"Epistemological questions in knowledge representation systems workshop"
Center for cultural Informatics – Institute of Computer Science – FORTH
25th September 2015, Heraklion, Crete

From the theatrum mundi *to metaphorical cartography: Languages, models, and methods for displaying and sharing knowledge*

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Understanding

Data - Information - Knowledge

Compatibility

Adequacy

Paradox
ensure objectivity of the transmitted information that have meaning for the users and detachment of the data for their meaning for communication

Epistemology

Ethics

In this talk I will take a philosophical/historical approach, asking questions about how to think through this paradox.

Outline

➢ Traces/looking back: Models and criteria for organizing knowledge (epistemological questions)

➢ Focus on: Cartographic and aquatic metaphors

➢ Key concepts: Objectivity and transparency (ethical questions)

➢ Horizons/looking forward

Aristotle

ΗΘΙΚΩΝ ΝΙΚΟΜΑΧΕΙΩΝ Α.

ΠΑΣΑ τέχνη καὶ πᾶσα μέθοδος, ὁμοίως [a] δὲ πρᾶξίς τε
[καὶ προ]αίρεσις, ἀγαθοῦ τινὸς ἐφίεσθαι δοκεῖ· διὸ καλῶς ἀπε[φήναν]-
[το] τἀγαθόν, οὗ πάντ᾽ ἐφίεται. Διαφορὰ δέ [b]τις φαί-
νεται τῶν τελῶν· τὰ μὲν [c] γάρ εἰσιν ἐνέργειαι, τὰ δὲ [d]παρ᾽
αὐτὰς ἔργα τινά. Ὧν δ᾽ εἰσὶ τέλη τινὰ παρὰ τὰς πράξεις
ἐν τούτοις βελτίω πέφυκε τῶν ἐνεργειῶν τὰ ἔργα. Πολλῶν 3
[e]δὲ πράξεων οὐσῶν καὶ τεχνῶν καὶ ἐπιστημῶν πολλὰ γίνε-
ται [f]καὶ τὰ τέλη· ἰατρικῆς μὲν [g]γὰρ ὑγίεια, [h]ναυπηγικῆς δὲ
πλοῖον, στρατηγικῆς δὲ [i]νίκη, οἰκονομικῆς δὲ πλοῦτος. Ὅσαι
δ᾽ εἰσὶ τῶν τοιούτων ὑπὸ μίαν τινὰ δύναμιν, καθάπερ ὑπὸ τὴν
ἱππικὴν [k]ἢ [l]χαλινοποιικὴ καὶ ὅσαι [m]ἄλλαι τῶν ἱππικῶν ὀρ-
γάνων εἰσίν· [n]αὕτη δὲ καὶ πᾶσα πολεμικὴ πρᾶξις ὑπὸ τὴν
στρατηγικήν· [o]τὸν αὐτὸν δὴ τρόπον ἄλλαι ὑφ᾽ ἑτέρας· ἐν
ἁπάσαις [p]δὲ τὰ τῶν ἀρχιτεκτονικῶν τέλη πάντων [q]ἐστὶν
αἱρετώτερα τῶν [r]ὑπ᾽ αὐτά· τούτων γὰρ χάριν [s]κἀκεῖνα διώ-
κεται. Διαφέρει δ᾽ οὐδὲν τὰς ἐνεργείας αὐτὰς εἶναι τὰ τέλη 5
τῶν πράξεων ἢ παρὰ ταύτας ἄλλο τι, καθάπερ ἐπὶ τῶν
λεχθεισῶν ἐπιστημῶν. Εἰ [t]δή τι τέλος ἐστὶ τῶν πρακτῶν (2)
ὃ δι᾽ αὑτὸ [v]βουλόμεθα, τἆλλα δὲ διὰ τοῦτο, καὶ μὴ πάντα
δι᾽ ἕτερον αἱρούμεθα (πρόεισι γὰρ [w]οὕτω γ᾽ εἰς ἄπειρον,
ὥστ᾽ εἶναι κενὴν καὶ ματαίαν τὴν ὄρεξιν), δῆλον ὡς τοῦτ᾽ ἂν
εἴη τἀγαθὸν καὶ [x]τὸ ἄριστον. Ἆρ᾽ οὖν καὶ πρὸς τὸν βίον 2

Codices Hᵃ.Kᵇ.Lᵇ.Mᵇ.Nᵇ.Oᵇ.
[a] δέ] δὲ καὶ Hᵃ.Mᵇ.Nᵇ.Oᵇ.   [b] τις om. Mᵇ.   [c] γὰρ αὐτῶν εἰσὶν Mᵇ.
[d] παρὰ ταύτας corr. Kᵇ.   [e] δὴ Lᵇ.   [f] καὶ om. Kᵇ.Mᵇ.Nᵇ. et pr. Hᵃ.
[g] γὰρ om. Mᵇ.Oᵇ.   [h] ναυτικῆς Hᵃ.   [i] νίκαι Lᵇ.   [k] ἢ add. Lᵇ.   [l] χα-
λινοποιητικὴ Hᵃ.Lᵇ.Mᵇ.Nᵇ.Oᵇ.   [m] ἄλλαι τῶν] τῶν ἄλλων Lᵇ.   [n] αὗται
Mᵇ.   [o] τὸν] κατὰ τὸν Kᵇ.Mᵇ.   [p] δὴ Mᵇ.   [q] εἰσὶν Lᵇ.Nᵇ.   [r] ὑφ᾽ αὑτά
Hᵃ.Lᵇ.Mᵇ.Nᵇ.Oᵇ.   [s] κεῖνα Lᵇ.   [t] δέ Hᵃ.   [v] αἱρούμεθα Lᵇ.   [w] οὕτως
εἰς Lᵇ.Mᵇ.Nᵇ.Oᵇ.   [x] τὸ om. Mᵇ.

VOL. IX.   B

eternal and unchangeable knowledge

synchronic

unpredictable and continuously varying knowledge

diachronic
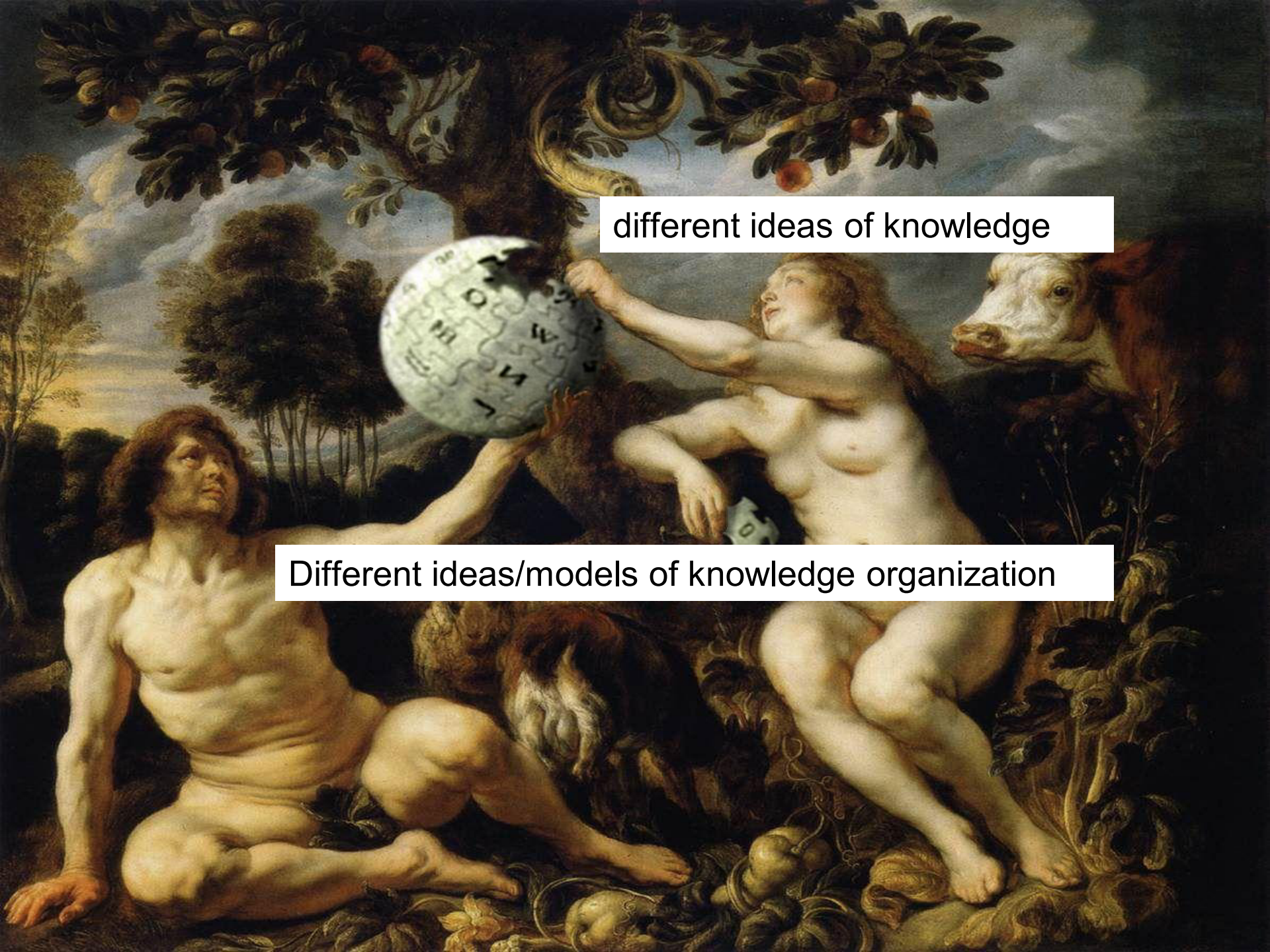
different ideas of knowledge

Different ideas/models of knowledge organization

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Dell' Abate Cesare Orlandi.

RITRATTO DEL MVSEO DI FERRANTE, IMPERATO
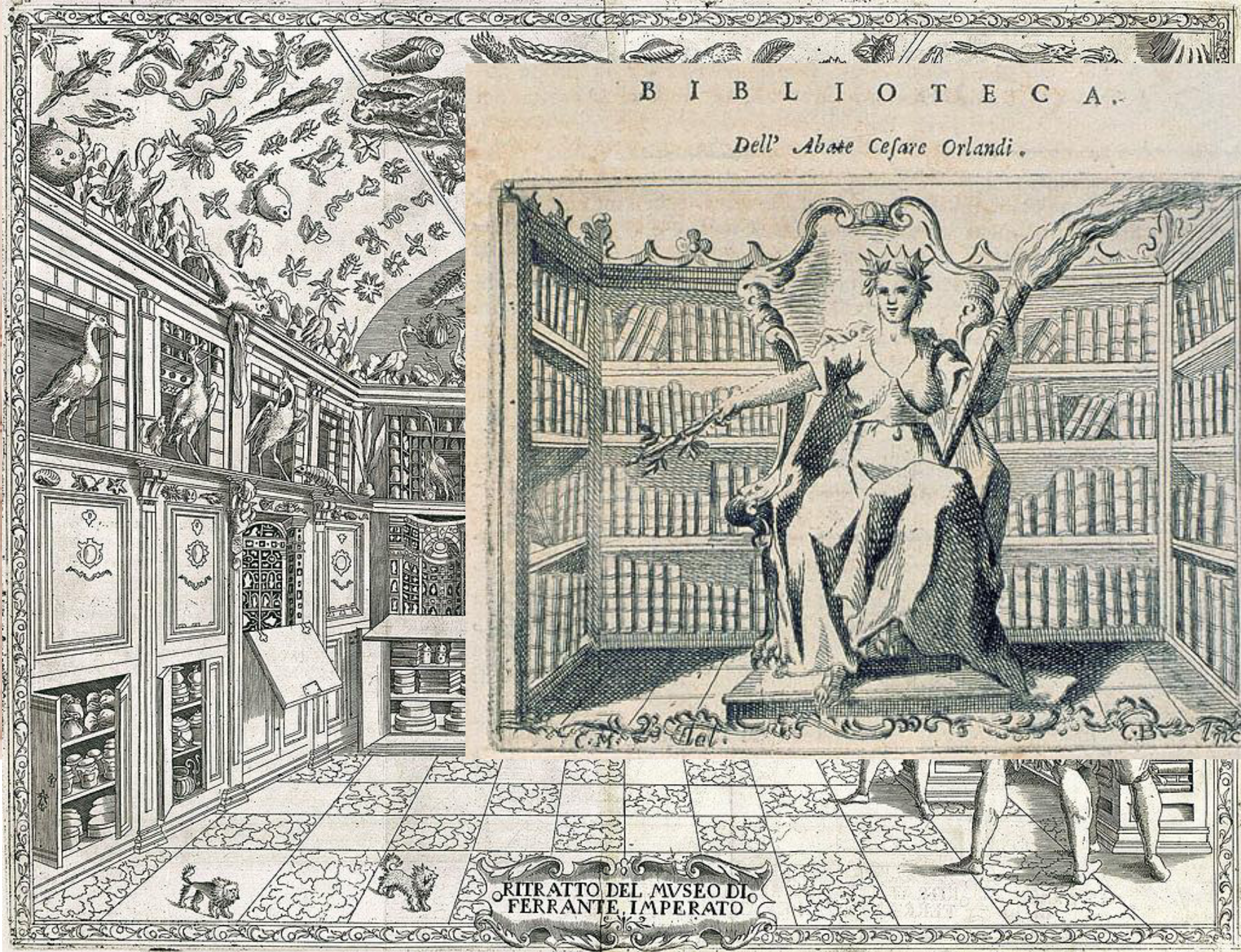
natural history cabinet

an **arboreal schema**, dichotomic, one root, one criterion of relation between knots, one way which is structured between polarities

SYSTÉME FIGURÉ DES CONNOISSANCES HUMAINES.

ENTENDEMENT.

MEMOIRE. RAISON. IMAGINATION.
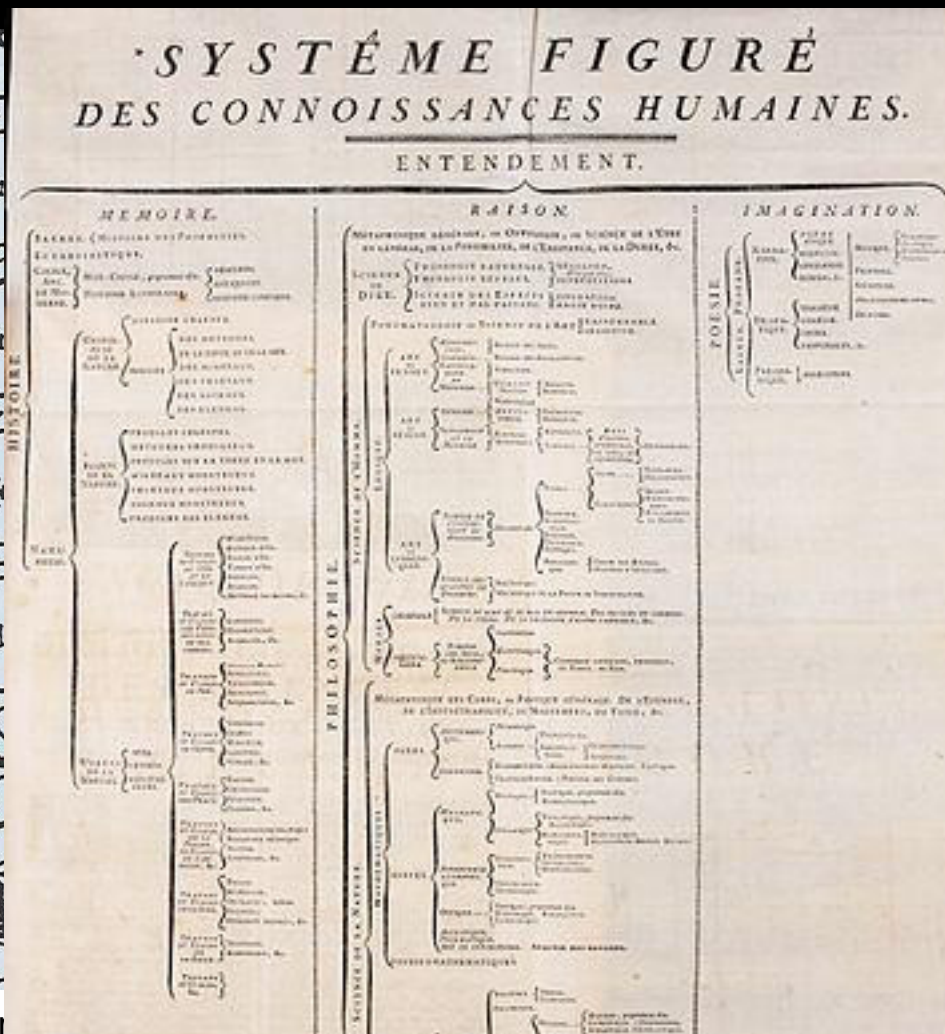
All that we know of natu... its *root, trunk,*

As an *Encyclopedia,* it is to set forth as well as possible the order and connection of the parts of human knowledge. As a *Reasoned Dictionary of the Sciences, Arts, and Trades,* it is to contain the general principles that form the basis of each science and each art, liberal or mechanical, and the most essential facts that make up the body and substance of each (D'Alembert, *Preliminary Discourse to the Encyclopedia of Diderot, 1751*)

PLATE XXIII.

a rhizomatic schema without knots, an intricate and complex combination of indistinct paths.

But the synchronic and diachronic dimensions are interrelated, although the synchronic has been privileged and the diachronic has been reduced to the first.
Cartography. Maps for example are (scaled) representation of the world: Space, languages (symbols, conventions…), technical skills…
knowledge as a cumulative process and knowledge as discovery and combination are converging
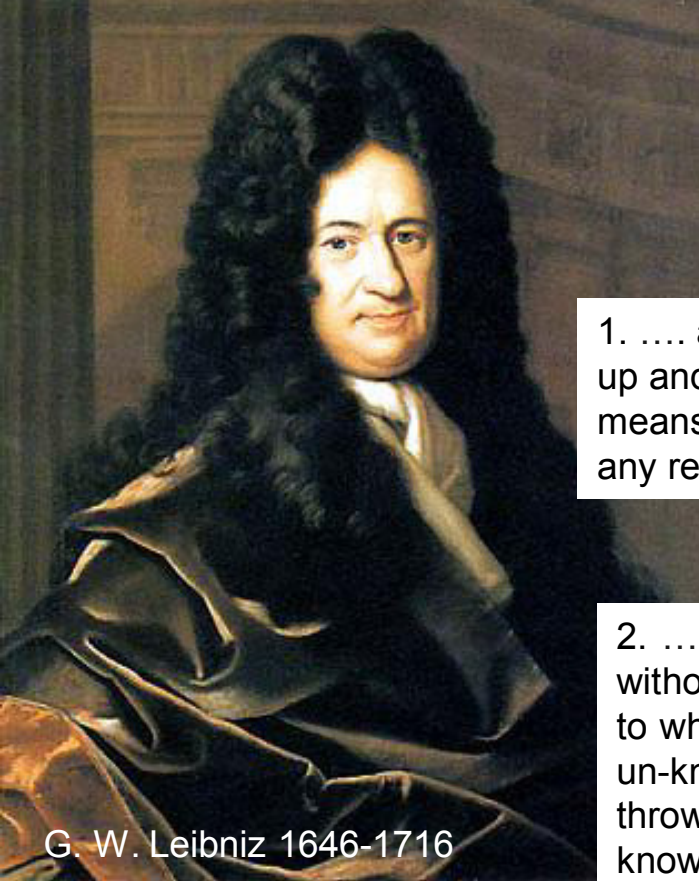
G. W. Leibniz 1646-1716

1. …. a huge storehouse, loaded with merchandises of all kinds, but all mixed up and unordered, without the possibility of gaining access to any of them by means of numbers, letters or any other index, without any inventory, without any record of input and output, from which some light could be drawn.

2. …. can be viewed as an ocean, which is every-where continuous, and without any interruption or partition, even though men distinguish in it parts, to which they give names for their own use. Furthermore, just as there are un-known seas, or seas which have only been navigated by a few vessels thrown there by mere chance, so too there are sciences of which we have known something only by chance and without any planning.

The reticular nature and the multiplicity of possible relations and relations between elements of the system requires the identification of a several number of trees and possible paths corresponding to a plurality of purposes and functions. The models changed.. Let's look at the aquatic models/metaphors and the concepts of **objectivity** and **transparency**

objectivity
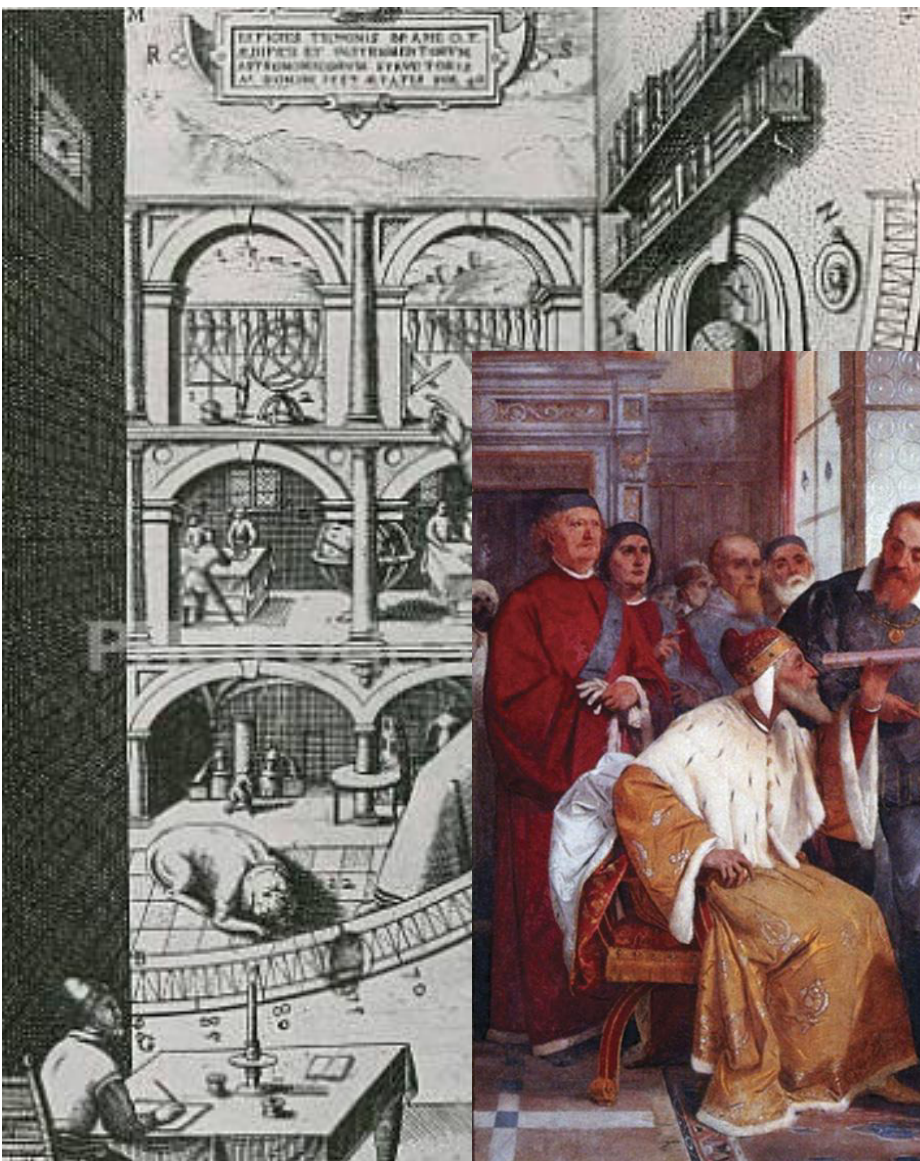
"The word "objective" performed a (…) volte-face, from its fourteenth-century meaning referring to objects of consciousness to its late eighteen-century meaning referring to object external to consciousness. During the seventeenth and early eighteenth centuries "fact" shed its associations with "doing" and "making" (…) and migrated toward "datum", that which is given rather than made" (Daston, 2000).

transparency

… scientific method is the privileged tool we have for penetrating beyond appearances and discovering the true "nature of things".
The scientific method should, thus, yield a fully intelligible representation of the world, which in its turn should be transparently communicable. (Dascal 2003)

How to organize the knowledge being produced (and to describe it) so that

a.   Knowledge can be shared

a.   Knowledge can be engaged in the process of knowledge production

Scientific data cannot be understood without knowledge about the meaning of the data and the ways and circumstances of their creation (Doerr-Theodoridou, 2011)

Horizons

Framework[*]

Common vocabulary

Participatory model development

Community building project

Light technology

* Carusi – Reimer 2010

USERS ⟶ PERSONS

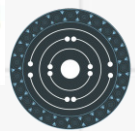**Identify the "type of users" and their needs (persons)**
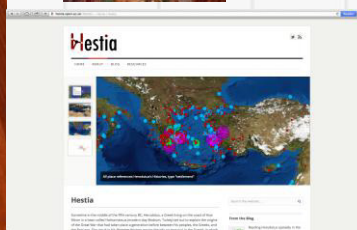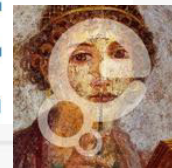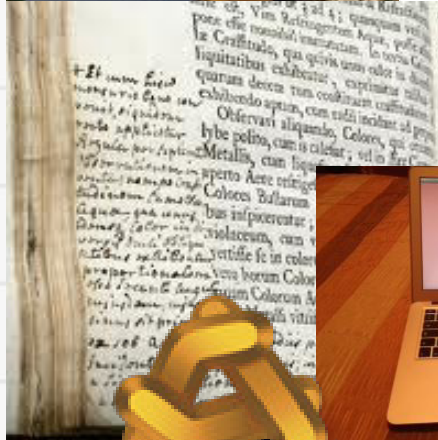
Desk research

Online Survey

Interviews

DH-University classes/WS/Summer schools/High trainings for librarians, etc…

Case studies

Key findings from literature

... in fieri

VRE, Virtual Research environments

intelligent/smart accessibility

review the models of representation

integrated and interrelated knowledge, non-modular

Challenges

Overcome "techno-dependency": *ad hoc modelling* (Ciula-Marras, 2014)

Evaluation and Monitoring

Institutionalise the mutual multidisciplinary alphabetization (philosophers, philologist, historian, developers…..) *learning on doing*

Multilingualism – Thesaurus

Consensus's methods

Acquatic and navigation metaphors could provide an interesting conceptual model to investigate. A combination of adaptation of *ad hoc* modelling (fexible, variable geometry…), to think through definitions, histories, examples, and theoretical problems, to think and to communicate thought, concepts and relations; "thinking-about" and "thinking-with", *scientia quia* (on principles) and *scientia propter quid* (on composition).

Theoria **cum** Praxis

Thank you!
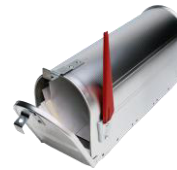
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