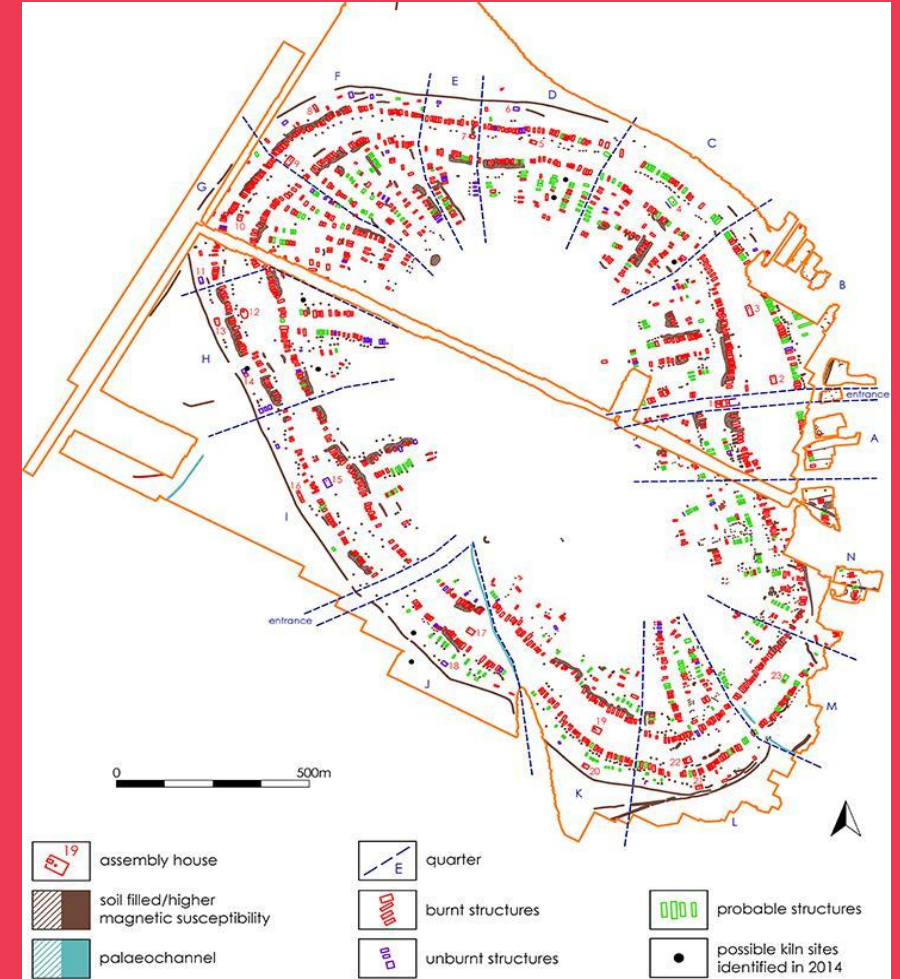
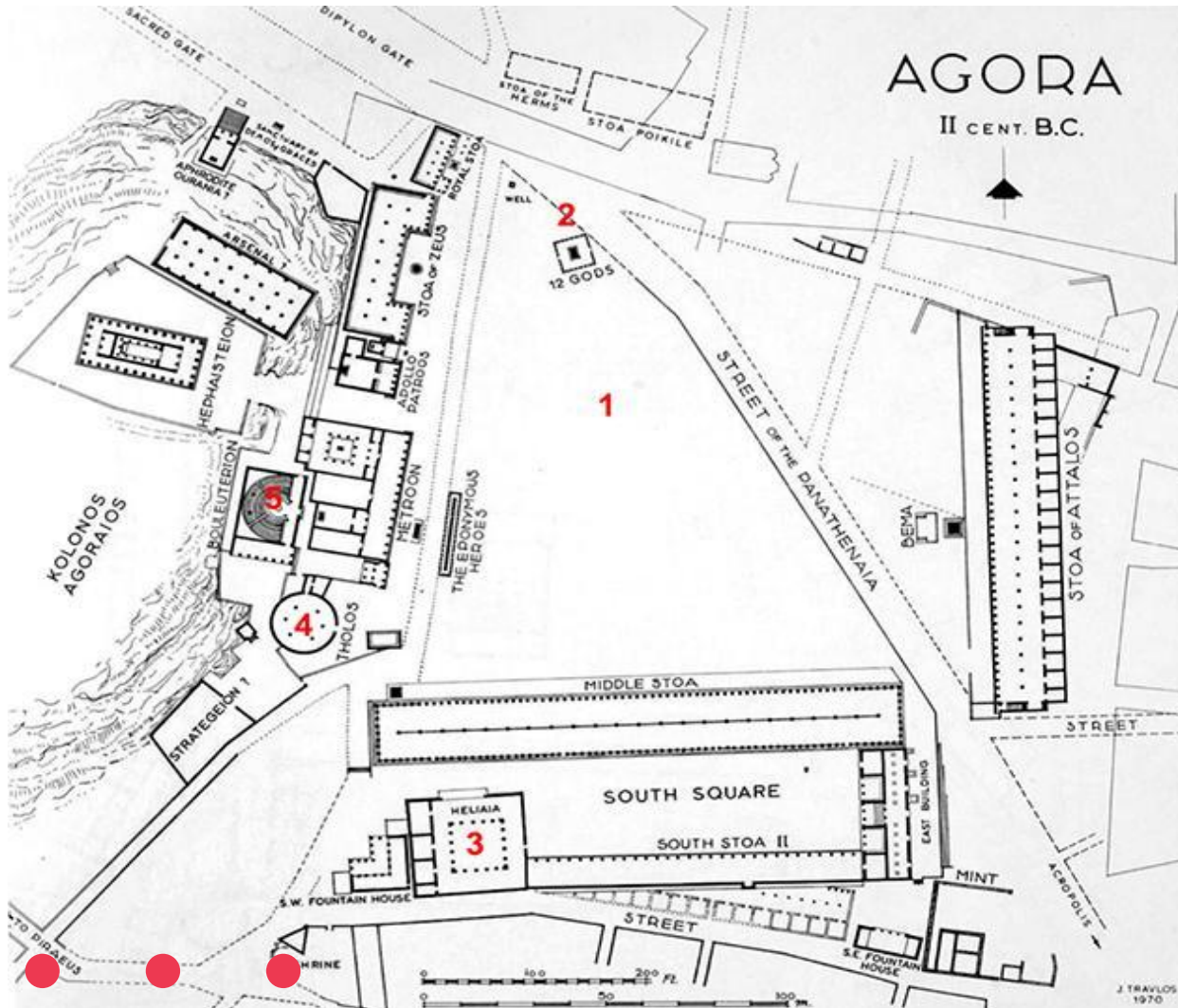


- Mega-sites in the ukrainian steppes
- Mesopotamic Cities
- Teotihuacan



# Starting democracy

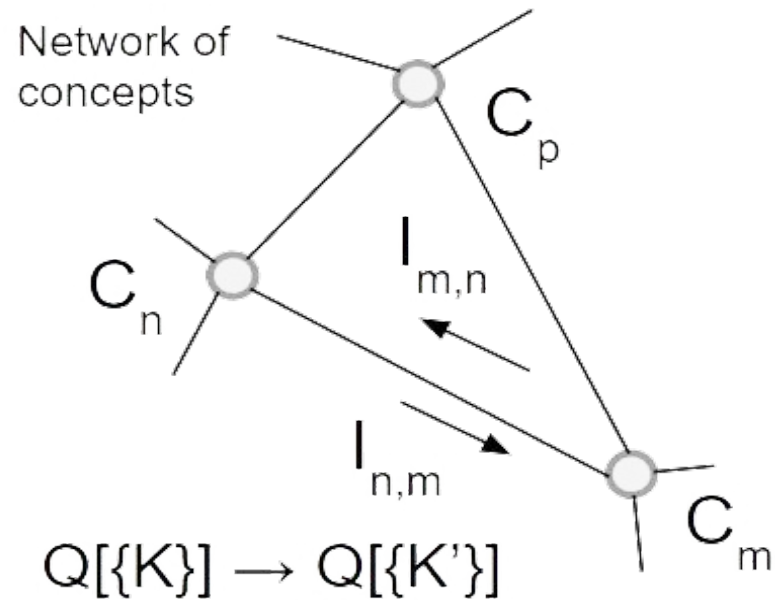
- The greek agora: What democracy?
- The ukrainian megasites (4.100-3.300 BCE) Nebelivka



# How do we know?

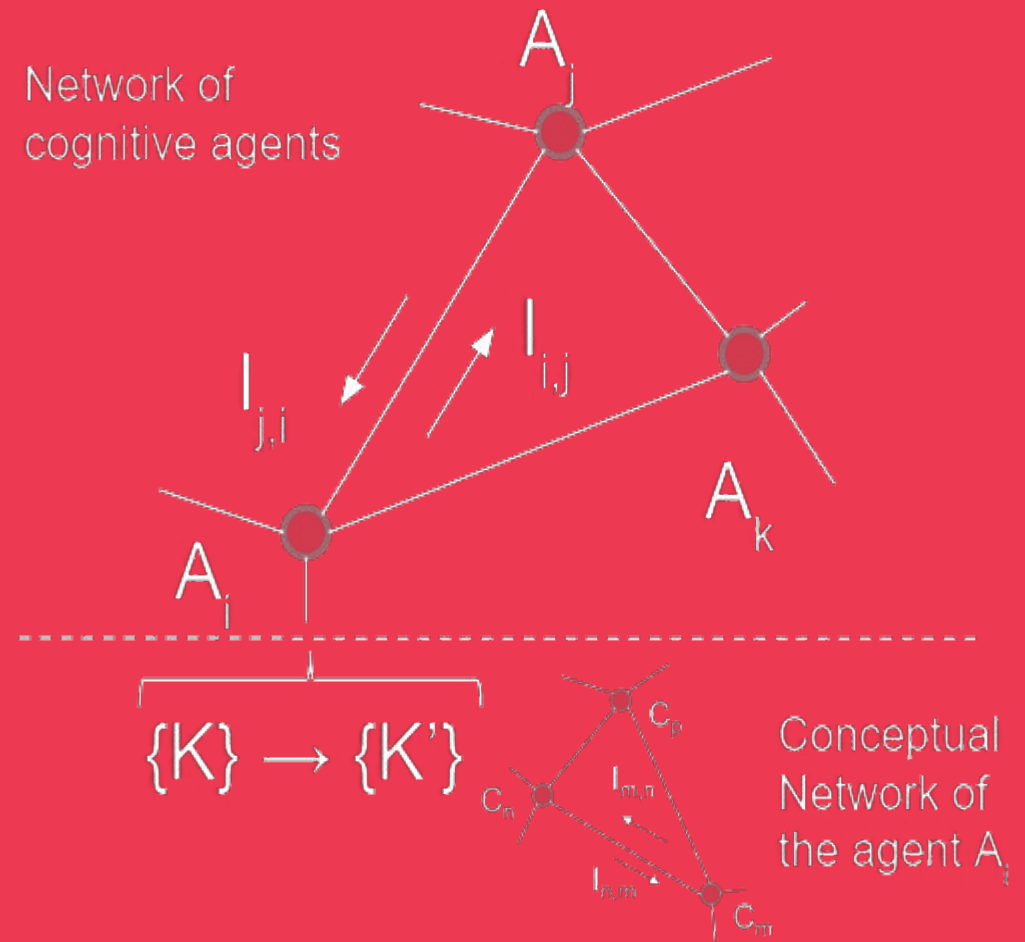
## Dynamic of knowledge system

Knowledge System  $\{K\}$  as a network of Concepts ( $C_i$ ).



$K$  evolves through the qualification of the system of knowers.

- The network of knowledge agents interact, confirm, criticize, propose...

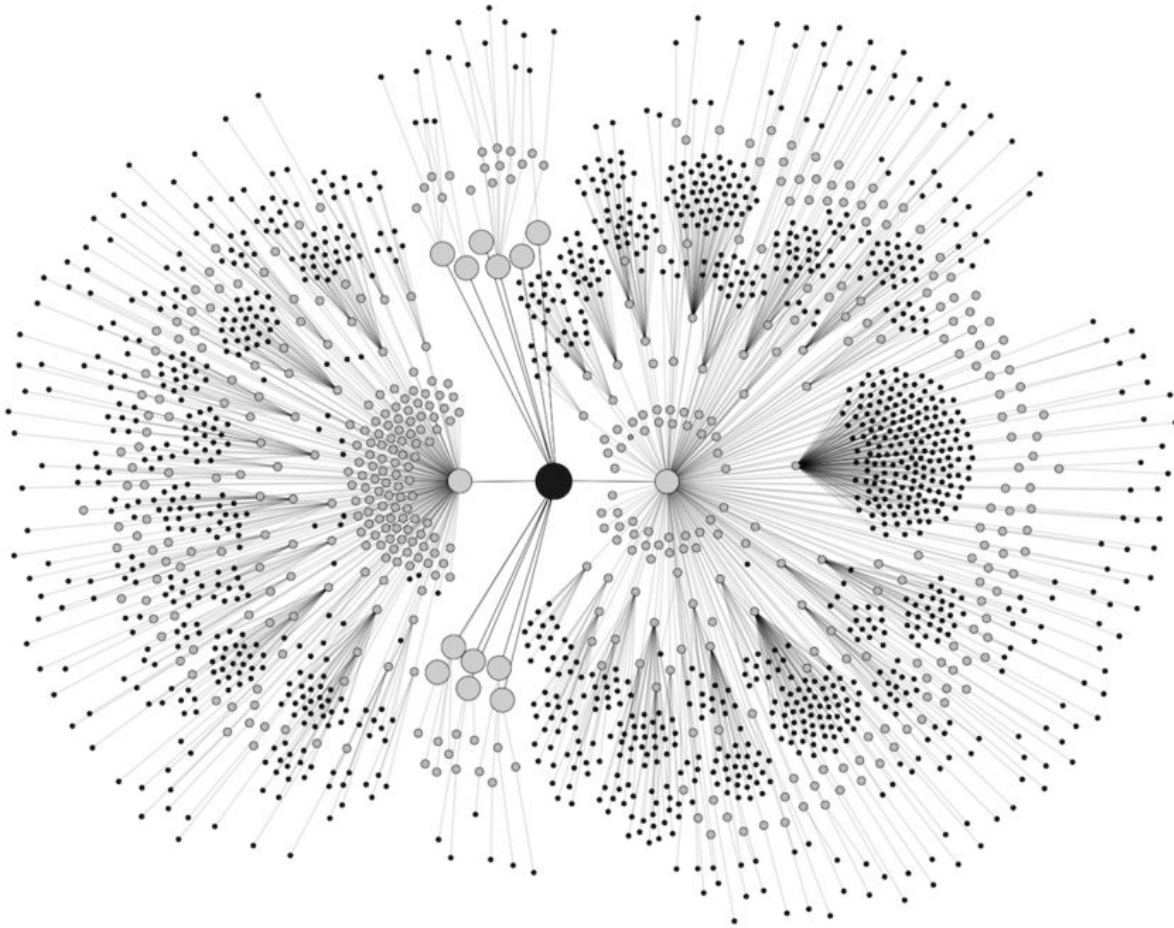




# From trees to networks

## Positivism vs Systematic viewpoint

- Universal Decimal Classification (Otlet and La Fontaine)
- Knowledge Networks (International Commission for Intellectual Cooperation, 1922-1930)

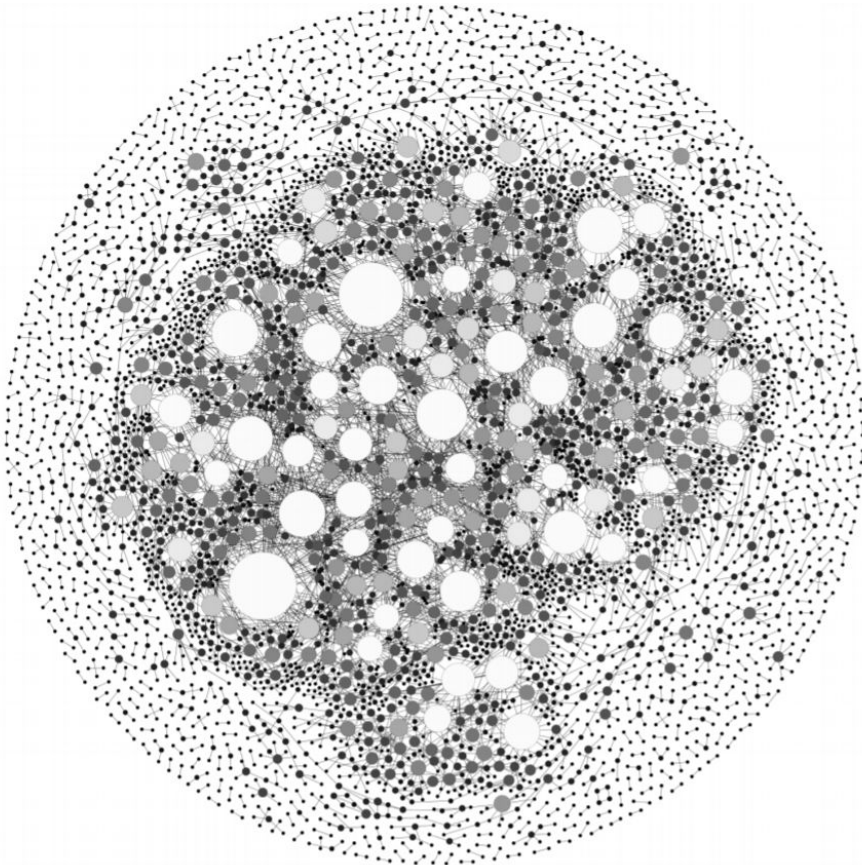


(Grandjean, 2014: *La connaissance est un réseau*)

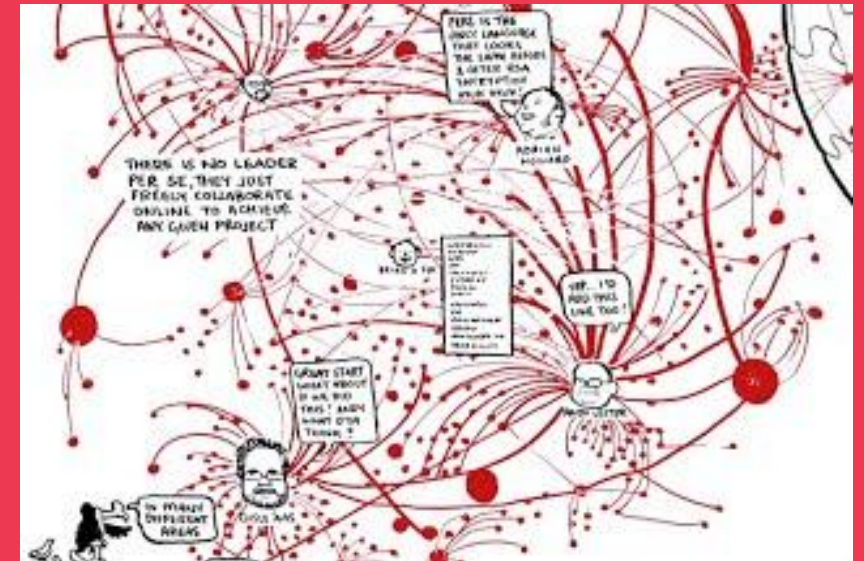


# Knowledge and Collaboration Networks

- Co-occurrence networks and co-authorship networks
- Collaboration networks (PERL programming)



(Grandjean, 2014)

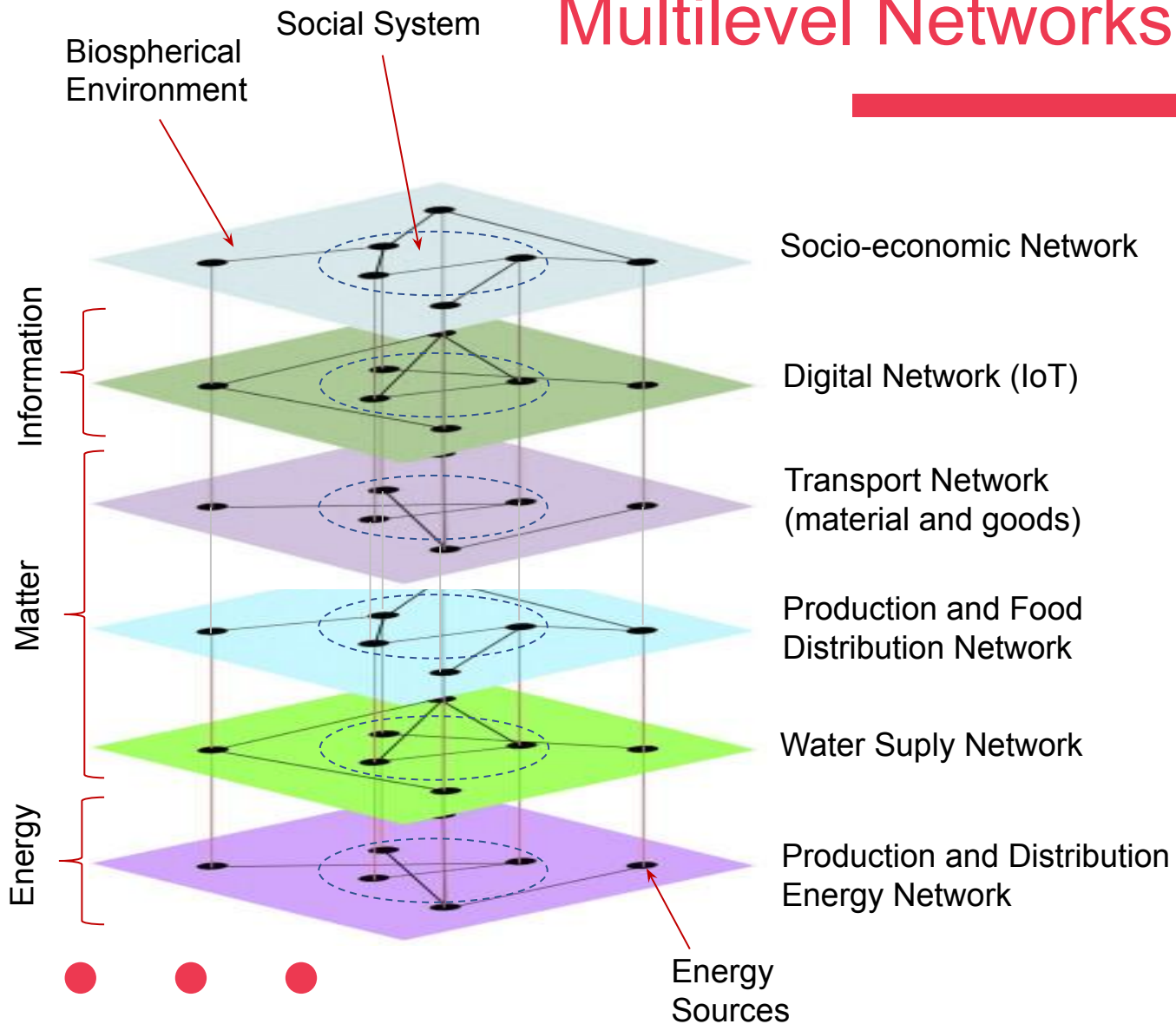


(Lima, 2012)



# How do we know?

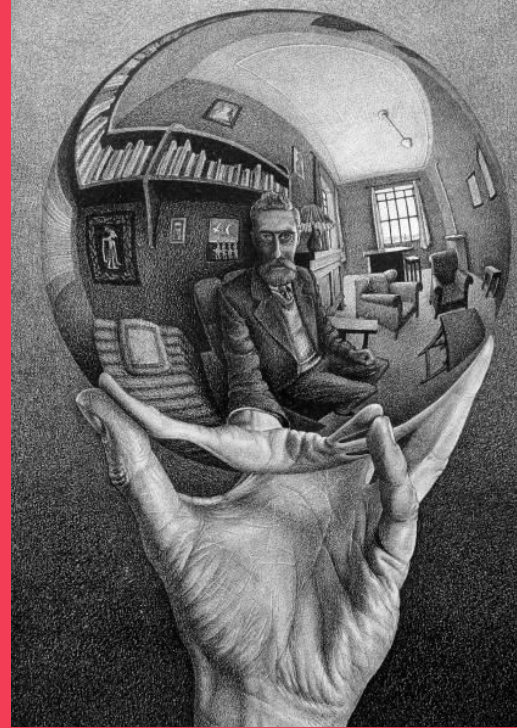
## Multilevel Networks



- At each level we can distinguish inside and outside defined by frontiers. The inner side is the **system**.
- If a **system** has capacity of autonomous agency we can abstract it as a node of a wider network.



**Danke für eure  
Aufmerksamkeit!**



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**The emergence of intentional cooperation**

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Science**



**Lebensprojekt  
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# **Kurze Bericht über glossaLAB und INSIGHT projects**

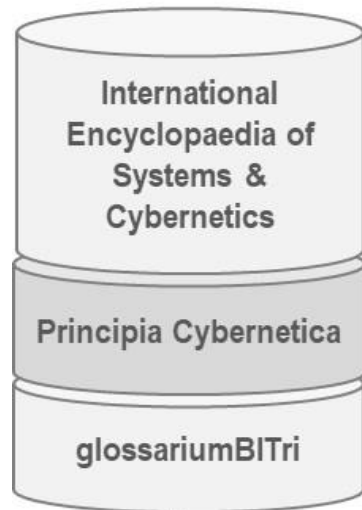
*Dr. José María Díaz Nafría*  
(Madrid Open University, Spain)

**udima**

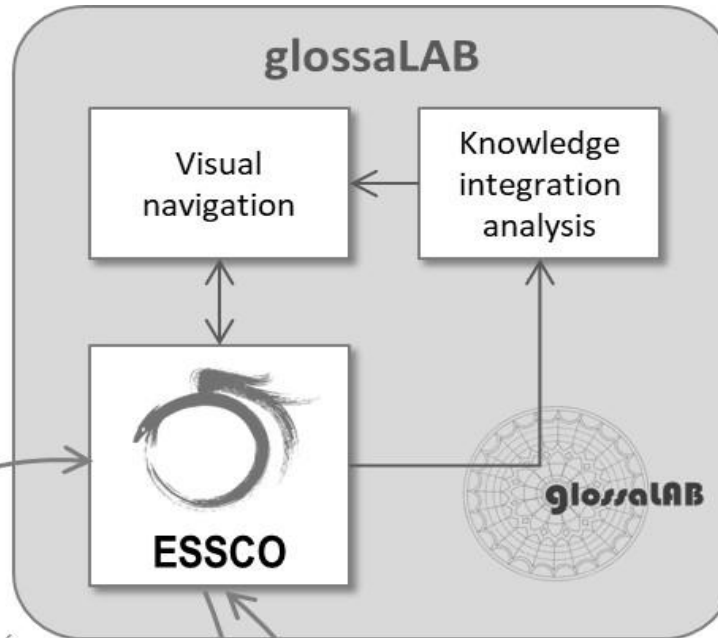
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# glossaLAB: co-creating Interdisciplinary knowledge

## Cooperative level



- Redundancy reduction
- New perspectives and topics
- Theoretical re-framing



- Reviews
- Research articles concerning theoretical clarification



Díaz-Nafría (2017). "glossaLAB: Co-creating Interdisciplinary Knowledge". Springer Link



Encyclopaedic editions in book series



Scientific Journals

## Project Level

### Technical level

Development of open platforms and tools

### Theoretical level

Development of contents and extension

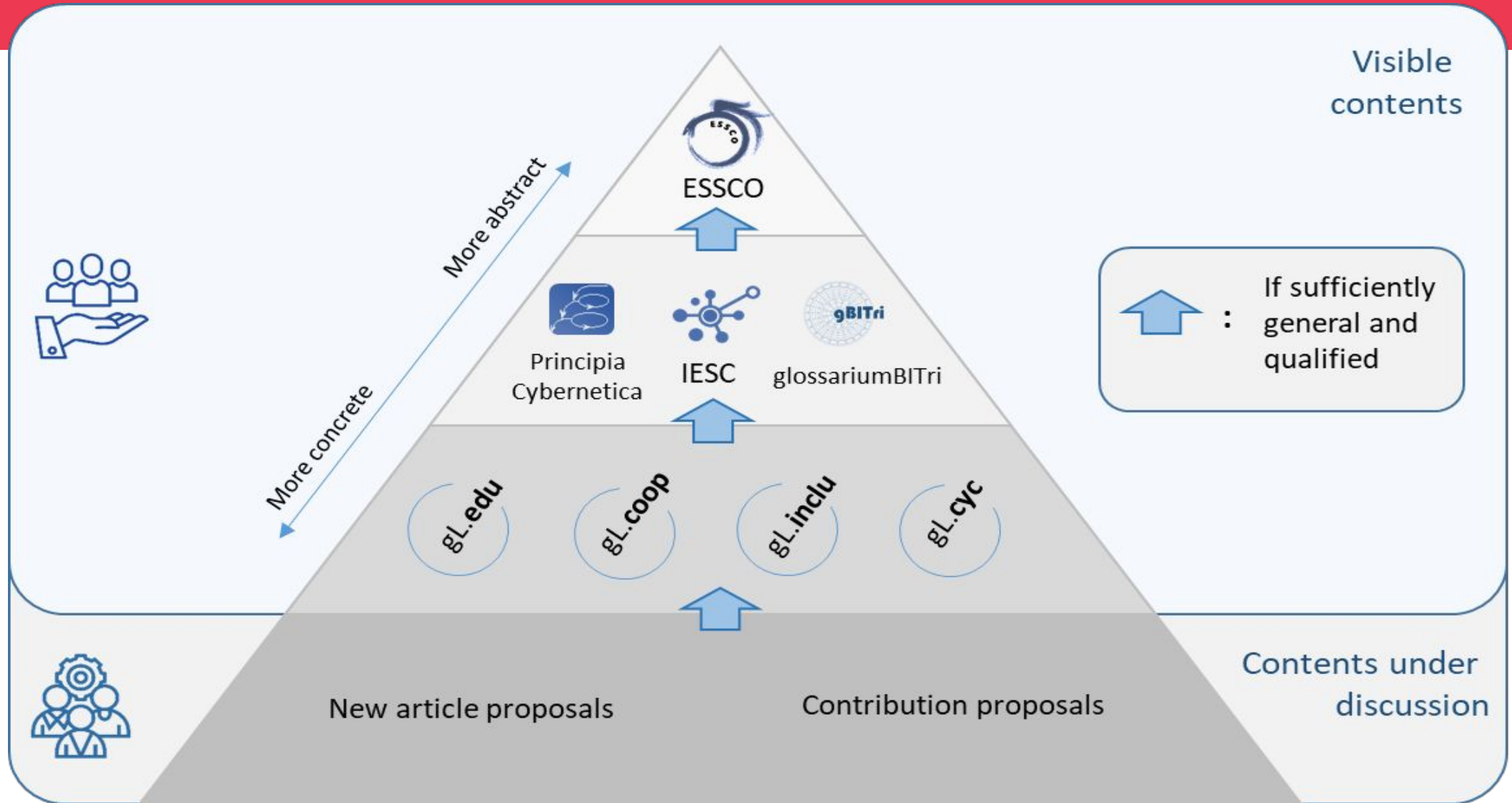
### Metatheoretical level

Eval. of knowledge integration

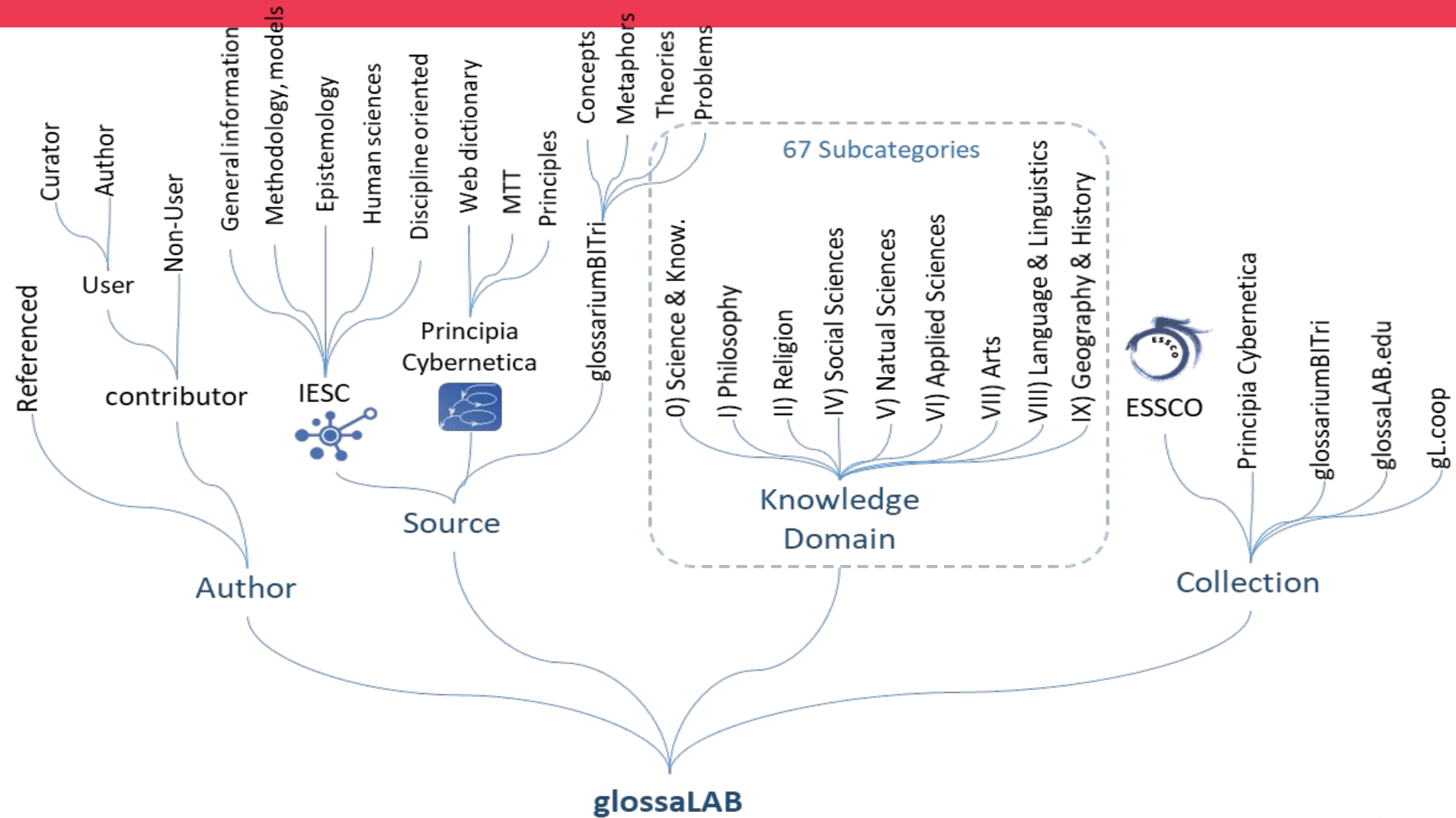
### Organizational level

Structure for sustainable management  
(Cyber-subsidiarity model)

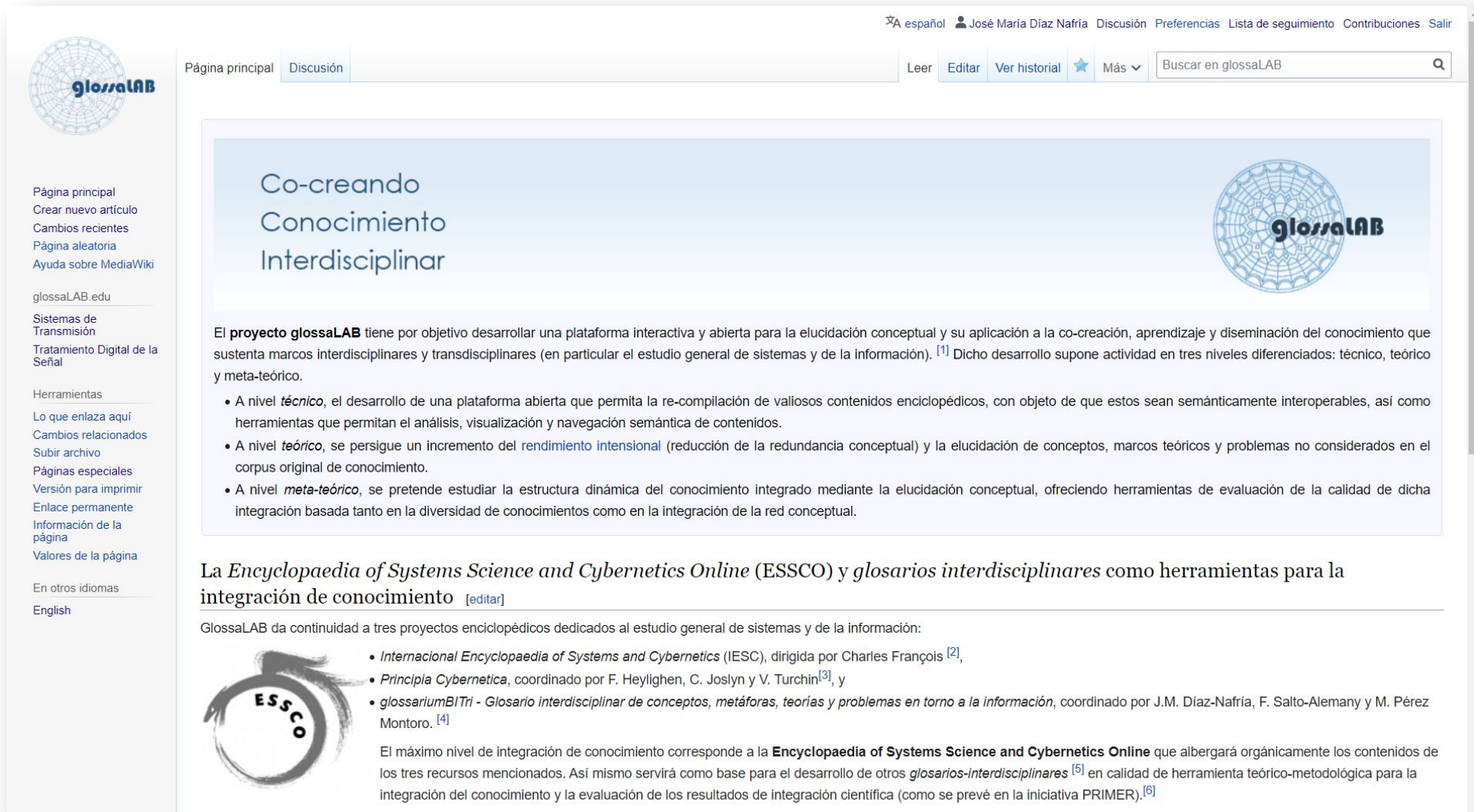
# glossaLAB: Federated system of IGs



# glossaLAB: contents organisation



# glossaLAB: MediaWiki based Platform (semantic annotation)



The screenshot shows the homepage of the glossaLAB MediaWiki platform. The page features a navigation bar at the top with options for language (Spanish), user profile (José María Díaz Nafría), and various user actions like 'Discusión', 'Preferencias', 'Lista de seguimiento', 'Contribuciones', and 'Salir'. Below the navigation bar, there are tabs for 'Página principal' and 'Discusión', and a search bar labeled 'Buscar en glossaLAB'. The main content area is titled 'Co-creando Conocimiento Interdisciplinar' and includes a large blue banner with the glossaLAB logo. The text describes the project's goal of developing an interactive platform for conceptual clarification and knowledge co-creation. It lists three levels of activity: technical, theoretical, and meta-theoretical. Below this, there is a section titled 'La Encyclopaedia of Systems Science and Cybernetics Online (ESSCO) y glosarios interdisciplinares como herramientas para la integración de conocimiento', which lists three related projects: IESC, Principia Cybernetica, and glossariumBITri. The page also includes a sidebar with navigation links and a footer with language options.

glossaLAB

Página principal | **Discusión** | Leer | Editar | Ver historial | Más | Buscar en glossaLAB

## Co-creando Conocimiento Interdisciplinar

El **proyecto glossaLAB** tiene por objetivo desarrollar una plataforma interactiva y abierta para la elucidación conceptual y su aplicación a la co-creación, aprendizaje y disseminación del conocimiento que sustenta marcos interdisciplinares y transdisciplinares (en particular el estudio general de sistemas y de la información).<sup>[1]</sup> Dicho desarrollo supone actividad en tres niveles diferenciados: técnico, teórico y meta-teórico.

- A nivel *técnico*, el desarrollo de una plataforma abierta que permita la re-compilación de valiosos contenidos enciclopédicos, con objeto de que estos sean semánticamente interoperables, así como herramientas que permitan el análisis, visualización y navegación semántica de contenidos.
- A nivel *teórico*, se persigue un incremento del *rendimiento intensional* (reducción de la redundancia conceptual) y la elucidación de conceptos, marcos teóricos y problemas no considerados en el corpus original de conocimiento.
- A nivel *meta-teórico*, se pretende estudiar la estructura dinámica del conocimiento integrado mediante la elucidación conceptual, ofreciendo herramientas de evaluación de la calidad de dicha integración basada tanto en la diversidad de conocimientos como en la integración de la red conceptual.

### La Encyclopaedia of Systems Science and Cybernetics Online (ESSCO) y glosarios interdisciplinares como herramientas para la integración de conocimiento [\[editar\]](#)

GlossaLAB da continuidad a tres proyectos enciclopédicos dedicados al estudio general de sistemas y de la información:

- *Internacional Encyclopaedia of Systems and Cybernetics* (IESC), dirigida por Charles François<sup>[2]</sup>,
- *Principia Cybernetica*, coordinado por F. Heylighen, C. Joslyn y V. Turchin<sup>[3]</sup>, y
- *glossariumBITri - Glosario interdisciplinar de conceptos, metáforas, teorías y problemas en torno a la información*, coordinado por J.M. Díaz-Nafría, F. Salto-Aleman y M. Pérez Montoro.<sup>[4]</sup>

El máximo nivel de integración de conocimiento corresponde a la **Encyclopaedia of Systems Science and Cybernetics Online** que albergará orgánicamente los contenidos de los tres recursos mencionados. Así mismo servirá como base para el desarrollo de otros *glosarios-interdisciplinares*<sup>[5]</sup> en calidad de herramienta teórico-metodológica para la integración del conocimiento y la evaluación de los resultados de integración científica (como se prevé en la iniciativa PRIMER).<sup>[6]</sup>

glossaLAB.edu

Sistemas de Transmisión

Tratamiento Digital de la Señal

Herramientas

Lo que enlaza aquí

Cambios relacionados

Subir archivo

Páginas especiales

Versión para imprimir

Enlace permanente

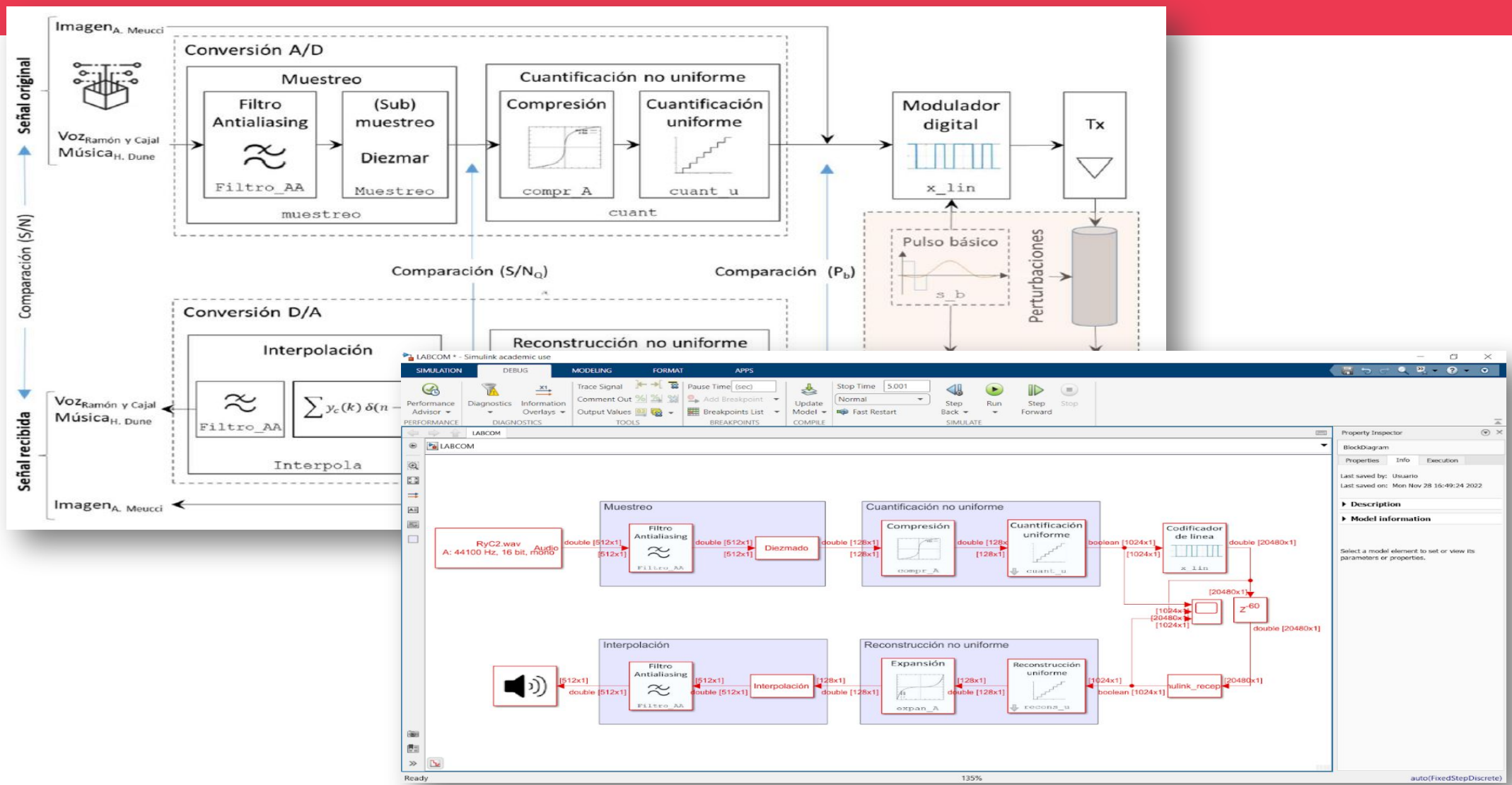
Información de la página

Valores de la página

En otros idiomas

English

# comLAB: from theory to practice in communication systems



# comLAB: from theory to practice in communication systems

The image displays the comLAB software interface, which is used for simulating communication systems. It features a central block diagram of an optimal receiver system. The diagram includes several functional blocks: 'Modulador digital' (Digital Modulator), 'Filtro adaptado' (Adapted Filter), 'Muestreo óptimo' (Optimal Sampling), and 'Decisor MAP' (MAP Decoder). The signal flow is indicated by arrows, showing the path from the modulator through the filter and sampler to the decoder.

Overlaid on the left side of the diagram is a 'Block Parameters: Receptor2' dialog box. The title of the dialog is 'Breve explicación del bloque y sus parámetros' (Brief explanation of the block and its parameters). The text inside explains that the parameters of the digital receiver must be adapted to those of the modulator for correct reception. It lists the following parameters and their values:

- $M_s$ : 20
- $s_b$ : 'sb\_manchester'
- $N_s$ : 10
- $r$ : 1
- Amplitudes  $\{a_i\}$ : [1.5; 0.5; -0.5; -1.5]
- Códigos  $\{c_i\}$ : [1 1; 1 0; 0 0; 0 1]

Below the parameter list are buttons for 'OK', 'Cancel', 'Help', and 'Apply'. A green arrow points from the 'Help' button to the browser window on the right.

The browser window on the right shows the 'Receptor óptimo' page on the glossalab.org website. The page title is 'Receptor óptimo' and it includes a 'Sumario [ocultar]' (Summary [hide]) section with the following table of contents:

Sumario [ocultar]	
1	Estructura del receptor óptimo
1.1	Sistema unidimensional
1.2	Sistema multidimensional
2	Código
2.1	Función Rx: receptor óptimo
2.2	Ejemplo de recepción óptima de una señal perturbada
3	Referencias

At the bottom of the browser window, there is a paragraph of text starting with 'bóveda de las comunicaciones digitales radica en la posibilidad que tras atravesar el canal llega al receptor corrupta por múltiple perturbación. A pesar de que la señal haya podido llegar muy débil, asegura Shannon en su teorema fundamental para canales ruidosos (obra de 1948) que en principio nos es posible extraer información inferior a la capacidad de canal "con una tasa de errores tan pequeña como se desee" (v. Teoremas fundamentales de Shannon). Con ello podemos representar a una señal como era en un principio, es decir, como si no hubiera...



# Danke nochmals!

## glossaLAB International Workshop

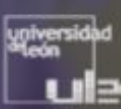
# From Information to Insights

Beyond AI, from Information to  
Knowledge to Sustainability

May 2-5  
2023

May 2 | ULE | León  
May 3 | UDIMA | Collado Villalba, Madrid  
May 4 | CEF | Metro Iglesia | Madrid

udima  
UM



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Design  
Science