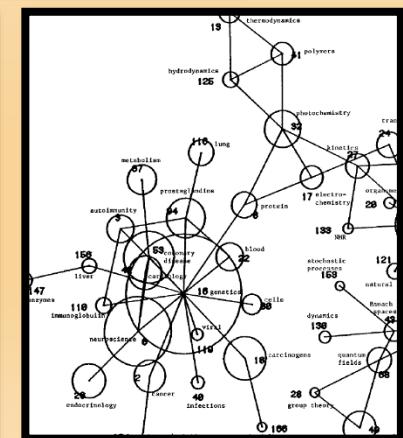
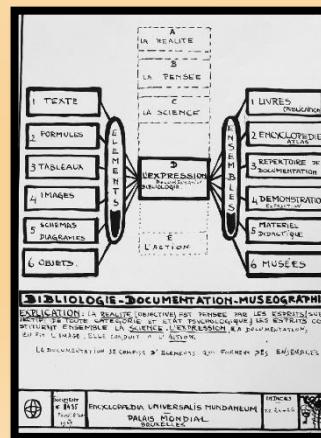
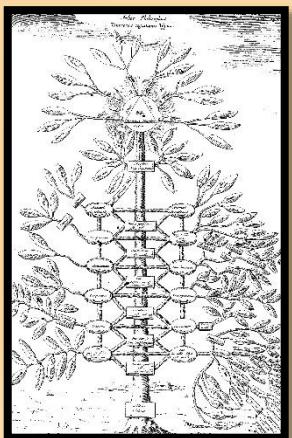
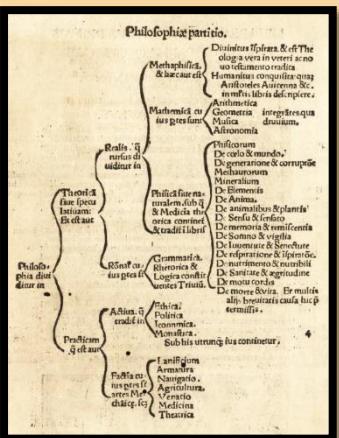
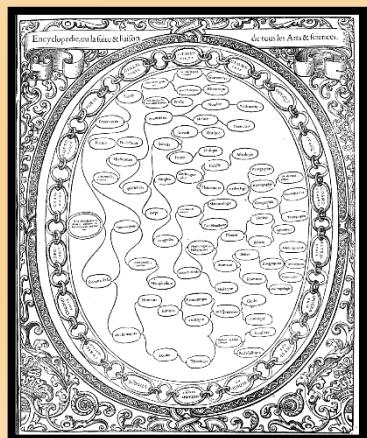
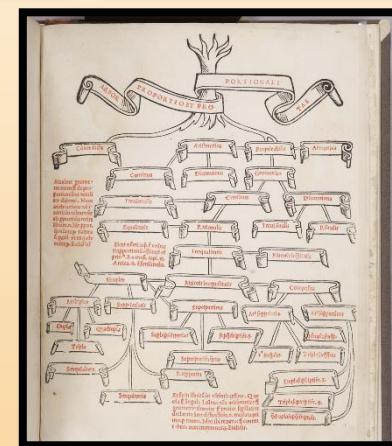
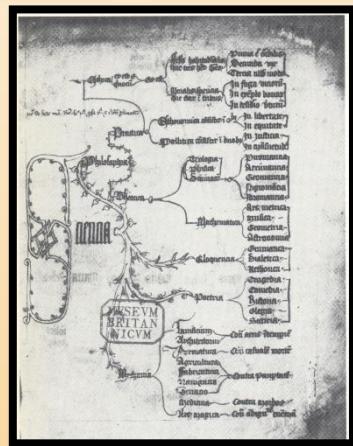
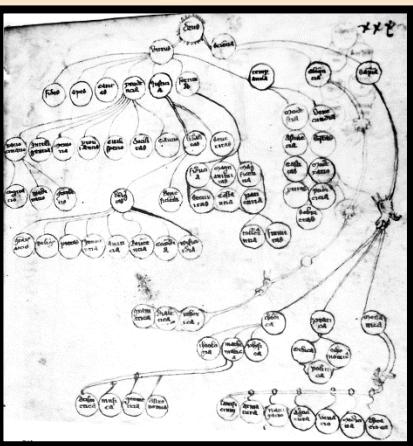
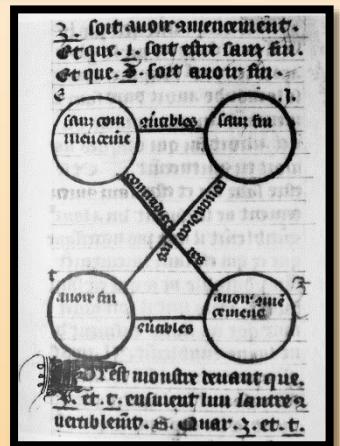
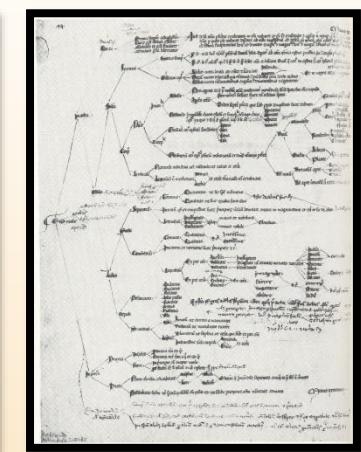
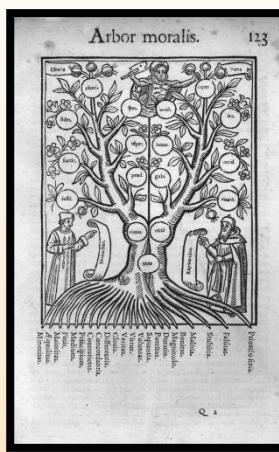
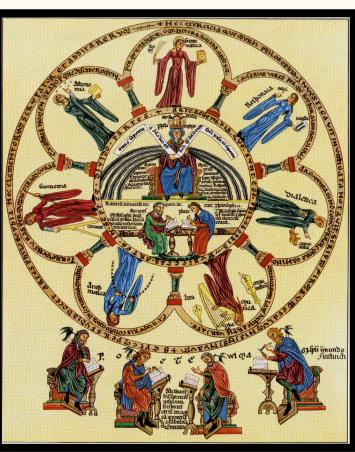
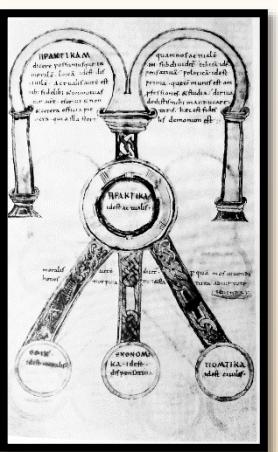
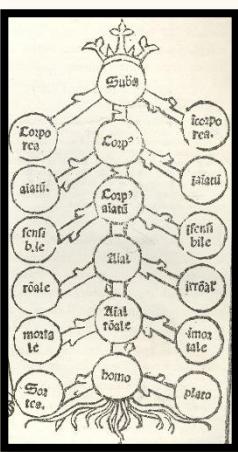
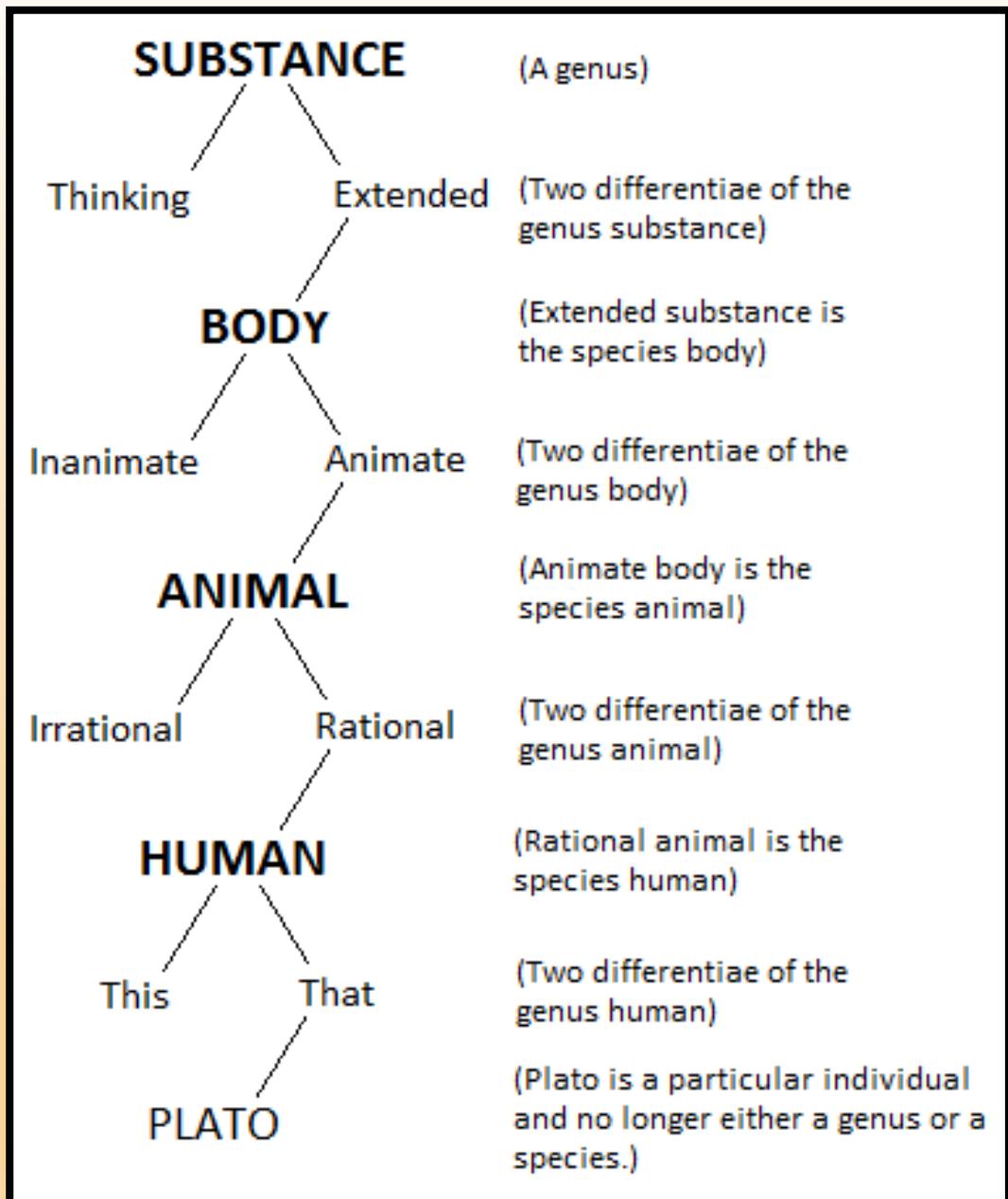
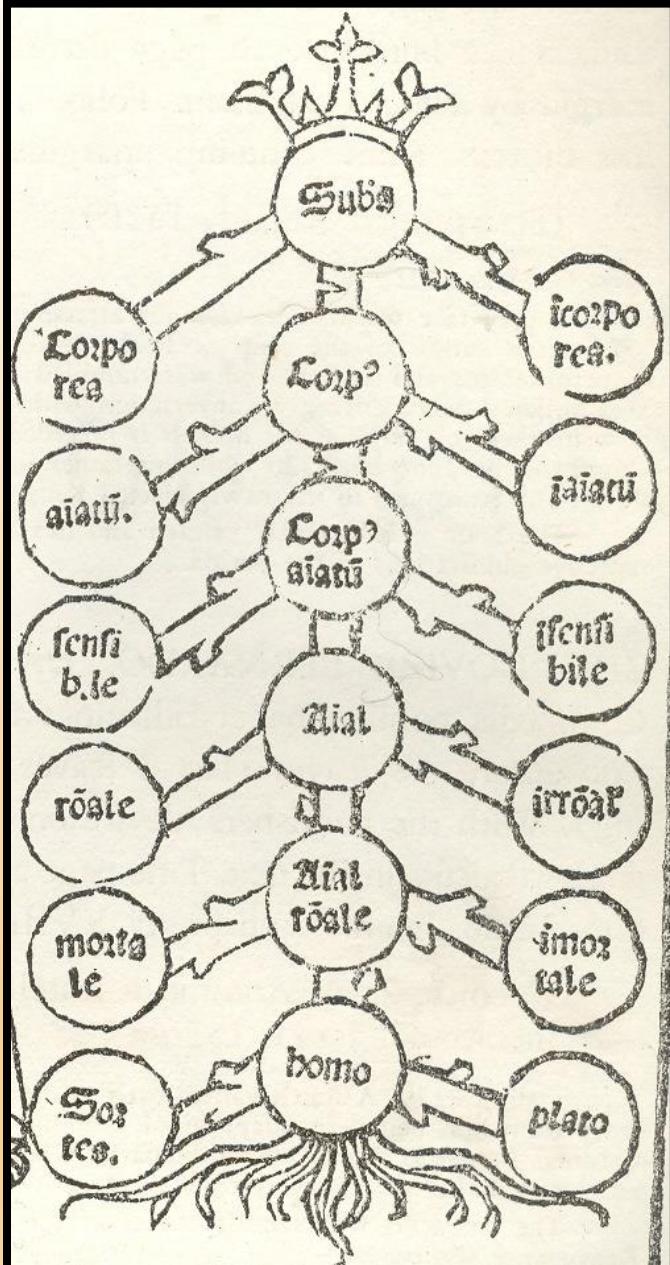


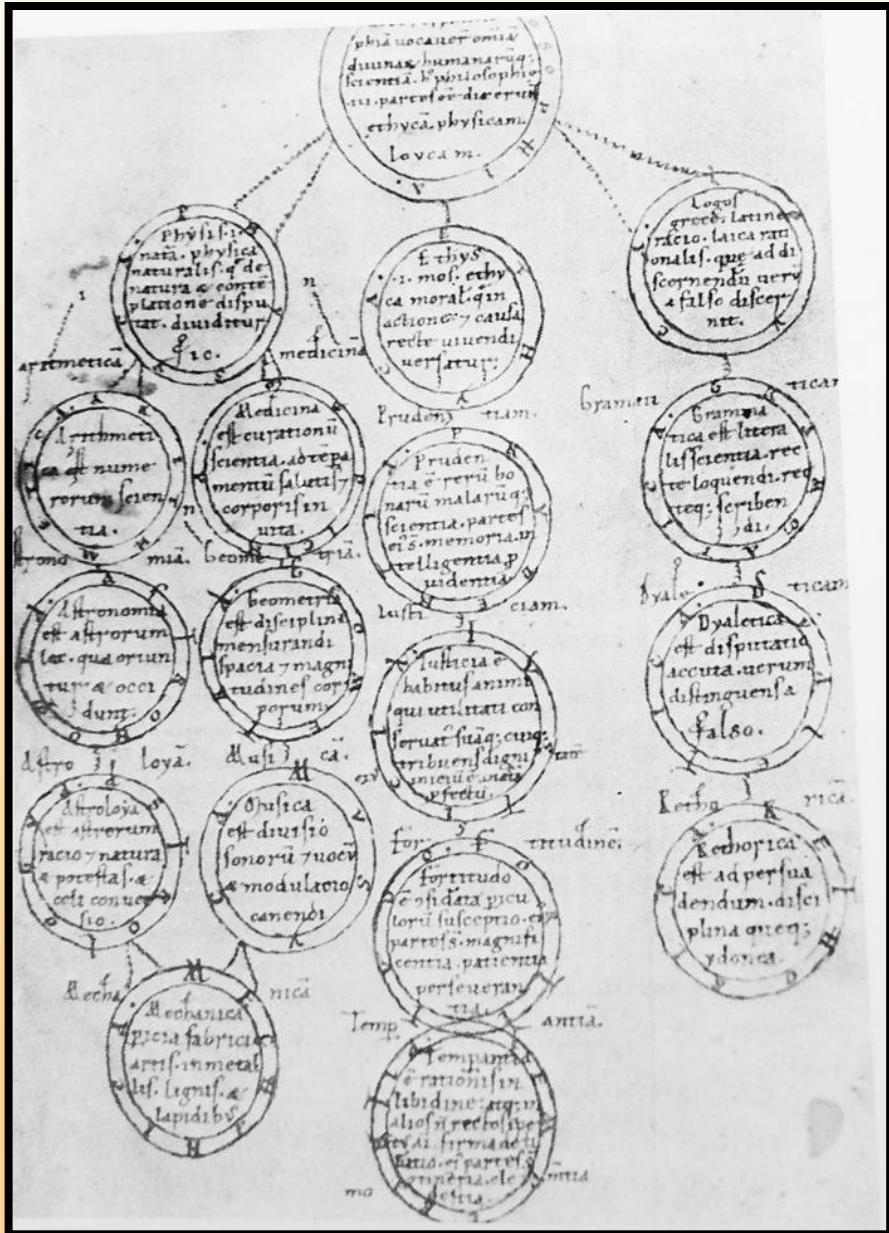
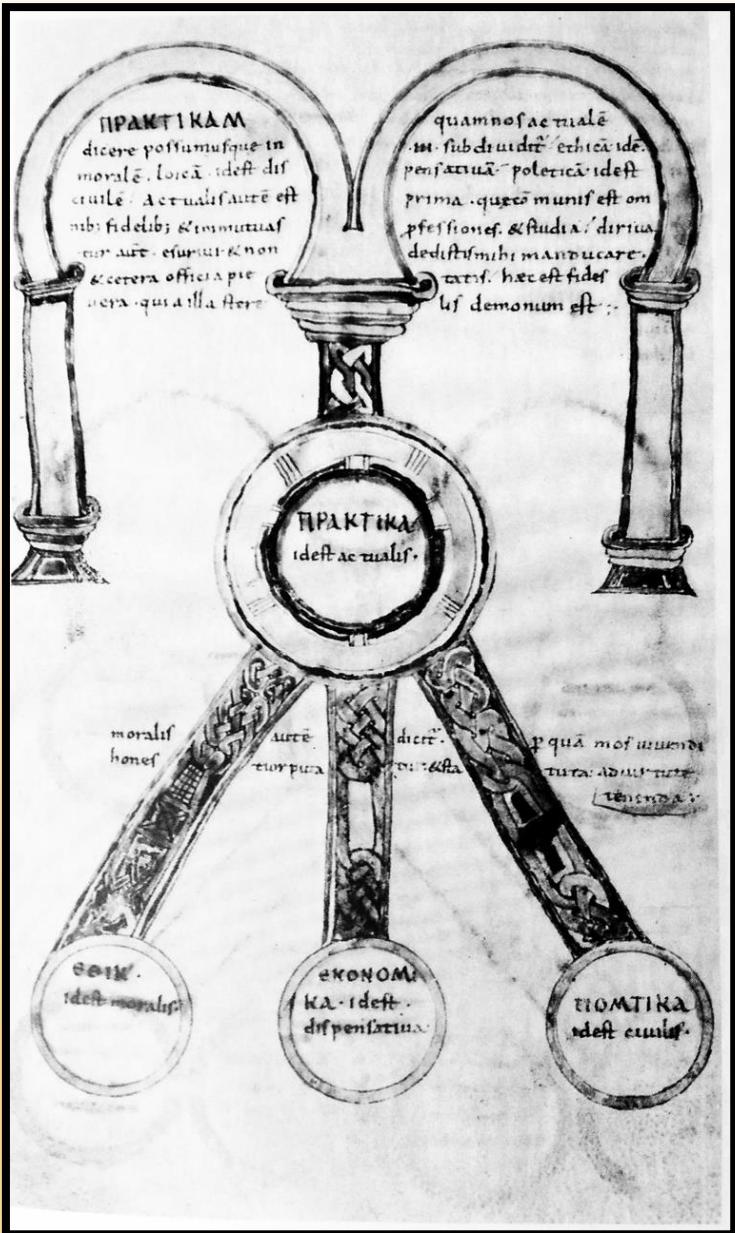
# From Trees to Webs

Uprooting Knowledge through Visualization

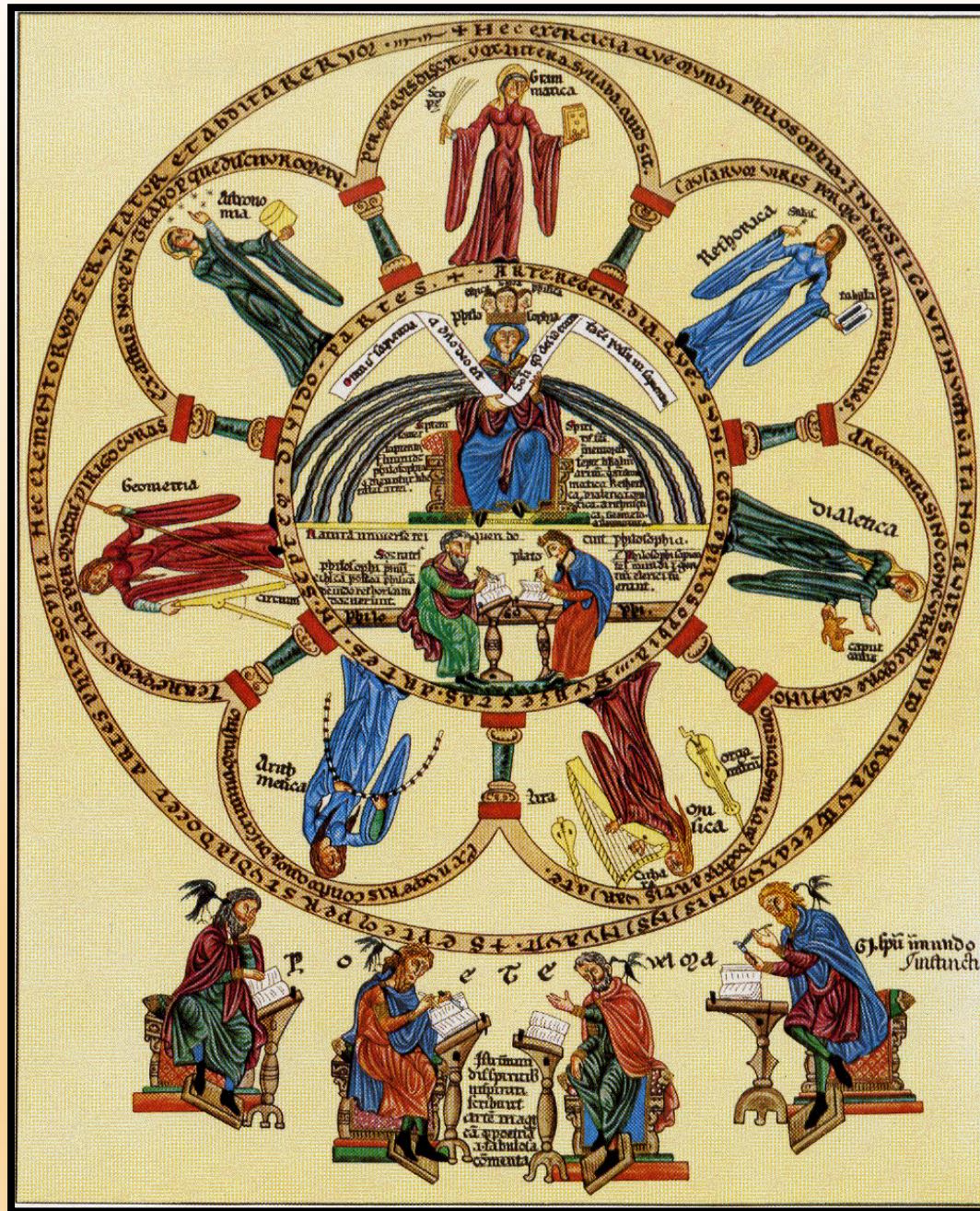


Trees of knowledge through the ages | @scott\_bot





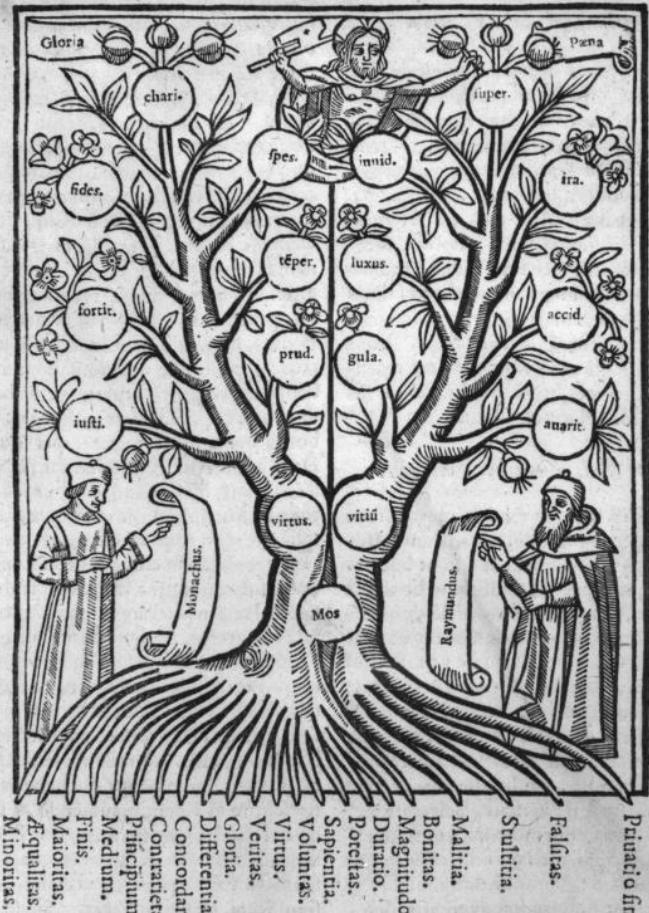
Illustrations splitting practical knowledge & philosophy, 11<sup>th</sup> & 12<sup>th</sup> centuries | @scott\_bot



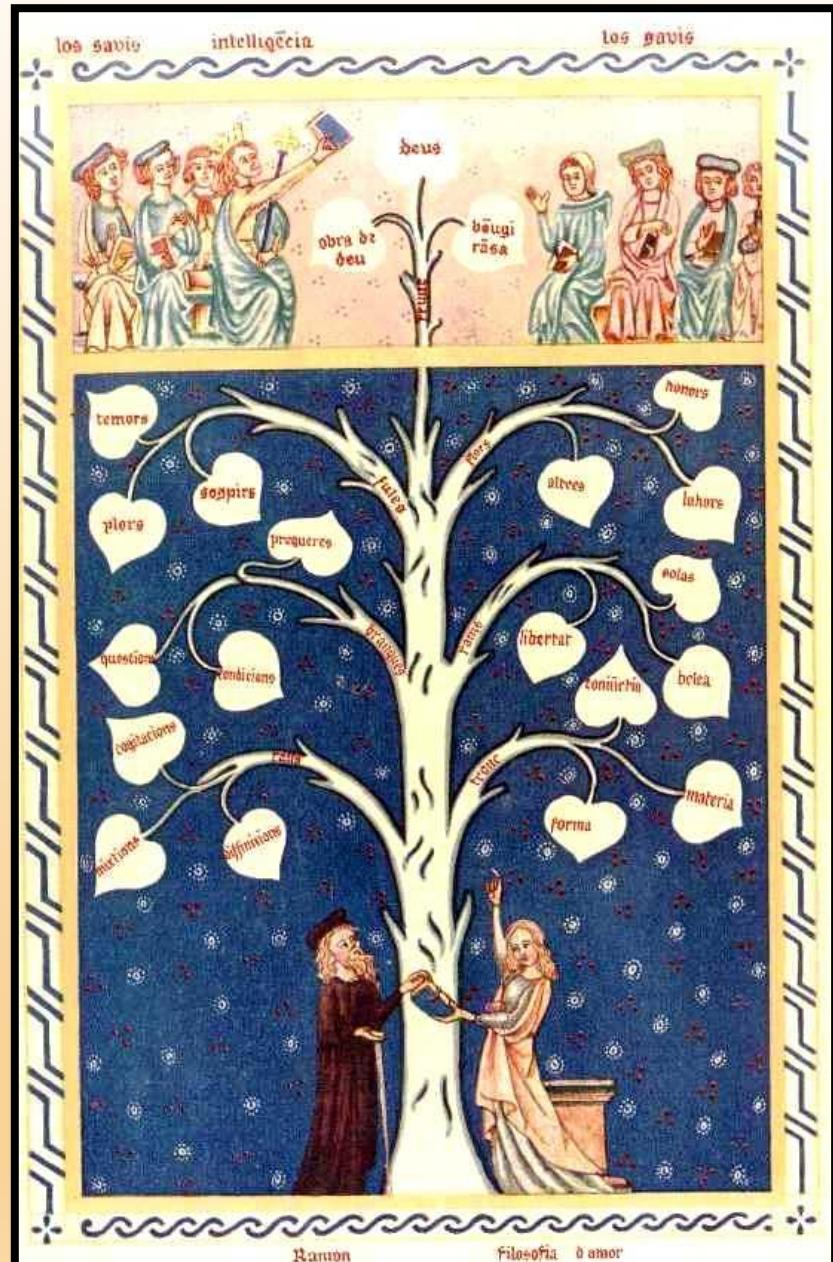
The Seven Arts in *Hortus Deliciarum*, 12<sup>th</sup> century | @scott\_bot

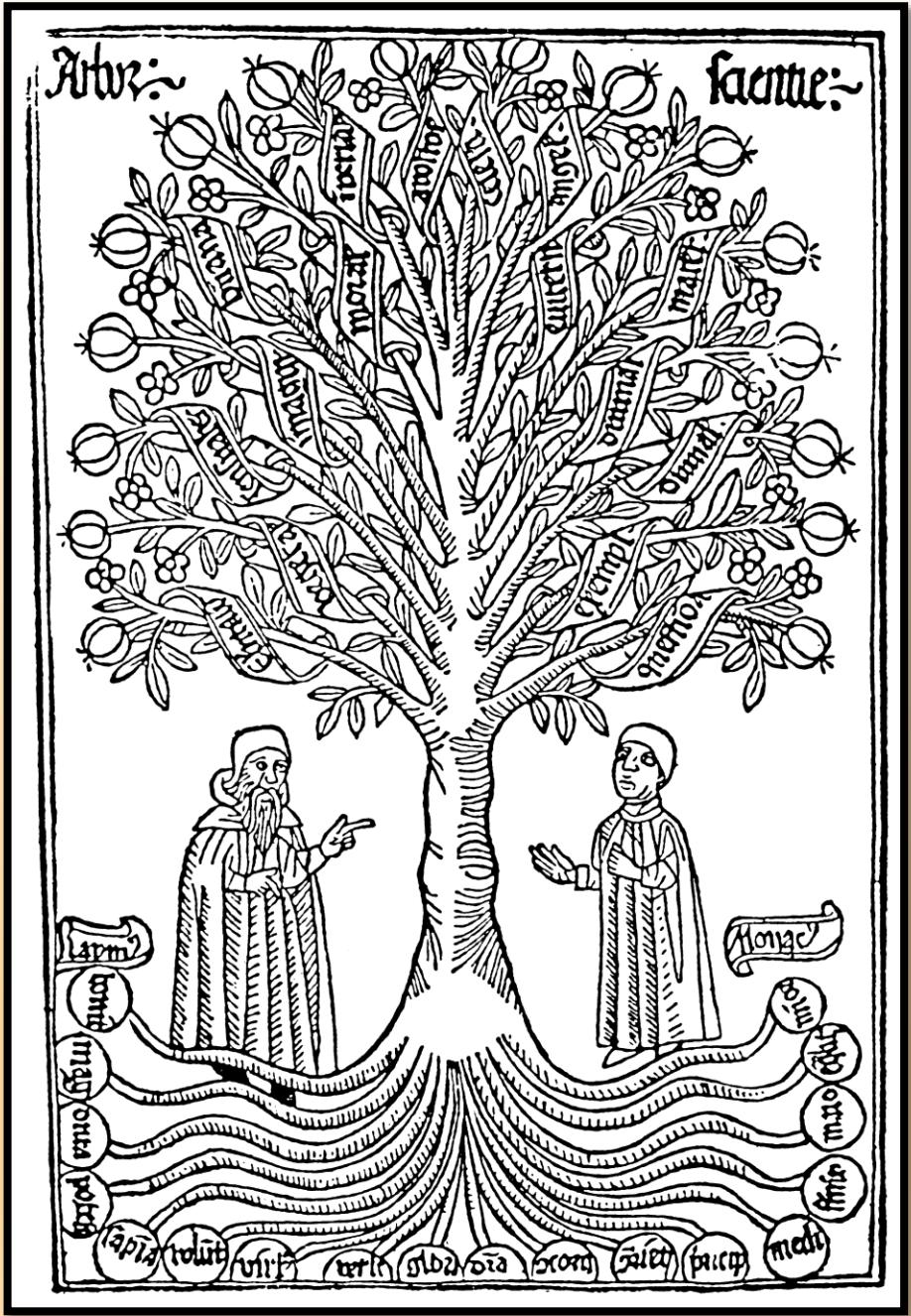
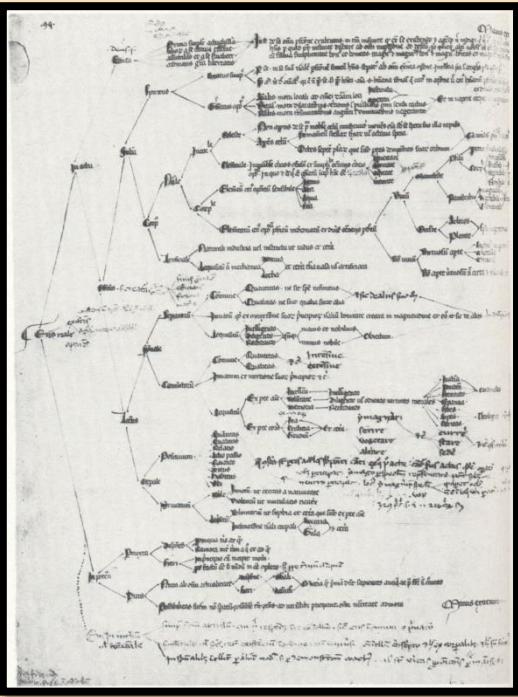
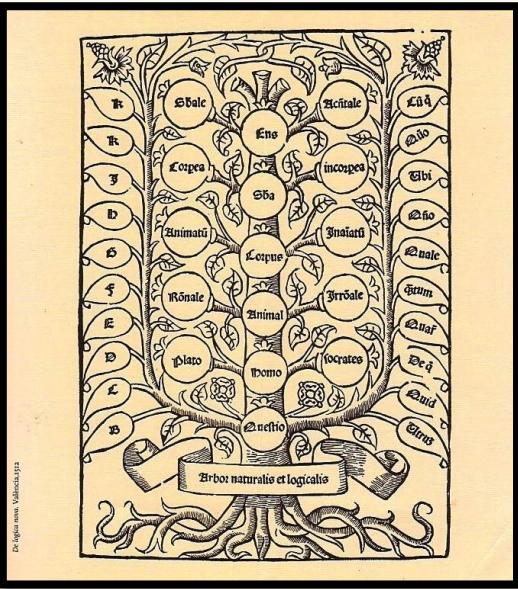
## Arbor moralis.

123

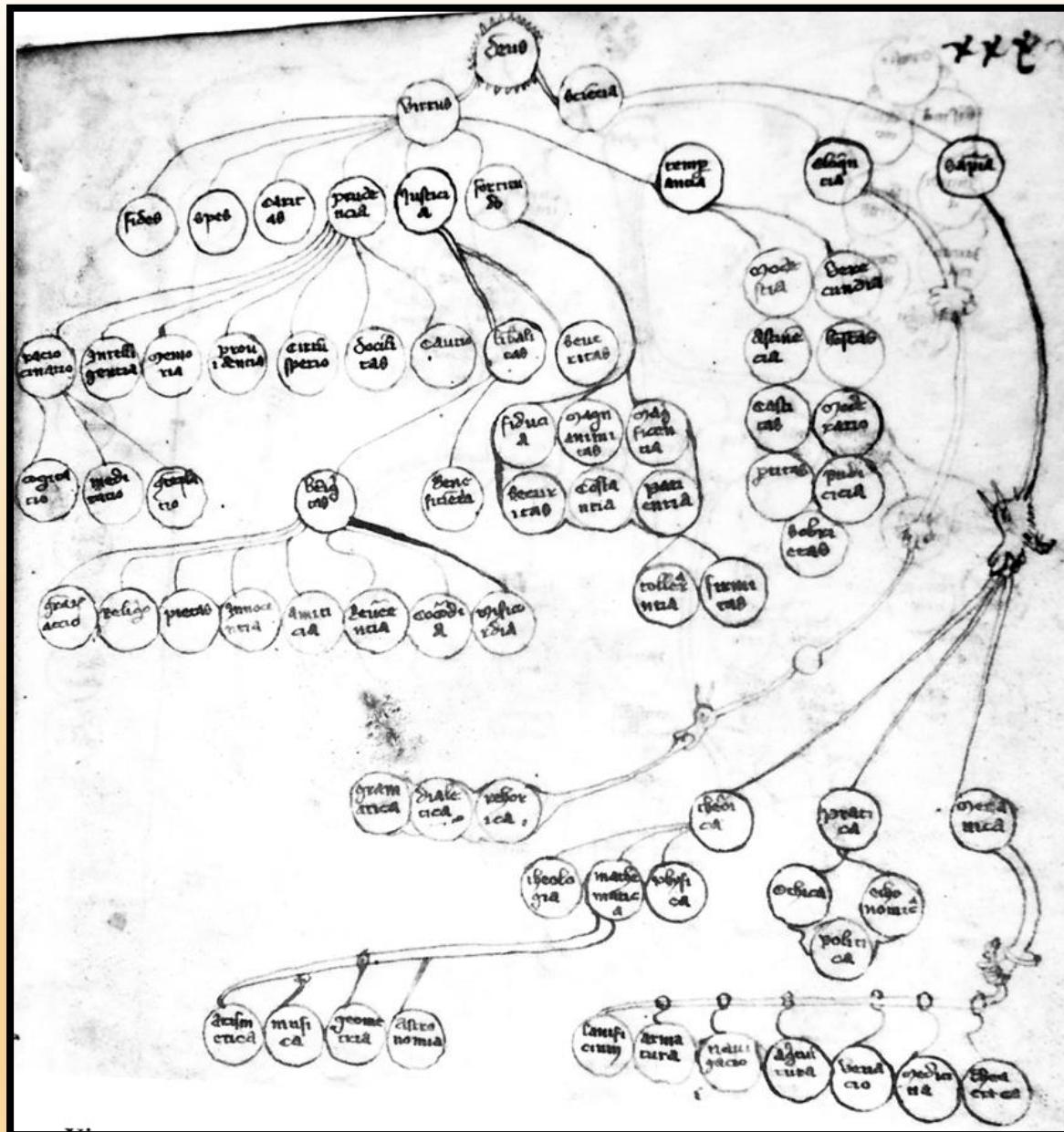


Falſitas.  
Stultitia.  
Magnitudo.  
Duratio.  
Maltitia.  
Bonitas.  
Voluntas.  
Virtus.  
Veritas.  
Gloria.  
Differentia.  
Concordantia.  
Contraries.  
Principium.  
Medium.  
Finis.  
Majoritas.  
Minoritas.

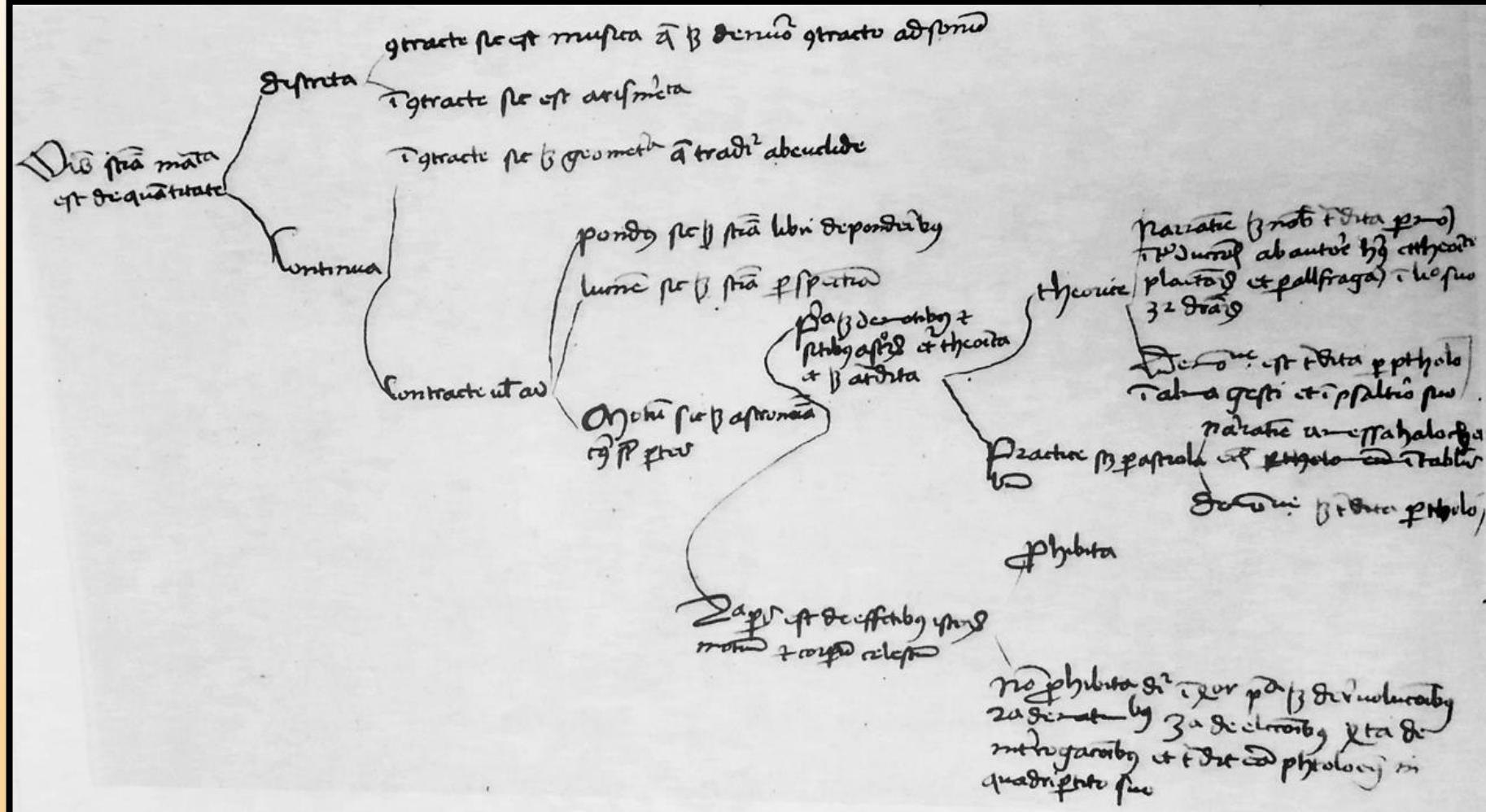




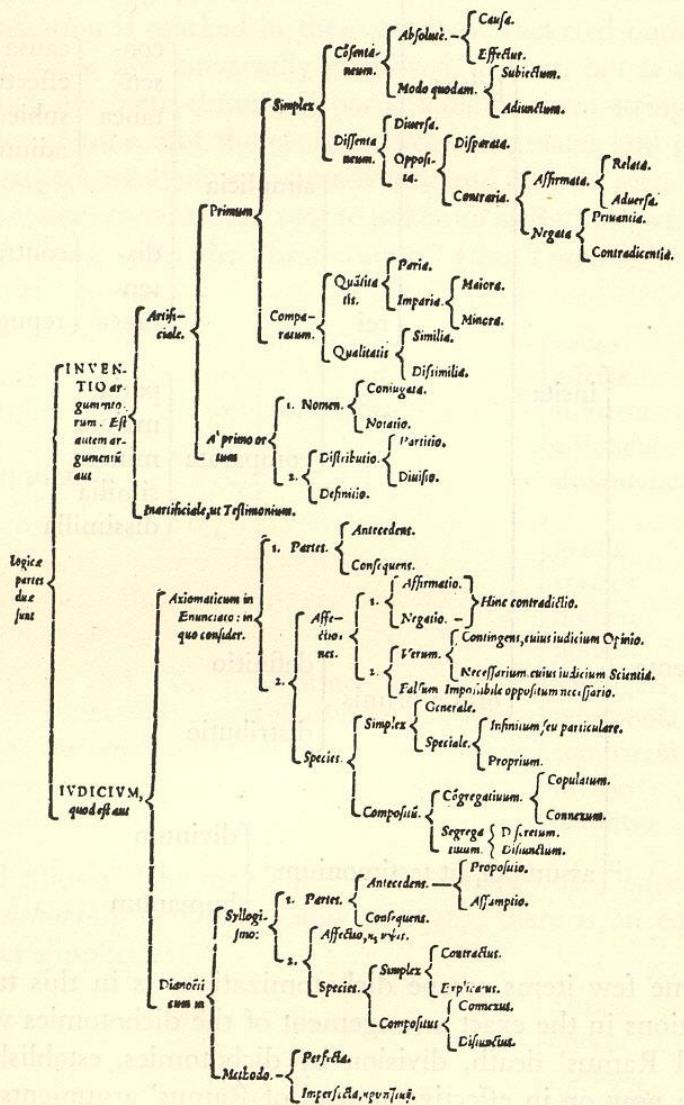
Ramon Llull, c. 1232- c. 1315 | @scott\_bot



Dichotomy of *Scientia* and *Virtus*, 14<sup>th</sup> century | @scott\_bot

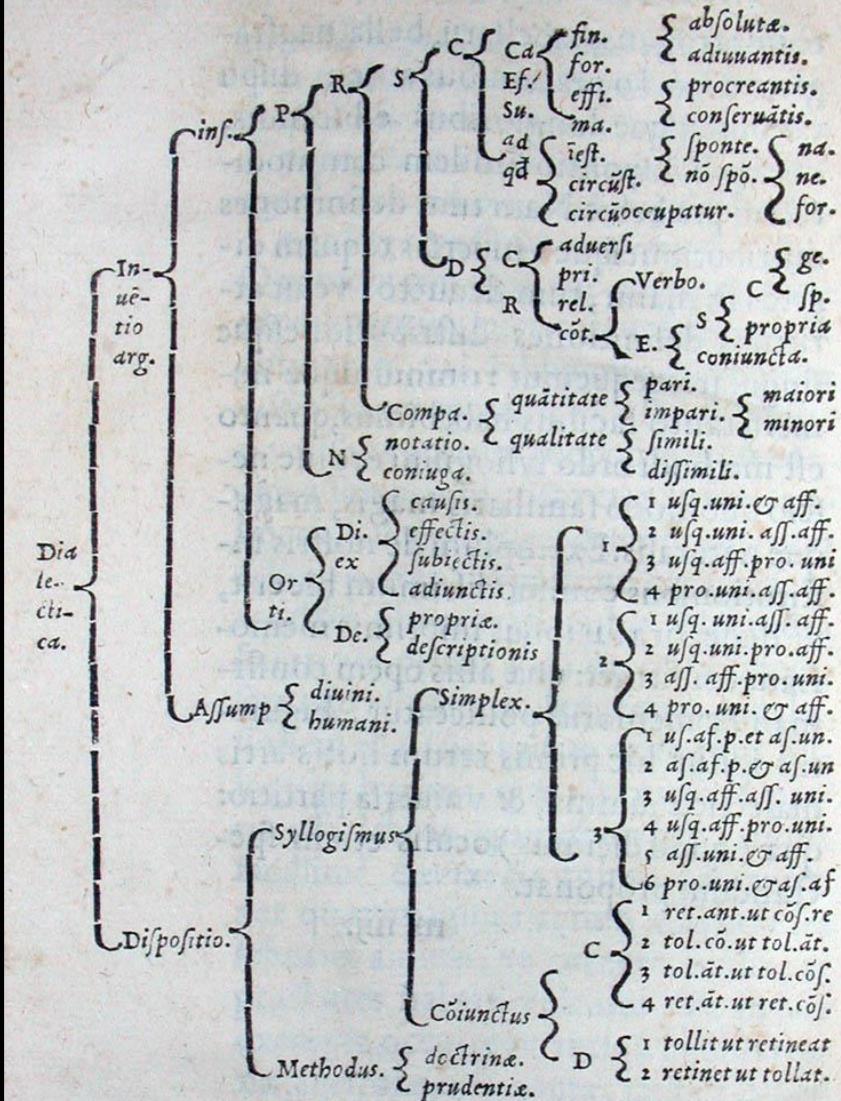


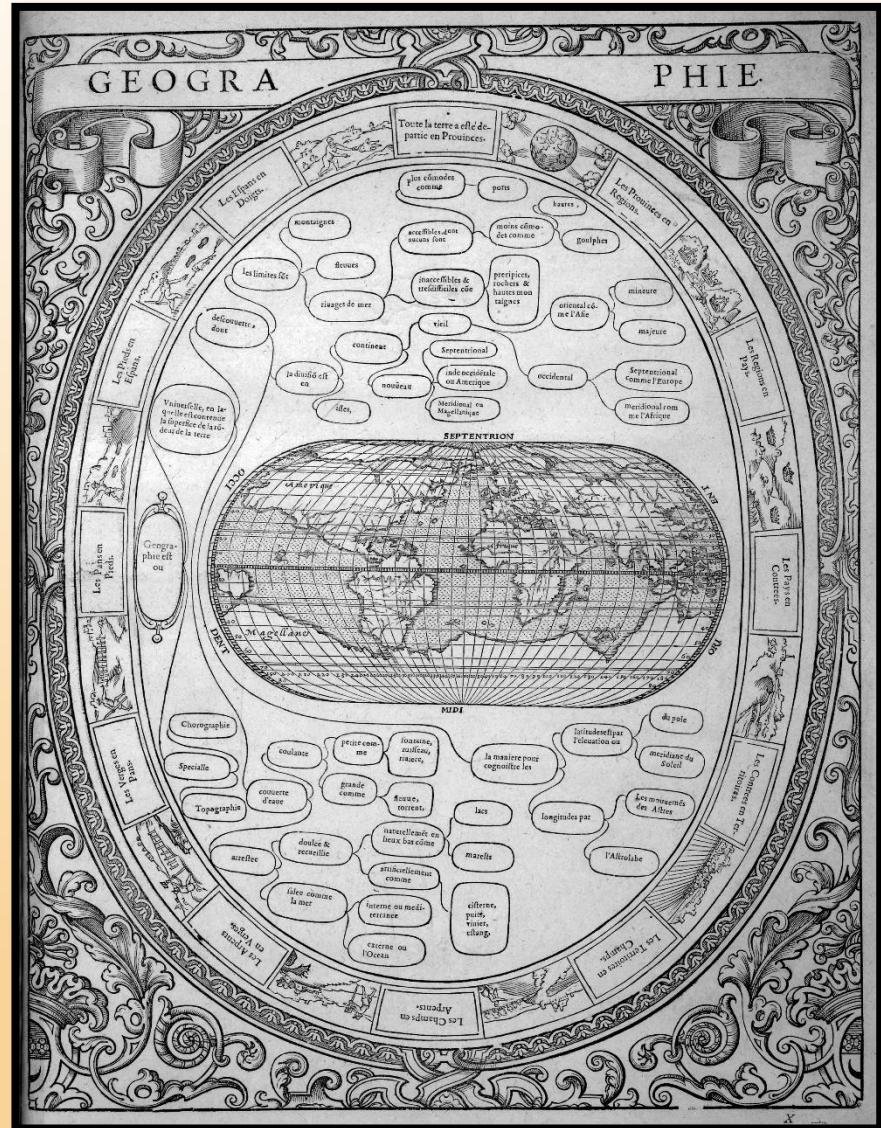
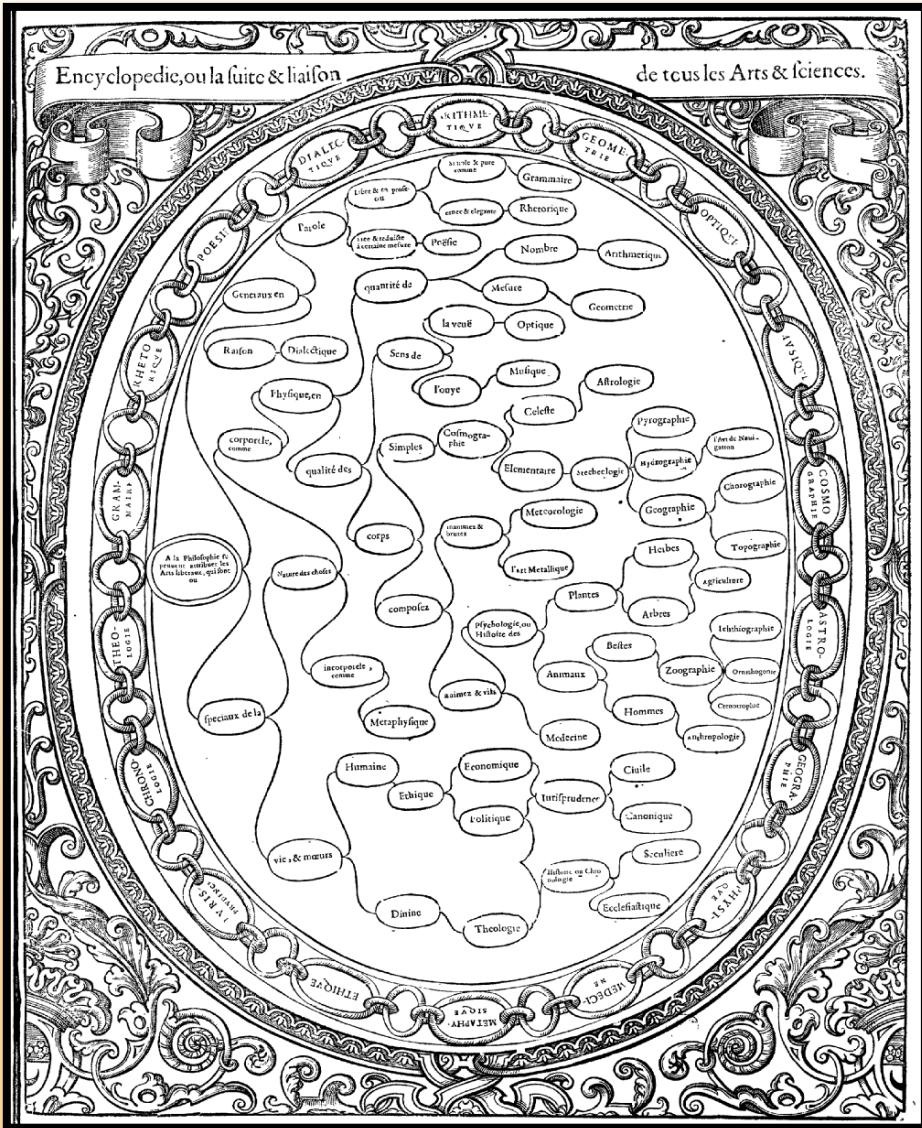
P. RAMI DIALECTICA.  
TABVLA GENERALIS.



D E I N V E N .

PETRI RAMI



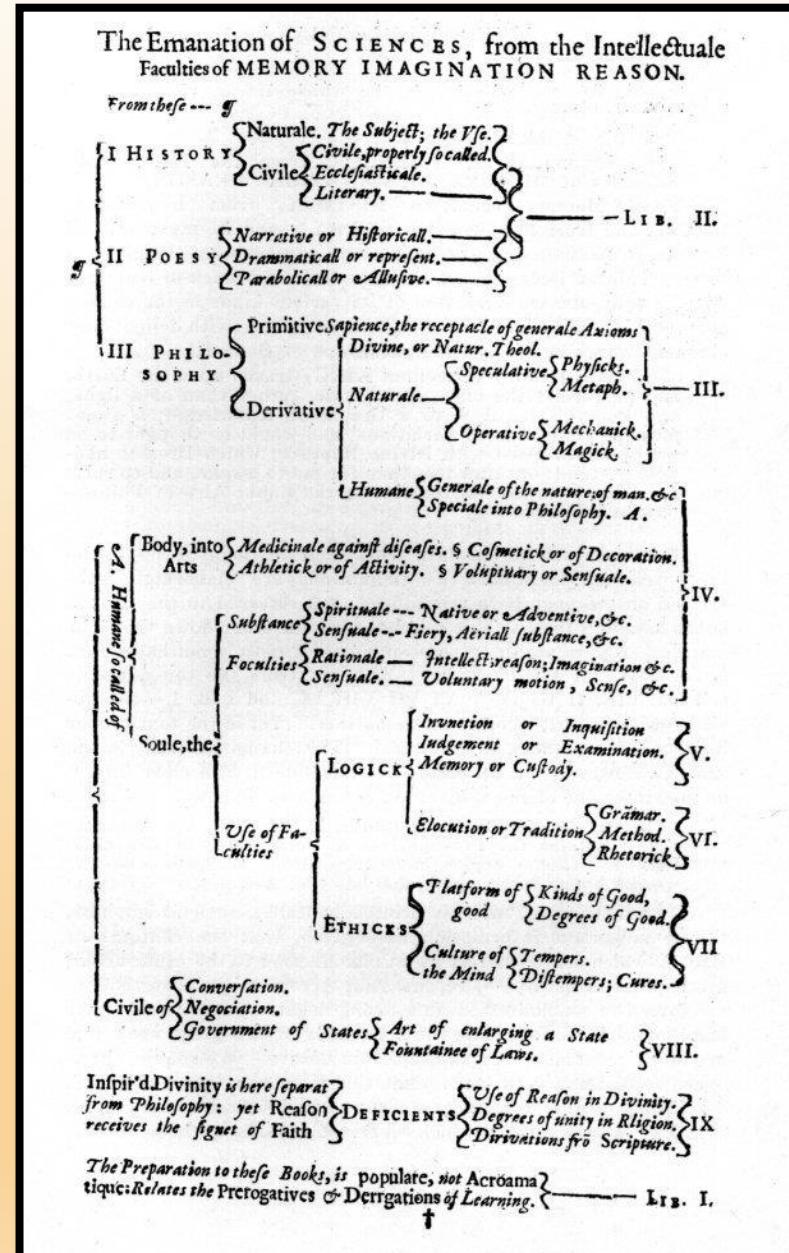
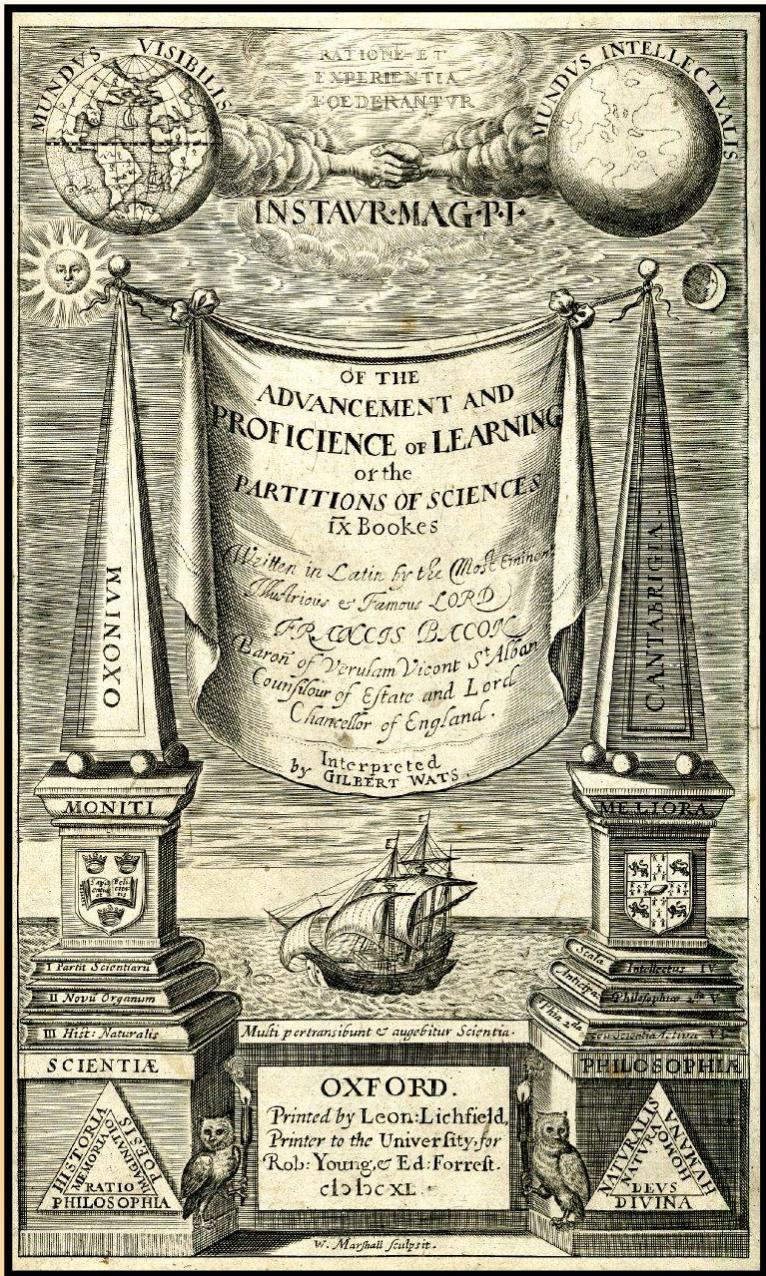


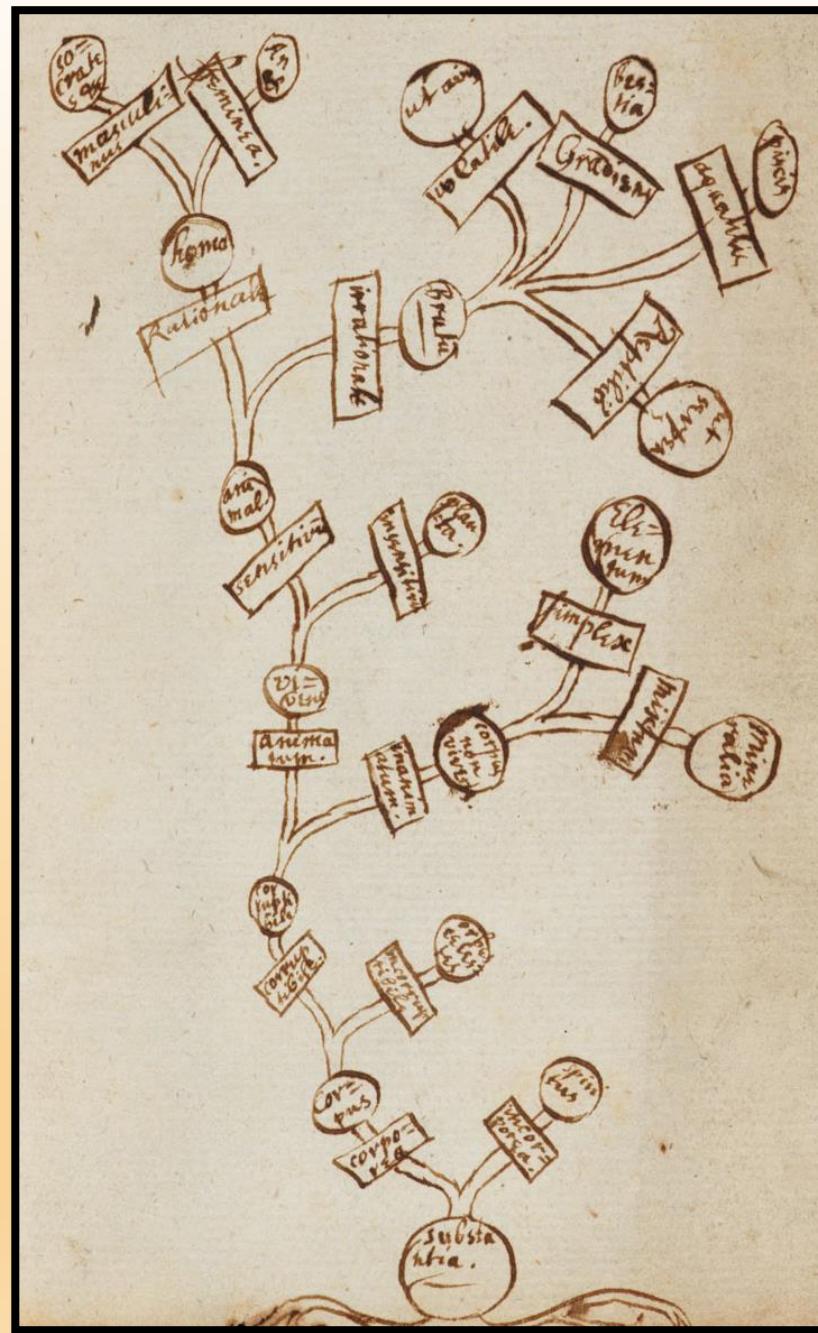
Christophe de Savigny's *Tableaux: Accomplis de tous les arts liberaux*, 1587 | @scott\_bot

## Philosophiae partitio.

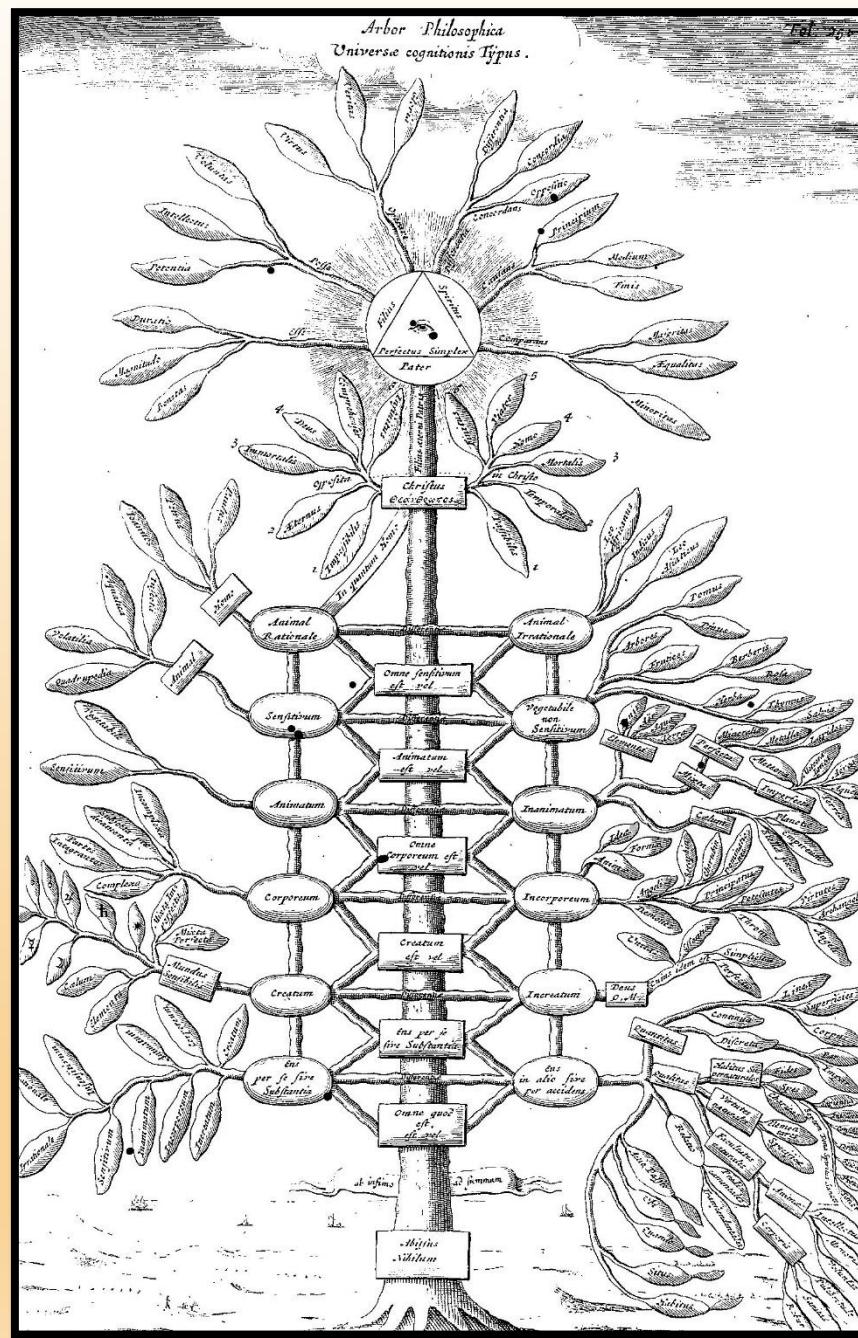
Philosophia diu naturae dicitur in	Theoria sive specu latiūam: Et est aut	Methaphysica. & hæc aut est	Divinitus inspirata. & est Theologia vera in veteri ac novo testamento tradita.
Romanus cu tius ptes se	Realis. q ruribus di uiditur in	Mathematica cu tius ptes sunt:	Humanitus conquista: quaz Aristoteles Auctentia &c. in multis libris descripere.
Grammatica. Rhetorica & Logica constit uentes Triuū.	Philistica sive na turelam, sub q & Medicina the orica continet & tradit in libris	Arithmetica	Astronomia
Activa. q eradic in	Philistica sive na turelam, sub q & Medicina the orica continet & tradit in libris	Physicorum De celo & mundo, De generatione & corruptione Methauorum Mineralium De Elementis De Anima. De animalibus & plantis De Sensu & sensato De memoria & remissione De Somno & vigilia De Iuventute & Senectute De respiratione & spiratore De nutrimento & nutritibili De Sanitate & aegritudine De motu cordis De morte & vita. Et multis alijs breuitatis causa hic p ermittit.	Geometria integritates qua Musica druium.
Practicam q est aut	Ethica. Politica. Iconomica. Monastica.	Sub his utrumque sive continetur:	Phia Naturae
Facta cu tius ptes si artes Me chanicæ, sc;	Lanificium Armatura Nauigatio Agricultura Venatio Medicina Theatrica		Geometria





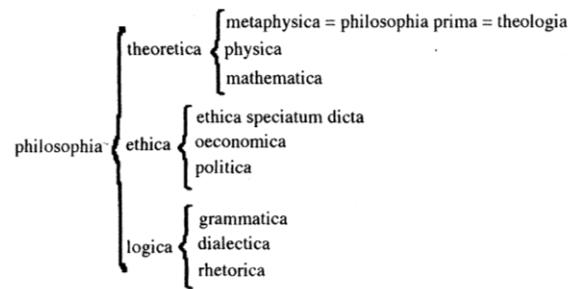


Isaac Newton's Undergraduate Notebook, 1661 | @scott\_bot

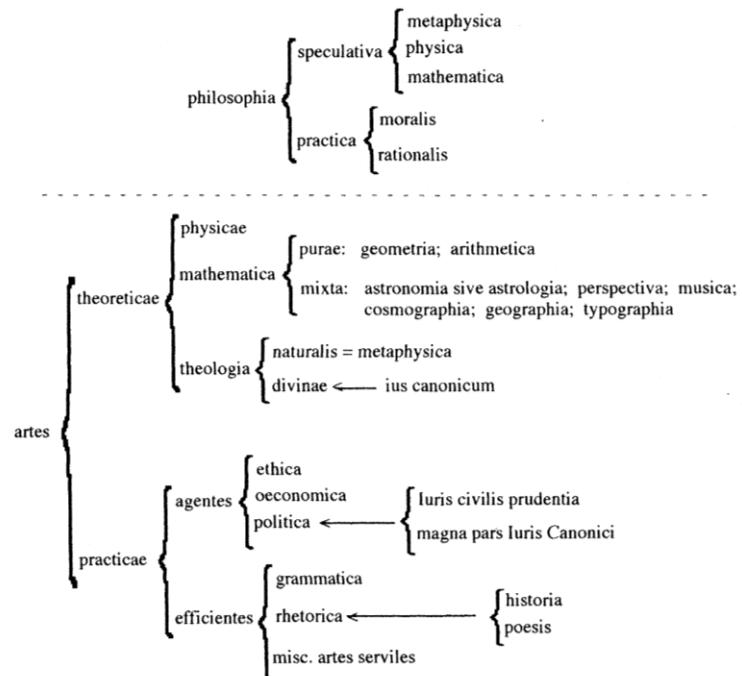


Athanasius Kircher's Arbor Philosophica in *Ars Magna Sciendi*, 1669 | @scott\_bot

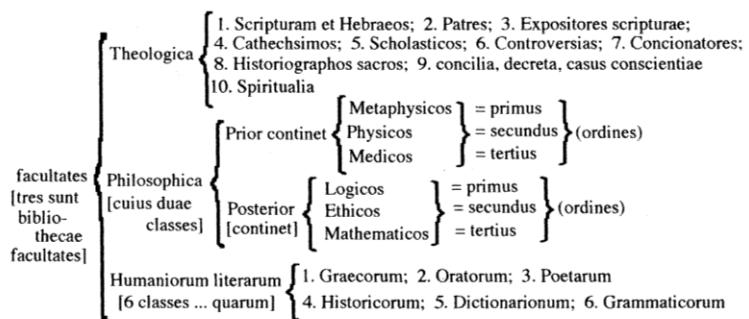
A. Philosophical Disciplines Listed by Henricus Paxmannus (1556)



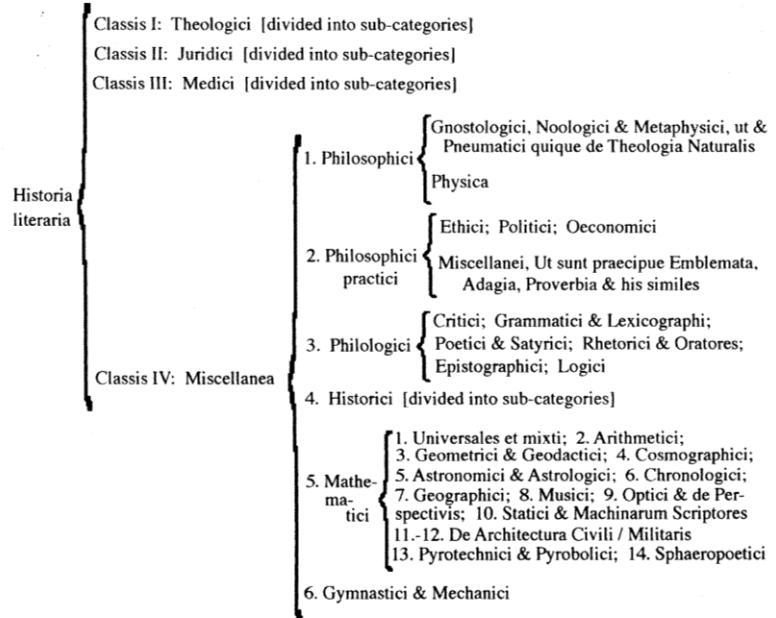
B. Philosophy and the Arts According to Georgius Clainerus S.J. (1610-1611)

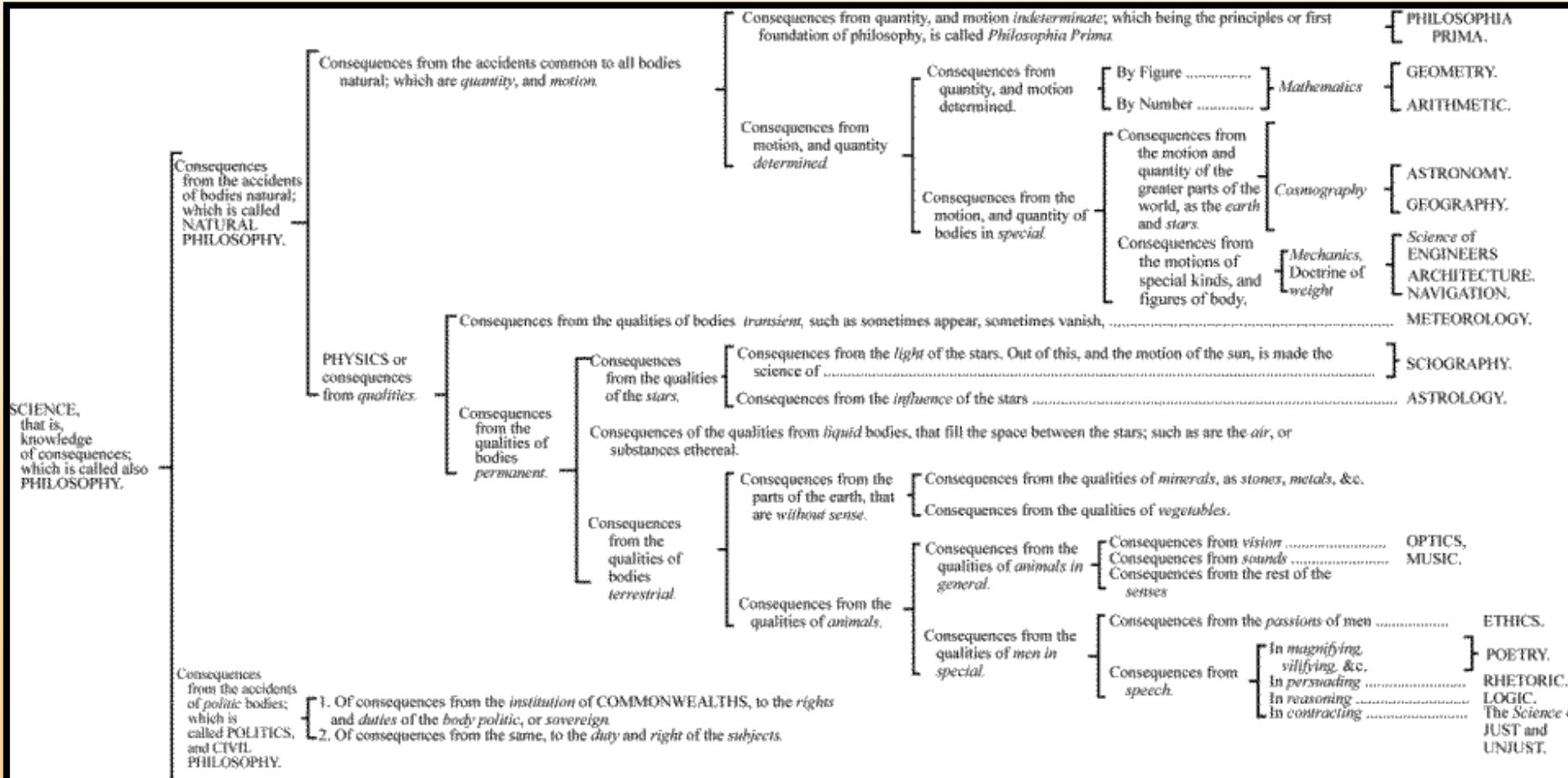


C. The Organization of the Library Catalog of the Jesuit Academy in Trier (1586)

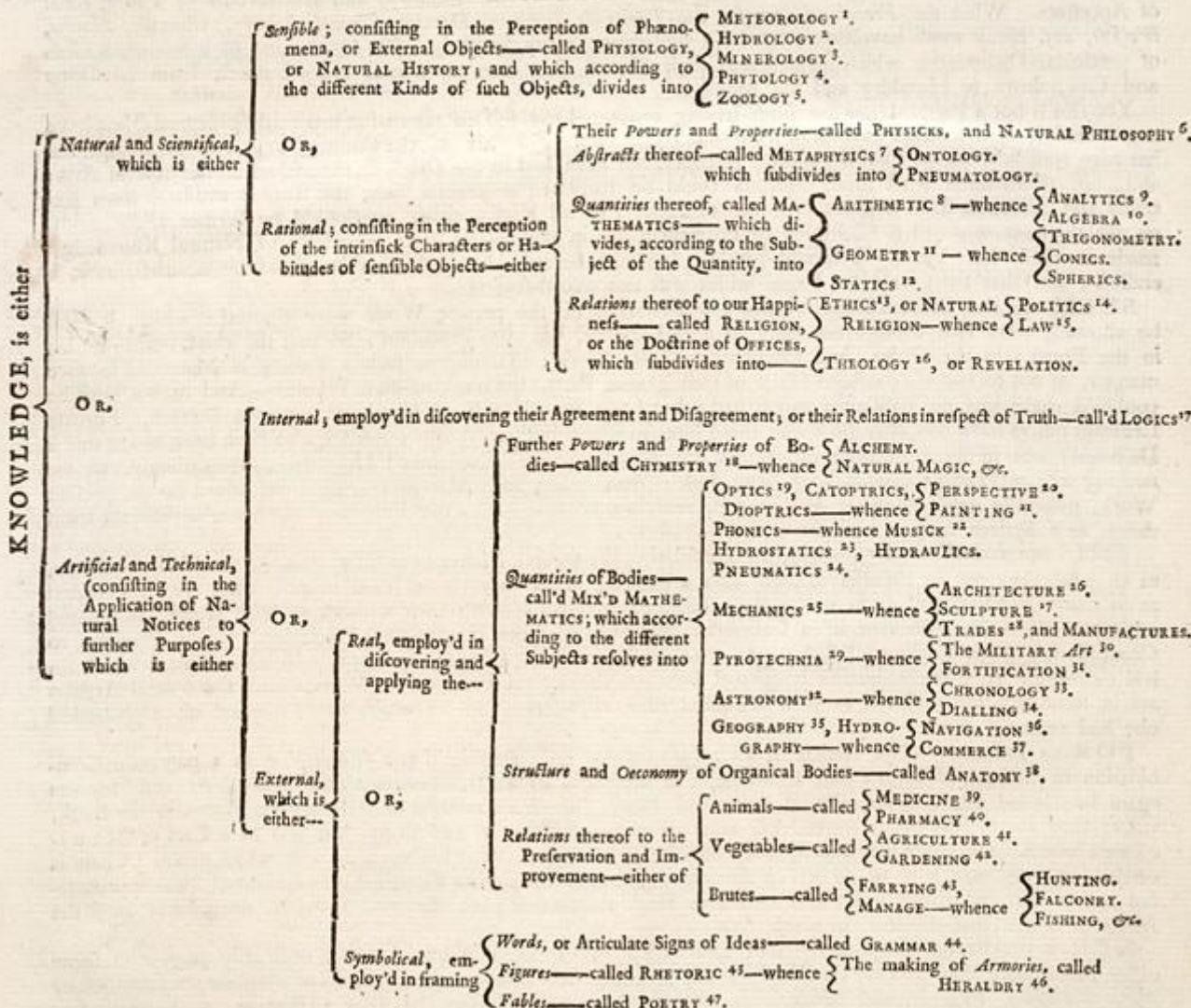


D. Academic / Professional Subject-Matters as Classified in a Bookseller's Catalog Published by Simon Paullus (1671)





BUT, it will be here necessary to carry on the Division of Knowledge a little further; and make a precise Partition of the Body thereof, in the more formal Way of Analysis: The rather, as an Analysis, by shewing the Origin and Derivation of the several Parts, and the Relation in which they stand to their common Stock and to each other; will assist in restoring 'em to their proper Places, and connecting 'em together.



# \*S Y S T È M E F I G U R È D E S C O N N O I S S A N C E S H U M A I N E S.

## E N T E N D E M E N T.

### M E M O I R E.

SACRÉE (HISTOIRE DES PROPHÉTIES).  
ECCLESIASTIQUE.  
CIVILE, ANC. ET MODERNE (HISTOIRE LITTÉRAIRE).

HISTOIRE DE LA NATURE (HISTOIRE DE LA TERRE ET DE LA MER, DES MINÉRAUX, DES VÉGÉTAUX, DES ANIMAUX, DES ÉLÉMENS).

NATURELLE (PRODIGES CELESTES, MÉTÉORES PRODIGIEUX, PRODIGES SUR LA TERRE ET LA MER, MINÉRAUX MONSTRUEUX, VÉGÉTAUX MONSTRUEUX, ANIMAUX MONSTRUEUX, PRODIGES DES ÉLÉMENS).

ARTS DE LA NATURE (TRAITS D'UN ET D'UNE FOI ET DE L'ÉCRITURE, TRAITS D'UN ET D'UNE FOI ET DE L'ÉCRITURE, TRAITS D'UN ET D'UNE FOI ET DE L'ÉCRITURE, TRAITS D'UN ET D'UNE FOI ET DE L'ÉCRITURE).

USAGES DE LA NATURE (ARTS MANUFACTURIERS).

### R A I S O N.

MÉTAPHYSIQUE GÉNÉRALE, OU ONTOLOGIE, OU SCIENCE DE L'ÊTRE EN GÉNÉRAL, DE LA POSSÉDABILITÉ, DE L'EXISTENCE, DE LA DURÉE, &c.

SCIENCE DE LA THÉOLOGIE RÉVÉLÉE, DE DIEU, SCIENCE DES ESPRITS JUVINATIFS, RIEN ET MAL FAISANT, MAGIE POIREE.

PNEUMATOLOGIE OU SCIENCE DE L'ÂME ET DE L'ESSENCE.

ART DE PENSER, ART DE CONNAÎTRE, ART DE COMPRENDRE.

SCIENCE DE L'HOMME (LOGIQUE, SCIENCE DE L'ESPÈCE HUMAINE).

SCIENCE DE LA NATURE (SCIENCE DES MÉTIERS, SCIENCE DES JUGEMENTS, SCIENCE DES PROPOSITIONS, SCIENCE DES IDÉES, SCIENCE DES MÉTHODES).

SCIENCE DES MÉTIERS (ARTS, MÉTIERS, INDUSTRIES).

SCIENCE DES JUGEMENTS (ARTS, MÉTIERS, INDUSTRIES).

SCIENCE DES IDÉES (ARTS, MÉTIERS, INDUSTRIES).

SCIENCE DES PROPOSITIONS (ARTS, MÉTIERS, INDUSTRIES).

SCIENCE DES MÉTHODES (ARTS, MÉTIERS, INDUSTRIES).

MORALE GÉNÉRALE (SCIENCE DU BIEN ET DU MAL EN GÉNÉRAL DES DEVOIRS EN GÉNÉRAL).

SCIENCE PARTICULIÈRE (ARTS, MÉTIERS, INDUSTRIES).

PHYSIQUE DE LA NATURE (PHYSIQUE PARTIELLE).

PHYSIQUE PARTIELLE (PHYSIQUE PRATIQUE, PHYSIQUE THÉORIQUE).

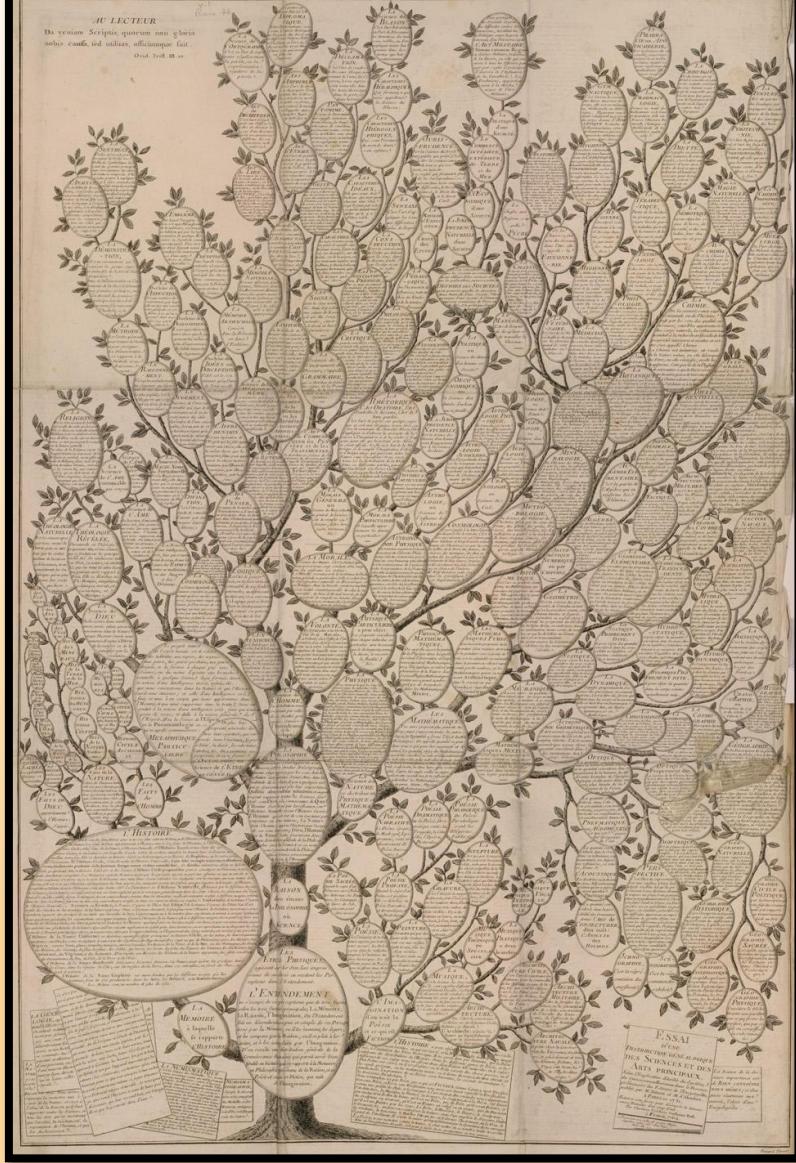
### I M A G I N A T I O N.

POÉSIE (SCIENCE DE LA POÉSIE).

SACRÉE, PROFANE.

DRAMATIQUE (COMÉDIE, OPERA, PASTORALE, &c.).

DIAPOLOGIE (ALLEGORIES).



Didert and d'Alembert's *Encyclopédie*, 18<sup>th</sup> century | @scott\_bot

THE principles of Method, developed in the preceding Essay, will, it is hoped, render perfectly intelligible the Plan of our whole work, which is comprehended under Four Divisions as follow:

		FIRST DIVISION.			
PURE SCIENCES.	2 VOLs.	FORMAL.	Universal Grammar and Philology: or the forms of Languages. Logic, particular and universal: or the forms of Conceptions and their combinations. Mathematics: (Geometry, Arithmetic, Algebra, &c.) or the forms and constructions of Figure and Number. Metaphysics: or the universal principles and conditions of Experience, having for its object the Reality of our speculative knowledge in general. Morals: or the principles and conditions of the coincidence of the individual will with the universal reason, having for its object the Reality of our practical knowledge: (hence, in a lower stage, Politics and Human Law.) Theology: or the union of both in their application to God, the Supreme Reality.		
		REAL.			
MIXED AND APPLIED SCIENCES.	6 VOLs.	MIXED.	Mechanics. Hydrostatics. Pneumatics. Optics. Astronomy.		
		APPLIED.	I. EXPERIMENTAL PHILOSOPHY. II. THE FINE ARTS. III. THE USEFUL ARTS. IV. NATURAL HISTORY. V. APPLICATION OF NATURAL HISTORY.		
BIOGRAPHICAL AND HISTORICAL.	8 VOLs.	THIRD DIVISION.			
MISCELLANEOUS AND LEXICOGRAPHICAL.	8 VOLs.	FOURTH DIVISION.			
<p>Biography CHRONOLOGICALLY arranged, interspersed with introductory Chapters of National History, Political Geography and Chronology, and accompanied with correspondent Maps and Charts.</p>					
<p>Alphabetical, Miscellaneous, and Supplementary:—containing a GAZETTEER, or complete Vocabulary of Geography: and a Philosophical and Etymological LEXICON of the English Language, or the History of English Words;—the citations arranged according to the Age of the Works from which they are selected, yet with every attention to the independent beauty or value of the sentences chosen, which is consistent with the higher ends of a clear insight into the original and acquired meaning of every word.</p>					
<p>The INDEX.—Being a digested and complete Body of Reference to the whole Work; in which the known English name, as well as the scientific name, of every subject of Natural History, will be found in its alphabetical place.</p>					

## NATURAL SCIENCE.

### **500 Natural Science.**

- 501 Philosophy.
- 502 Compends.
- 503 Dictionaries.
- 504 Essays.
- 505 Periodicals.
- 506 Societies.
- 507 Education.
- 508 Travels.
- 509 History.

### **510 Mathematics.**

- 511 Arithmetic.
- 512 Algebra.
- 513 Geometry.
- 514 Trigonometry.
- 515 Conic sections.
- 516 Analytical geometry.
- 517 Calculus.
- 518 Quaternions.
- 519 Probabilities.

### **520 Astronomy.**

- 521 Theoretical.
- 522 Practical.
- 523 Descriptive.
- 524 Maps.
- 525 Observations.
- 526 Figure of the earth.
- 527 Navigation.
- 528 Almanacs.
- 529 Chronology.

### **530 Physics.**

- 531 Mechanics.
- 532 Hydrostatics.
- 533 Pneumatics.
- 534 Acoustics.
- 535 Optics.
- 536 Heat.
- 537 Electricity.
- 538 Magnetism.
- 539 Molecular physics.

### **540 Chemistry.**

- 541 Theoretical.
- 542 Experimental.
- 543 Analysis.
- 544 Qualitative.
- 545 Quantitative.
- 546 Inorganic.
- 547 Organic.
- 548 Crystallography.
- 549 Mineralogy.

### **550 Geology.**

- 551 Physical Geography, Meteorology.
- 552 Lithology.
- 553 Dynamical geology.
- 554 Europe.
- 555 Asia.
- 556 Africa.
- 557 North America.
- 558 South America.
- 559 Oceanica.

### **560 Palaeontology.**

- 561 Plants.
- 562 Invertebrates.
- 563 *Protozoa and Radiates.*
- 564 Mollusca.
- 565 Articulates.
- 566 Vertebrates.
- 567 Fishes.
- 568 Reptiles and Birds.
- 569 Mammals.

### **570 Biology.**

- 571 Prehistoric Archaeology.
- 572 Ethnology.
- 573 Natural History of Man.
- 574 Homologies.
- 575 Evolution.
- 576 Embryology.
- 577 Spontaneous generation.
- 578 Microscopy.
- 579 Collectors' Manuals.

### **580 Botany.**

- 581 Physiological.
- 582 Systematic.
- 583 Ornamental.
- 584 Europe.
- 585 Asia.
- 586 Africa.
- 587 North America.
- 588 South America.
- 589 Oceanica.

### **590 Zoology.**

- 591 Comparative Anatomy.
- 592 Invertebrates.
- 593 *Protozoa and Radiates.*
- 594 Mollusca.
- 595 Articulates.
- 596 Vertebrates.
- 597 Fishes.
- 598 Reptiles and Birds.
- 599 Mammals.

## USEFUL ARTS.

### **600 Useful Arts.**

- 601 Philosophy.
- 602 Compends.
- 603 Dictionaries.
- 604 Essays.
- 605 Periodicals.
- 606 Societies.
- 607 Education.
- 608 Patents.
- 609 History.

### **610 Medicine.**

- 611 Anatomy.
- 612 Physiology.
- 613 Hygiene.
- 614 Public health.
- 615 *Materia medica and therapeutics.*
- 616 Pathology, theory and practice.
- 617 Surgery and dentistry.
- 618 Obstetrics and sexual science.
- 619 Veterinary medicine.

### **620 Engineering.**

- 621 Mechanical.
- 622 Topographical.
- 623 Military.
- 624 Bridge.
- 625 Road and railroad.
- 626 Canal.
- 627 Harbor.
- 628 Hydraulic and mining.
- 629 Instruments and field books.

### **630 Agriculture.**

- 631 Soil and preparation.
- 632 Pests and hindrances.
- 633 Productions of the soil.
- 634 Fruits.
- 635 Garden.
- 636 Domestic animals.
- 637 Dairy.
- 638 Bee and silkworm.
- 639 Fishing, trapping.

### **640 Domestic Economy.**

- 641 Cookery.
- 642 Confectionery.
- 643 Food and dining.
- 644 Fuel and lights.
- 645 Furniture.
- 646 Clothing and toilet.
- 647 Servants.
- 648 Laundry.
- 649 Nursery and sick-room.

### **650 Communication, Commerce.**

- 651 Writing.
- 652 Penmanship.
- 653 Short hand.
- 654 Telegraphy.
- 655 Printing.
- 656 Navigation and transportation.
- 657 Book-keeping.
- 658 Business manuals.
- 659 Other.

### **660 Chemical Technology.**

- 661 Chemicals.
- 662 Pyrotechnics.
- 663 Wines, liquors, and ale.
- 664 Sugar, salt, starch, etc.
- 665 Gas.
- 666 Glass.
- 667 Dyeing and bleaching.
- 668 Assaying.
- 669 Metallurgy.

### **670 Manufactures.**

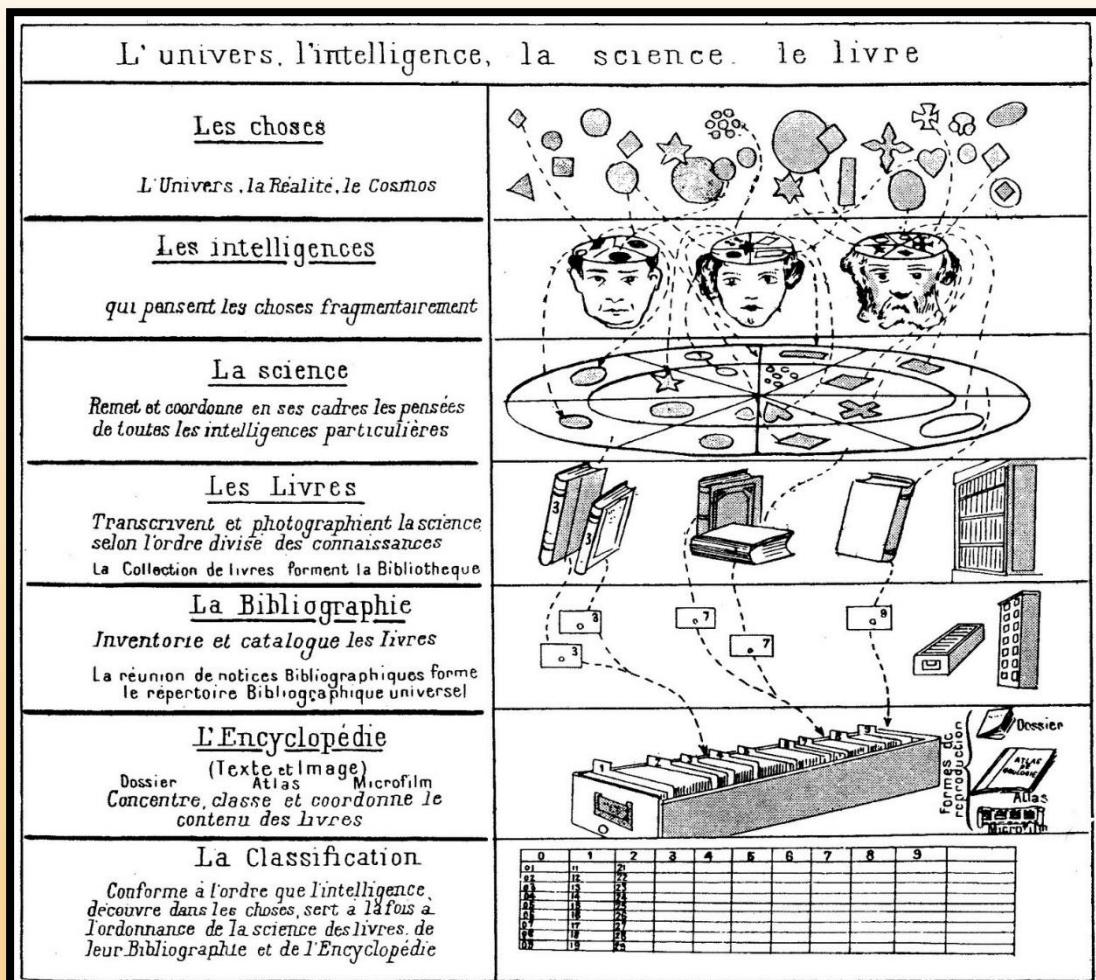
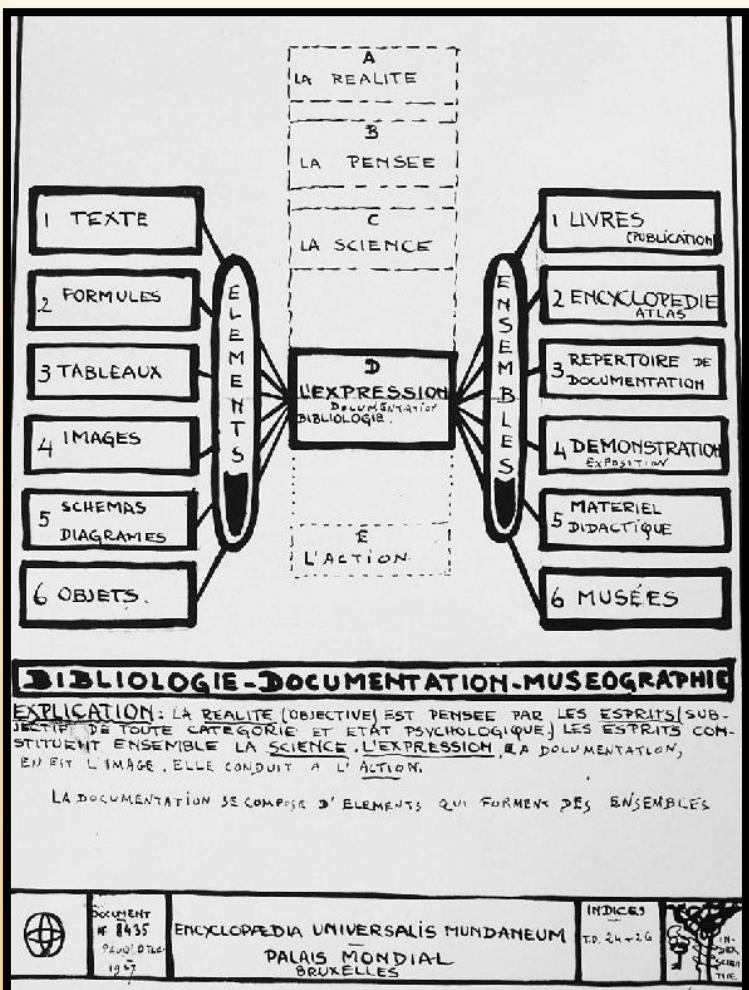
- 671 Metals.
- 672 Iron.
- 673 Marble, stone, and brick.
- 674 Wood.
- 675 Leather and rubber.
- 676 Paper.
- 677 Textile fabrics.
- 678 Cotton.
- 679 Other.

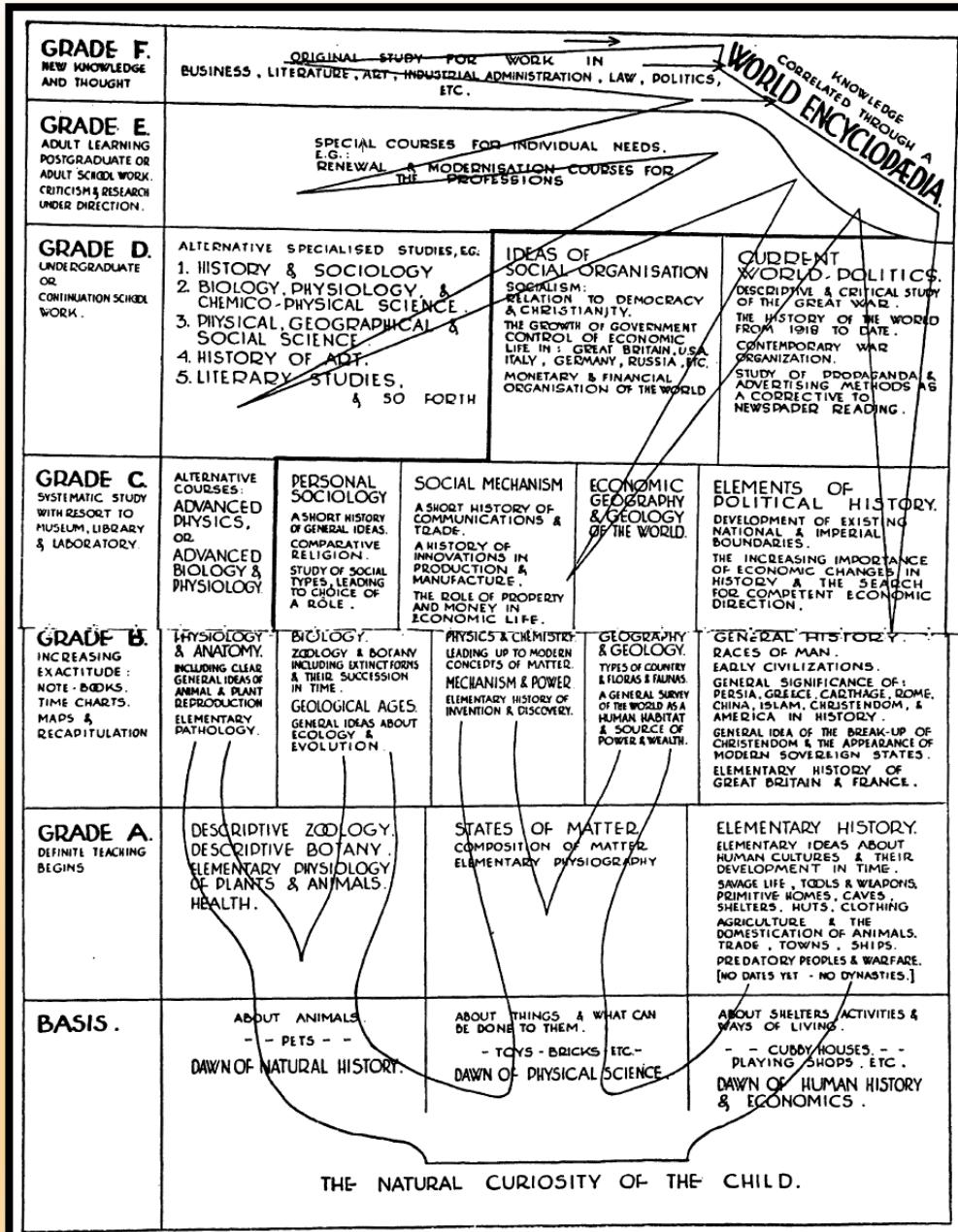
### **680 Mechanic Trades.**

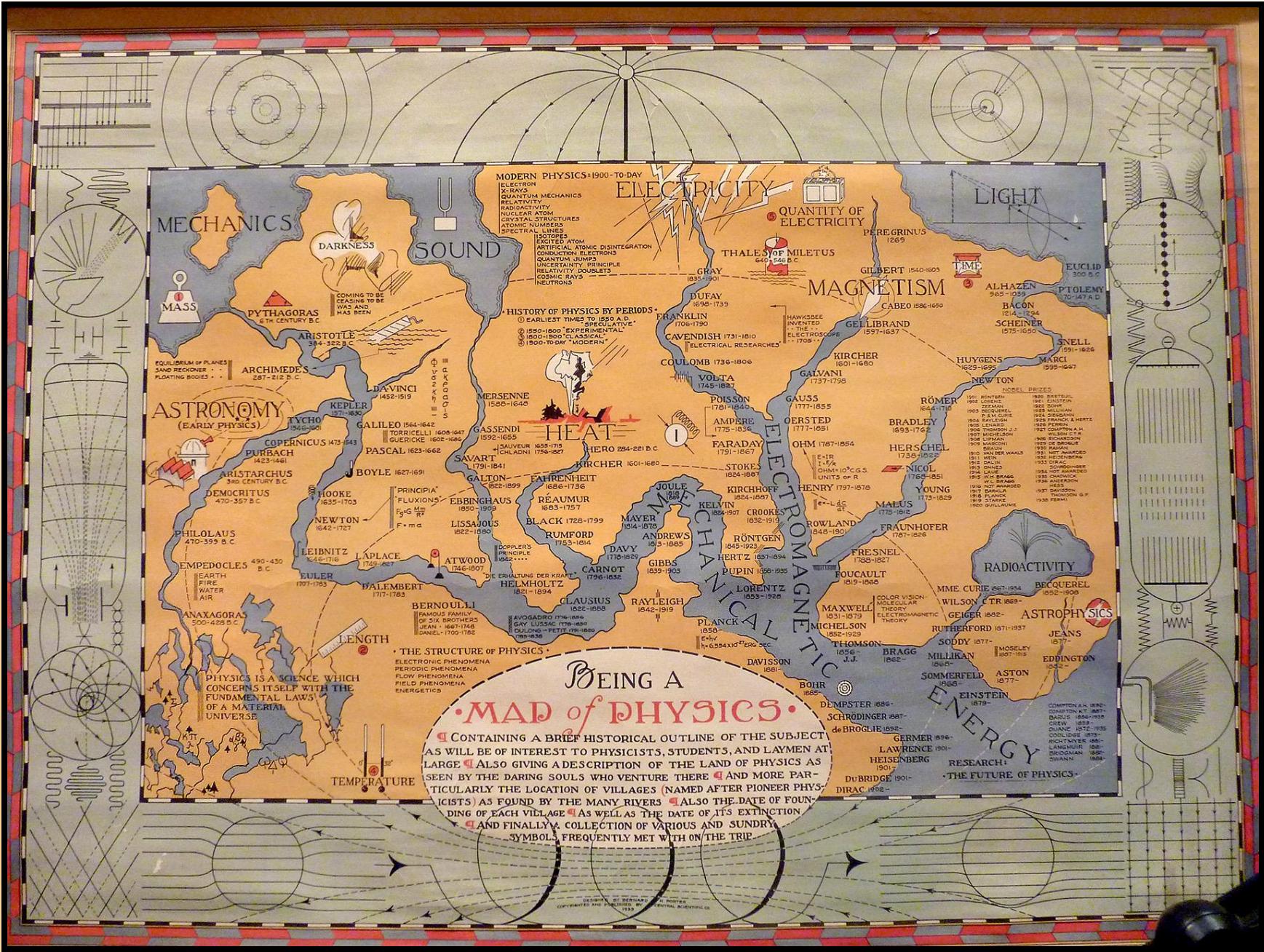
- 681 Watch and instrument-making.
- 682 Blacksmithing.
- 683 Lock and gun-making.
- 684 Carriage and cabinet-making.
- 685 Saddlery and shoe-making.
- 686 Book-binding.
- 687 Clothes-making.
- 688 Other.

### **690 Building.**

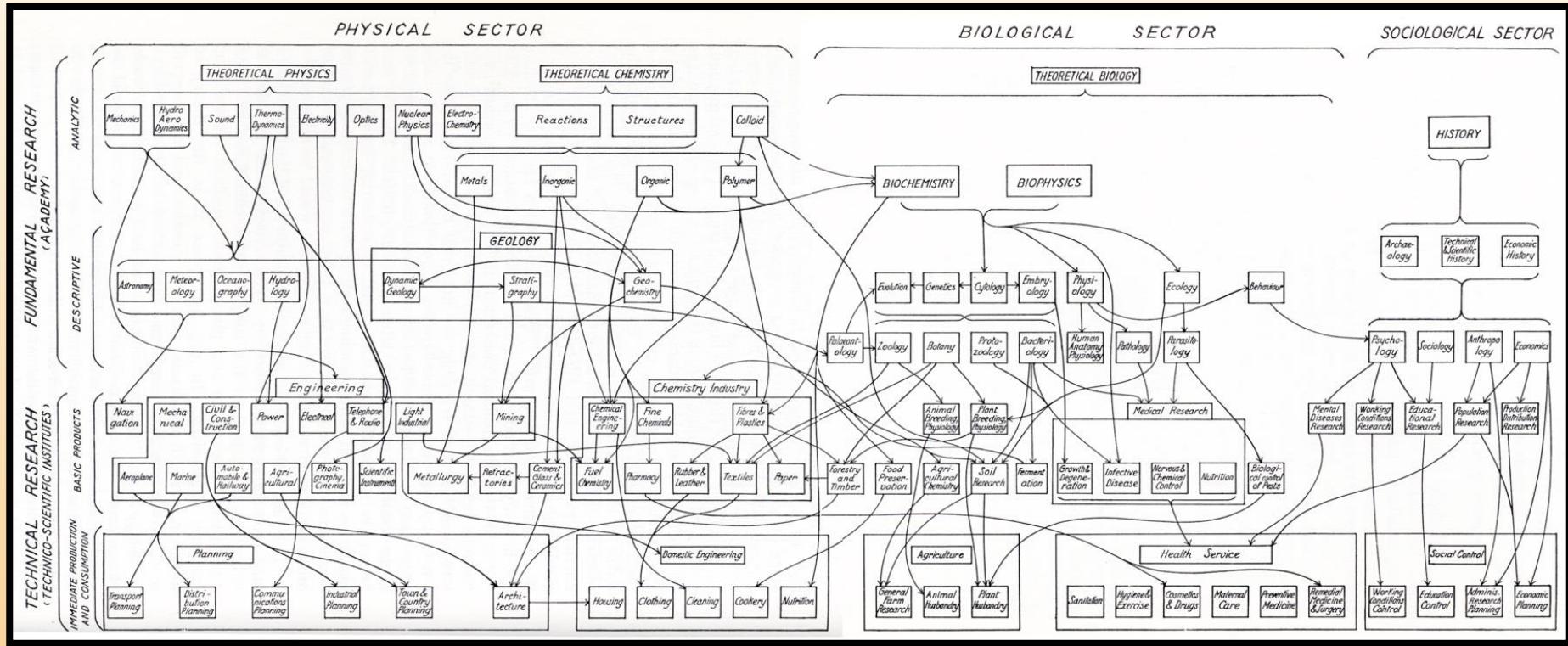
- 691 Materials.
- 692 Plans and specifications.
- 693 Masonry.
- 694 Carpentry.
- 695 Slating and tiling.
- 696 Plumbing.
- 697 Warming and ventilation.
- 698 Painting, glazing, and paper-hanging.
- 699 Car and Ship-building.





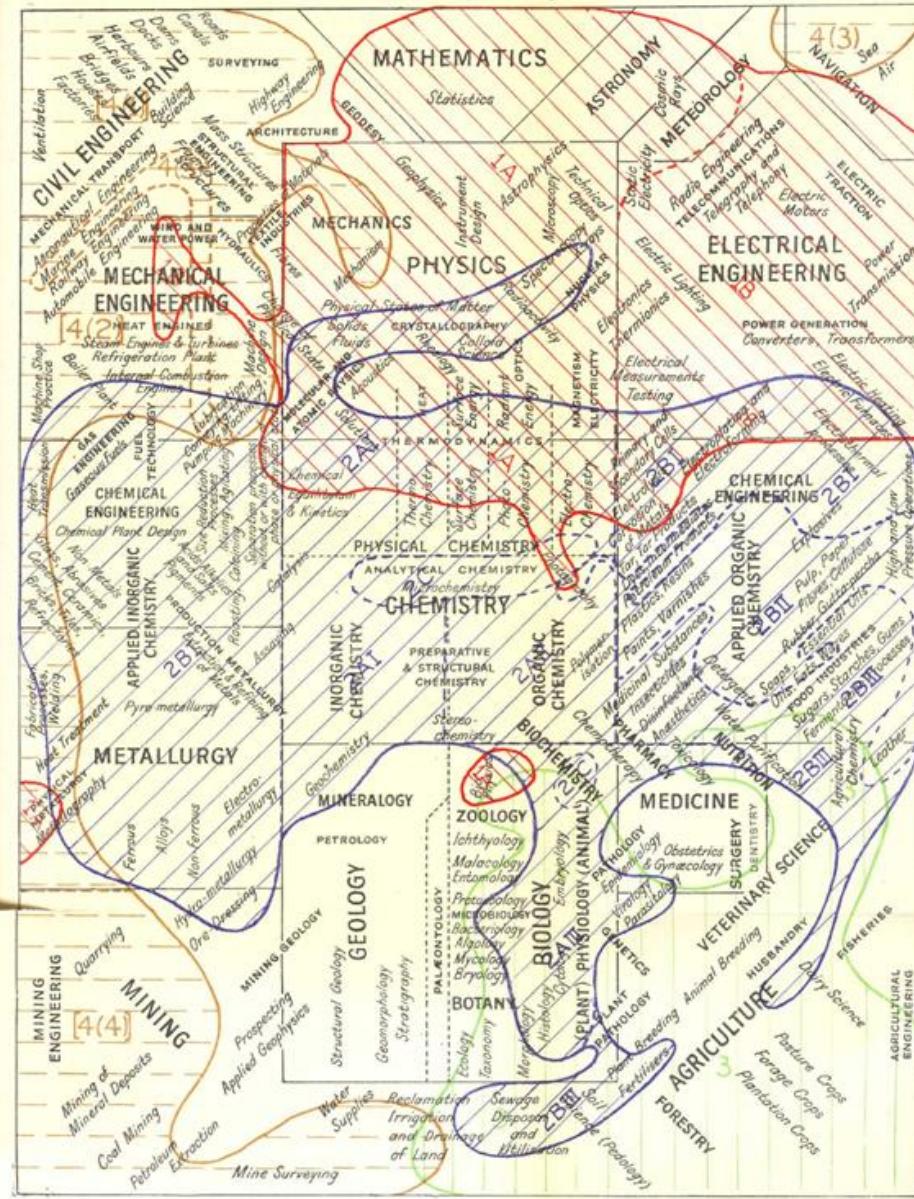


Bernard H. Porter's map of physics, 1939 | @scott\_bot



John D. Bernal's *The Social Function of Science*, 1939 | @scott\_bot

A CHART ILLUSTRATING SOME OF  
THE RELATIONS BETWEEN THE BRANCHES OF NATURAL SCIENCE AND TECHNOLOGY  
H.J.T. Ellingham. 1948.



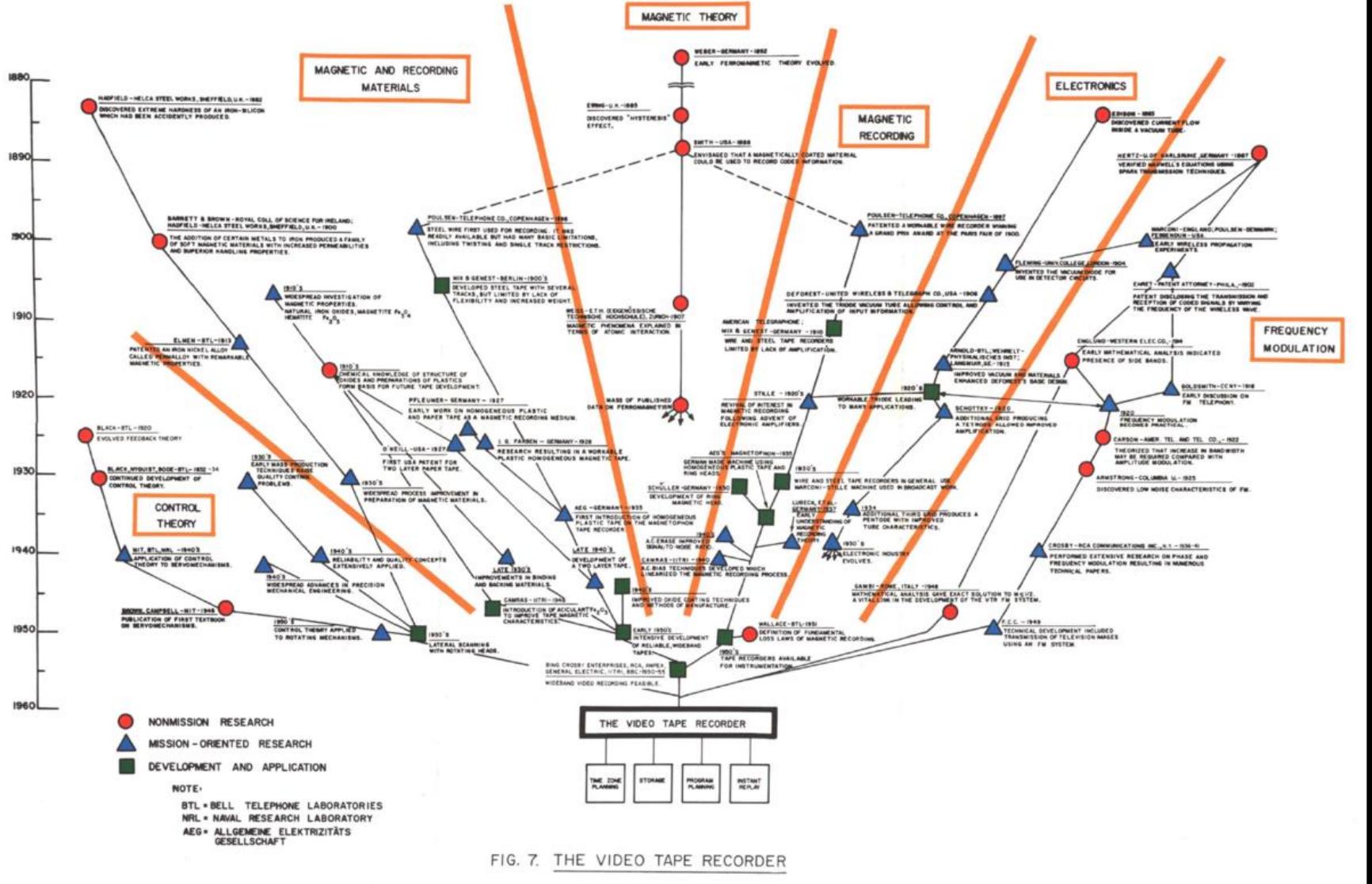
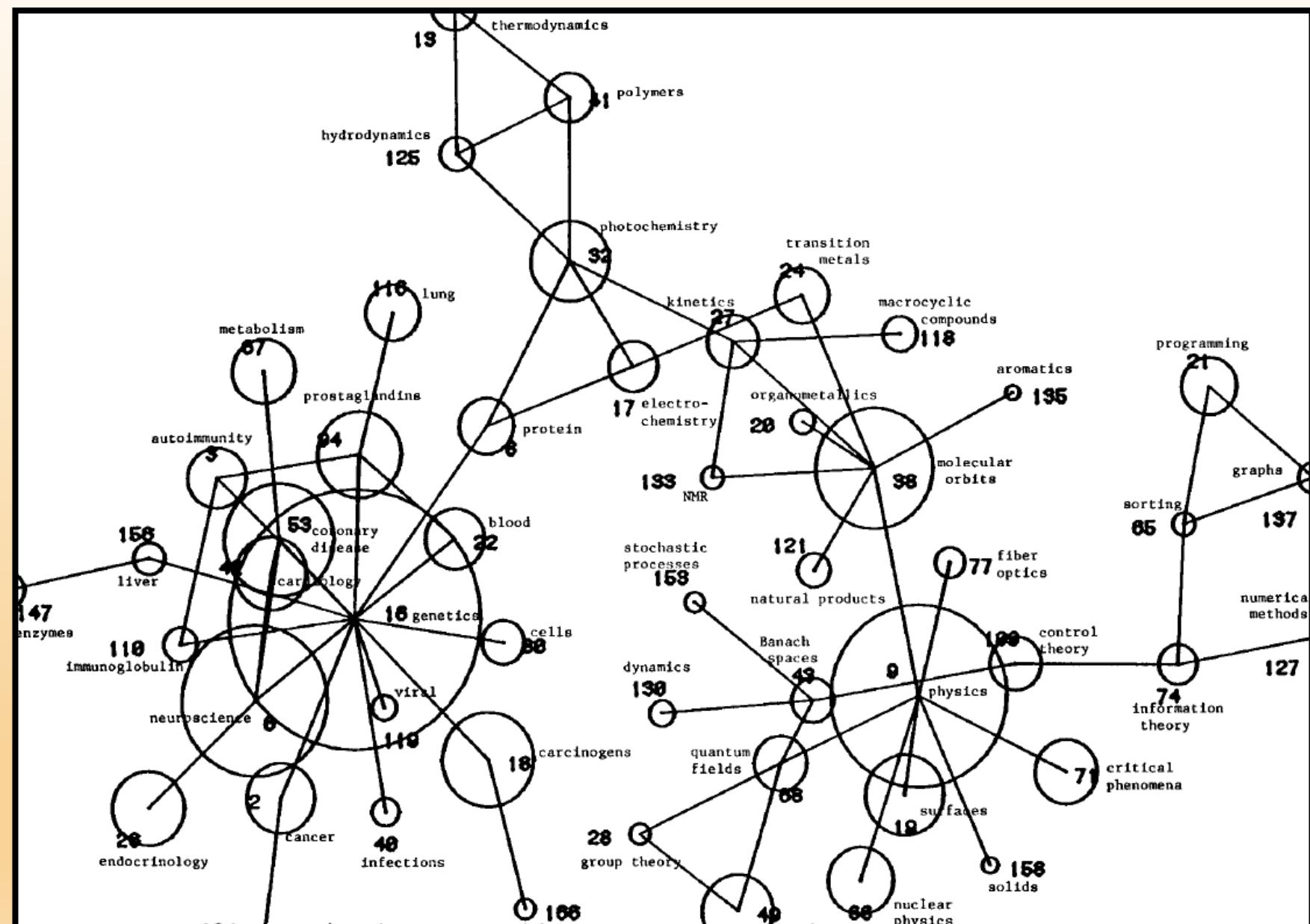
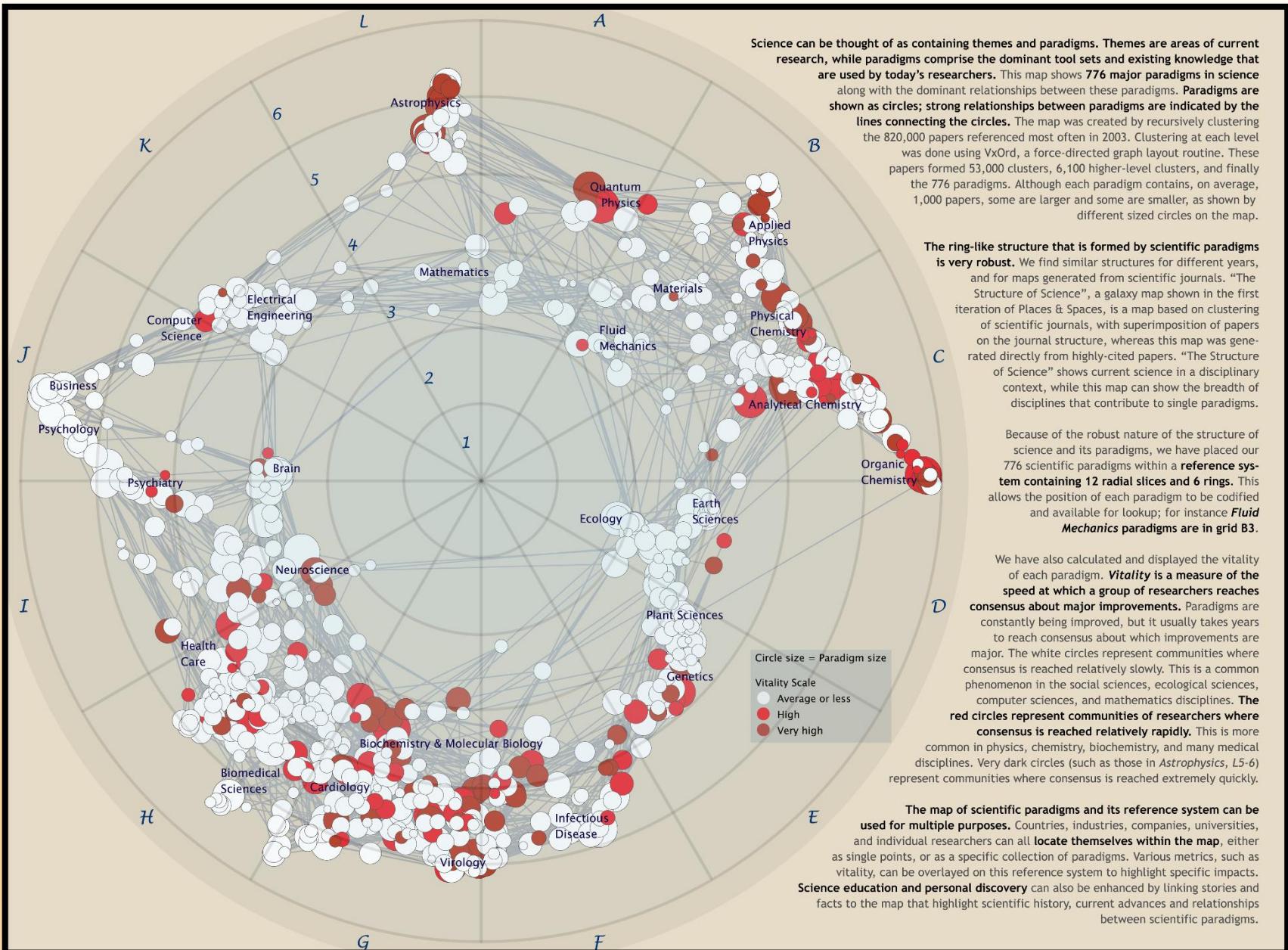


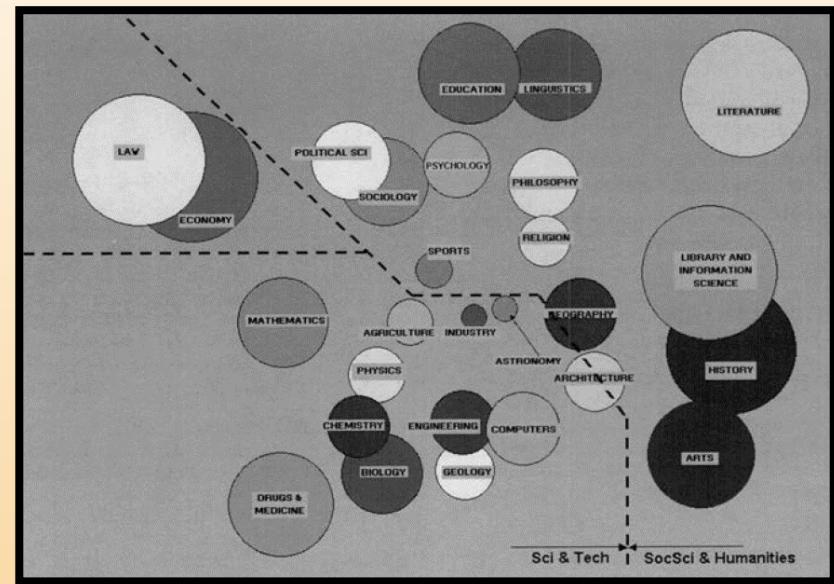
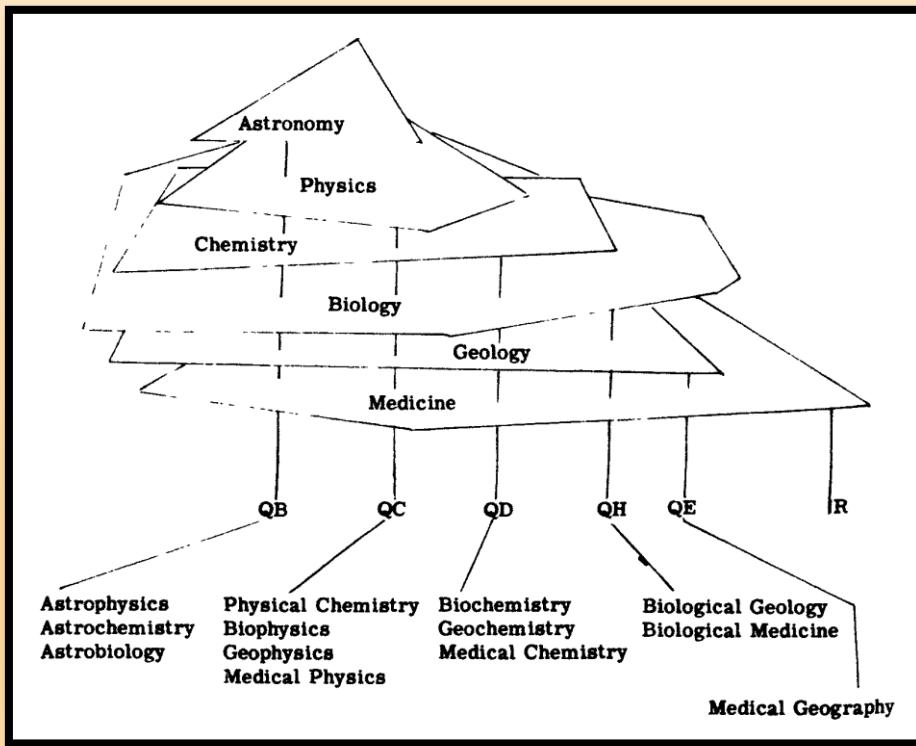
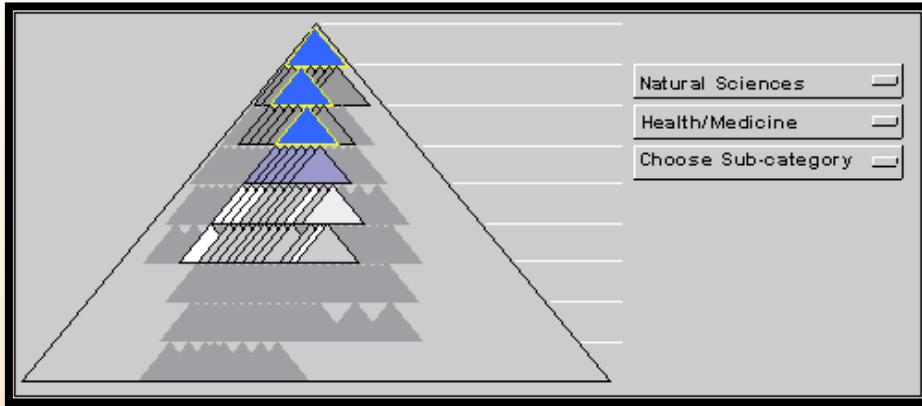
FIG. 7. THE VIDEO TAPE RECORDER

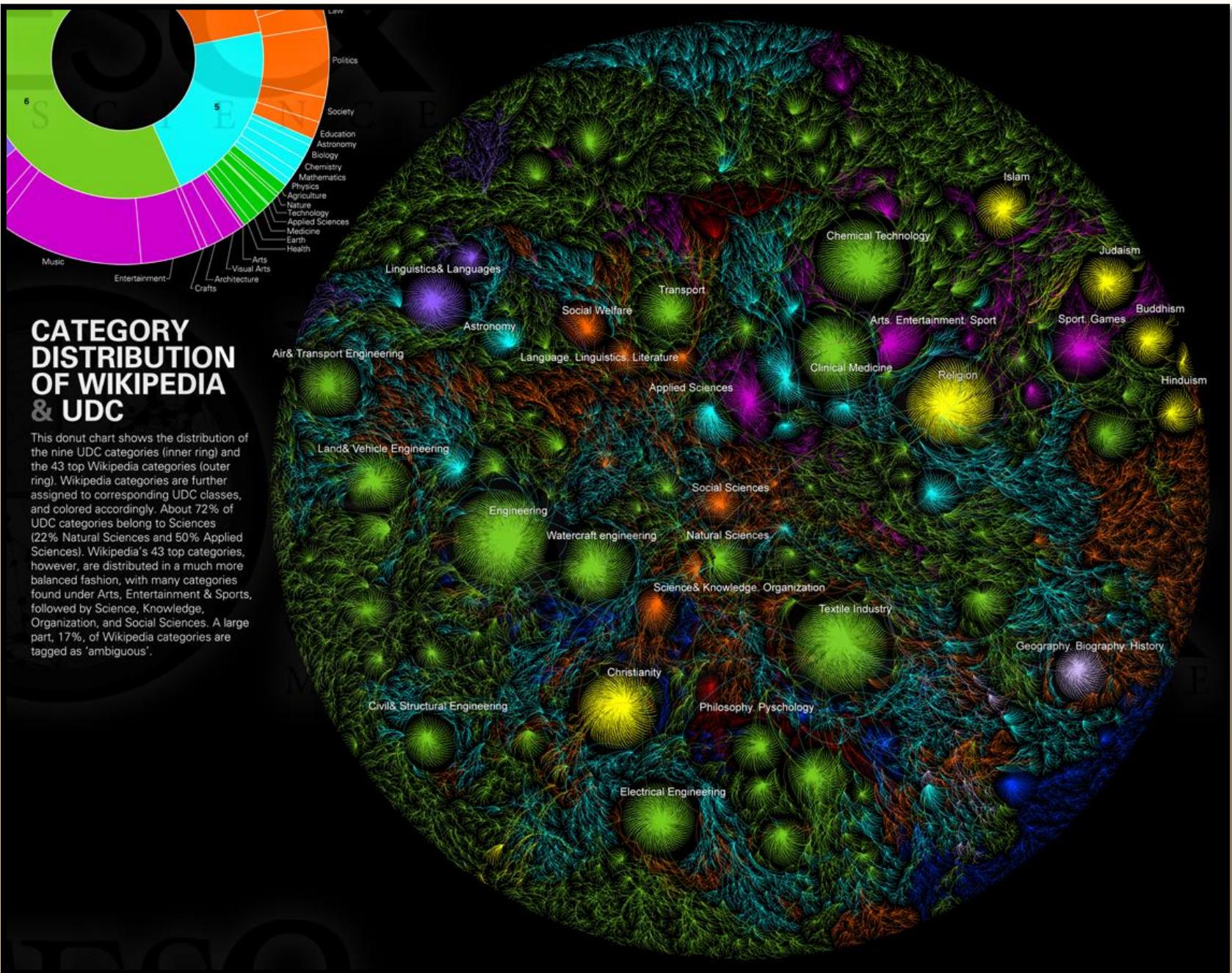
Francis Narin's history of the tape recorder, 1968 | @scott\_bot

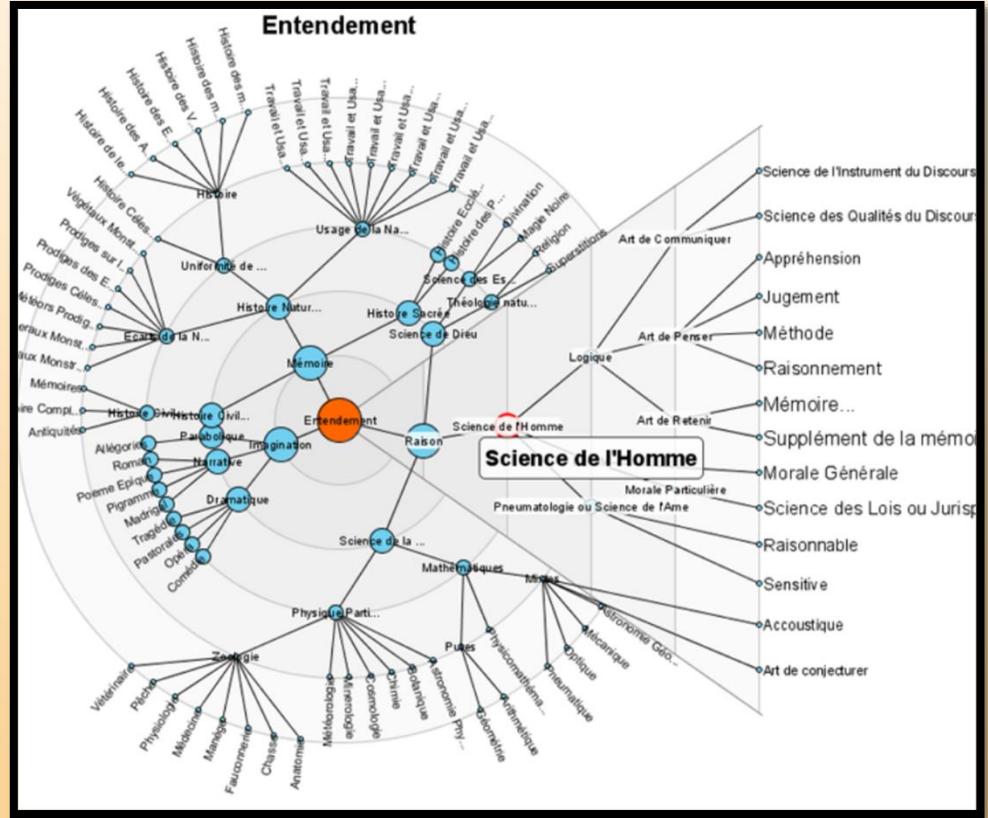
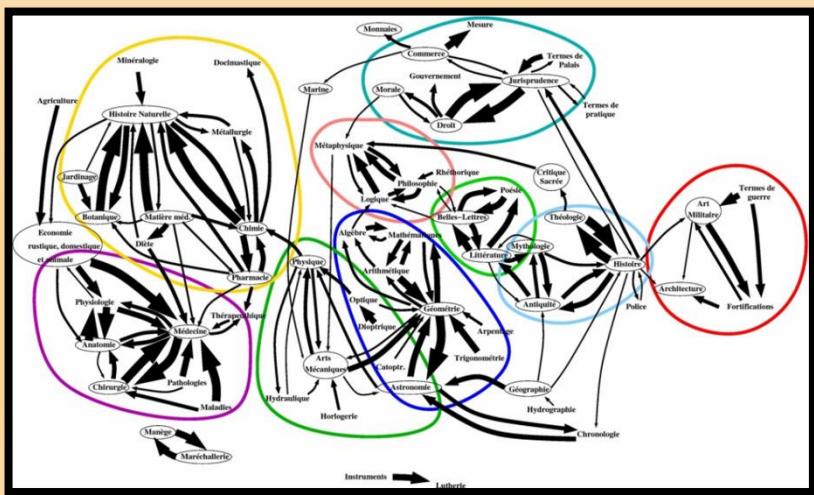
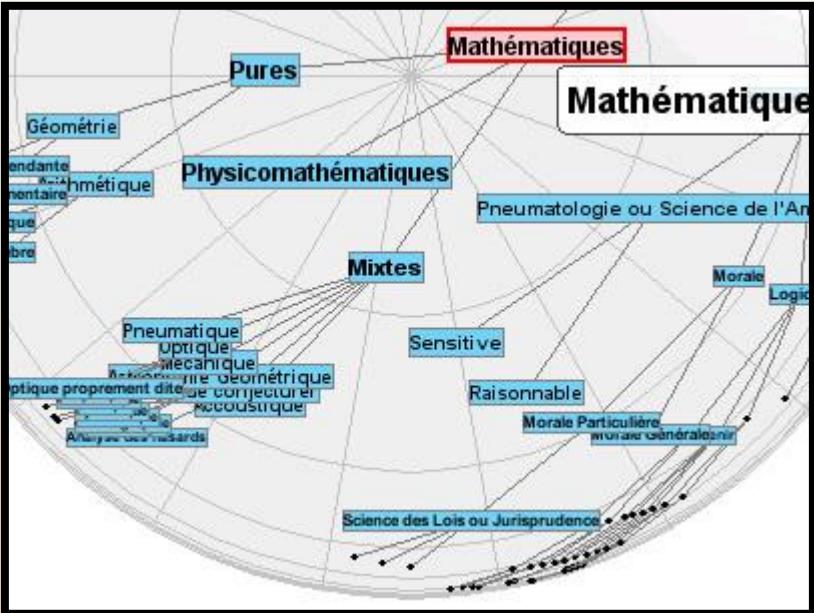


Small & Garfield's Co-Citation Map of Science, 1985 | @scott\_bot









# From Trees to Webs

Uprooting Knowledge through Visualization

## Thank you.

High resolution images can be found at [scottbot.net](http://scottbot.net), and full citations are available in the proceedings.