

# The Organization of Knowledge

**Geoff Nunberg** 

**Concepts of Information i218** 

March 13, 2012

# Itinerary: 3/12

"Knowledge" and "Information" (reprise) The structure of knowledge
Shifting conceptions of Knowledge, 1500-1800 Early modern solutions
Enlightenment Reorganizations of Knowledge: philosophical influences
Material Representations of Knowledge
The Politics of Knowledge: the case of the dictionary
Spatializations of Knowledge



# "knowledge" and "information"



# "knowledge" and "information"



#### A spurious semantic field

Data are facts and statistics that can be quantified, measured, counted, and stored. Information is data that has been categorized, counted, and thus given meaning, relevance, or purpose. Knowledge is information that has been given meaning and taken to a higher level. Knowledge emerges from analysis, reflection upon, and synthesis of information. Dr. Donald Hawkins, Information Today



## "knowledge" and "information"

...information is the meaning of statements as they are intended by the speaker/writer and understood/misunderstood by the listener/reader. Knowledge is embodied in humans as the capacity to understand, explain and negotiate concepts, actions and intentions.

H. Albrechtson, Institute of Knowledge Sharing, Denmark

Data are sensory stimuli that we perceive through our senses. Information is data that has been processed into a form that is meaningful to the recipient. Knowledge is what has understood and evaluated by the knower.

Prof. Shifra Baruchson–Arbib, Bar Ilan University, Israel



## A modest proposal

To avoid confusion with ordinary-lg uses of *data*, *information*, and *knowledge*, substitute new terms for technical notions:



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To avoid confusion with ordinary-lg uses of *data*, *information*, and *knowledge*, substitute new terms for technical notions:

"data" = "moe" "information → "curly" "knowledge" → "larry"



## A modest proposal



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"data" = "moe"
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"information  $\rightarrow$  "curly"

"knowledge"  $\rightarrow$  "larry"

Moes are facts that are the result of observation or measurement. Curly is meaningful moe. ... Larry is internalized or understood curly that can be used to make decisions.

## Defining "knowledge": What are we talking about?

#### Collocations

**knowledge economy** *n. Econ.* and *Business* an economy in which growth is thought to be dependent on the effective acquisition, dissemination, and use of information, rather than the traditional means of production **knowledge management** *n. Econ.* and *Business* the effective management of the sharing and retention of information in an organization; the use of management techniques to optimize) the acquisition, dissemination, and use of knowledge. **knowledge work** *n.* work which involves handling or using information. **knowledge worker** *n.* a person whose job involves handling or using information.

[Note: almost never translated with equivalent of "knowledge"]

# 1

# **Defining "knowledge"**

#### Individual senses

Oxford English Dictionary:

• The fact of knowing a thing, state, etc., or a person; familiarity gained by experience. *His knowledge of human nature must be limited indeed.* 

• Acquaintance with a branch of learning, a language, or the like; His knowledge of French is excellent.

The information that the Giants acquired Pagan ightarrow

The knowledge that Giants acquired Pagan.

No epistemic difference...

# The ideology of "knowledge"



#### Folding the social into the concept, :

Information is piecemeal, fragmented, particular. Knowledge is structured, coherent and universal.

information is timely, transitory, even ephemeral. Knowledge is enduring and temporally expansive.

information is a flow across spaces. Knowledge is a stock, specifically located, yet spatially expansive. Machlup 1983

What kind of knowledge is "universal," "enduring," etc.?

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#### Collective senses

**13.** The sum of what is known. De Quincey, 1860 All knowledge may be commodiously distributed into science and erudition.

# Collective knowledge: the missing arguments



Collective senses: knowledge as a three-place relation **I3.** The sum of what is known [about X] [by Y] Medical knowledge vs medical information: what is the difference?









GROUP 8

# Collective knowledge: the missing arguments

The Story of the Beautiful Things in the Treasure-House of the World WONDER MEN OF FLORENCE the town in Tuscany called steepley; the town had a holiday in honour tranquil if a dirty place, of the beautiful thing, ann. Lovers of beautiful — This event, not the only one of its kind warm feeling for Siena; in the history of Italian an, throws a light were on the pecaliar workings of the Renai The Creat Streies of the World That Will Be Told For Exe WILLIAM TELL great It ouched more he would be change a conv on the ünished ( PICTURE til on a (app) yeardy-neurality cube at WOLVES OF THE WORLD impricted of grading to black product the second continues of the second second second second second second the second second second second second second second second the second second second second second second second second the second s to had its was on his of water. newsy ones a most of p DMAGENA

Collective senses: knowledge as a three-place relation **I3.** The sum of what is known [about X] [by Y] What qualifies a proposition as c-knowledge? P must be collectively accessible (to everyone? In C?) "The third-century Chinese had knowledge of porcelain" In that medical knowledge doubles every 3.5 years or less, by 2029, we will know at least 256 times more than we know today. As a result, it is not impracticable nor improbable to expect that humankind will reach the point where we'll know

how to substantially slow or perhaps even stop aging,



ART GROUP 8 The Story of the Beautiful Things in the Treasure-House of the World WONDER MEN OF FLORENCE is a little town in Tussany called steeples; the town had a hobday in honour a, a tranquil if a dirty place, of the beautiful thing. the sun. Lovers of beautiful This event, not the only one of its kind ave a warm teeling for Siena: in the history of Italian an, throws a light thirteenth century were on the peculiar workings of the Renais iterations of super Forcewood humiland a The Creat Streies of the World That Will Be Told For Keer WILLIAM TELL great It touched more he would be change a conv on the Unished b PICTURE itin to a (app) yeardy-neurality cube at inspictive of greatin Many Without J This wa restlyre inculier of the straight, and straight, and straight, and straight life host went aufe server in clothing There was irrely add Toli had to had to was on his of water. newsy ones a most of p DMAGENA

# Collective knowledge: the missing arguments

Collective senses: knowledge as a three-place relation

**I3.** The sum of what is known [about X] [by Y]

What qualifies a proposition as c-knowledge?

P is collectively significant (to everyone? In C?)

It's snowing in Chicago./It often snows in Chicago.

- "We are out of paper towels"/Paper towel consumption is 50% higher in America than in Europe/Arthur Scott introduced the first paper towel in 1931.
- GN was born in Manhattan./William Tell was born in Bürglen, Switzerland.

## Collective knowledge: the missing arguments

Collective senses: knowledge as a three-place relation **I3.** The sum of what is known [about X] [by Y] How do we satisfy x and y? Circumscribing the community/discourse Cf medical knowledge vs medical information Circumscribing the knowledge domain



# The structure of Knowledge

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# The structure of Knowledge

"All grammars leak" – E. Sapir

Knowledge is characterized by "spatial" extension & internal structure

Internal structure implies a standardized (canonical, implicit) classificatory scheme, *ideally*...

= <u>socially embedded</u>, <u>principled</u> procedure for sorting <u>everything</u> in D into <u>mutually exclusive</u> categories

Class schemes realized in (more-or-less) formal infrastructures consisting of procedures, institutions, technologies, communities, etc.

Natural vs nominal, naïve vs. specialist, explicit vs implicit, etc.

# **Changing Frames of Knowledge**

Schemes of knowledge are responses to influences that are:

Pragmatic/material Technological Philosophical/academic/theological Symbolic/political (Metaphysical – what's out there)

# The anthropology of knowledge

How do we characterize conceptions of "knowledge" historically?

Explicit descriptions & theories

Models/images of knowledge in

Forms of institutions & practices (curriculum, conferences, job descriptions)

Material embodiments (library, museum, form of book)

Textual embodiments – encyclopedia, dictionary, compendium, bibliography

Metaphors & visualizations: field, tree, discipline, trésor, etc.

# Shifting Conceptions of Knowledge, 1500-1800

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Varieties of Renaissance knowledge:

scientiae/artes: "Ars sine scientia nihil est." Private/public (alchemy, cf métier, "trade")

#### General/specialized

The "universal man" (*polymathia*, *pansophia*) "A man is able to learn many things and make himself universal in many excellent arts." Matteo Palmieri, 1528

Book-learning vs knowledge of things



# The 15<sup>th</sup>-Century Curriculum

The enkyklios paideia ("circle of 'learning'"):

Trivium: grammar, logic, rhetoric

Quadrivium: arithmetic, astronomy, geometry, music

The three philosophies: ethics, metaphysics, "natural philosophy"

Higher faculties: theology, medicine, law





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5 Tree of Knowledge, title-page of R. Lull, Arbor Scientiae (1515: Rpr. 1635): Copy in Cambridge University Library (P\*.3.52)



# The 15<sup>th</sup>-Century Curriculum

System of knowledge is "closed"; built around classical sources and religious texts (courses organized around texts, not subjects)

Organization of knowledge is fixed and "natural"

Curriculum roughly uniform throughout Europe, enabled peregrinatio academica

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# **Breaking with the past**



It would disgrace us, now that the wide spaces of the material globe, the lands and seas, have been broached and explored, if the limits of the intellectual globe should be should be set by the narrow discoveries of the ancients. Francis Bacon, *The Advancement of Learning*, 1605

### Opening the World of Knowledge: Botany

Herbarum vivae eicones ("Living Pictures of Herbs") by Otto Brunfels, 1532. Matched Swiss & German plants to those known to Pliny and Discorides, ignoring differences, with residual herbae nudae ("naked plants")



corum, T O M V S. Primus. TEMPERAMENTVM EIVS EX Mefue & Galeni Method. 3 Omnes calidæ tun in principie certi, ficze in fecundo : quanquara Longa oparcat roundler, non obstance quod uigetin e ad errera qua inter. Rounda fullolir, peneraratorog. Onnes quogo aperitar copias nonum refolutius, attractuas. Siguidem certafunt fpins, ella paleaura, gra & quiequal infissum cardi territ. VIRESETIVVAMENTA Longioris, ex Diofcoride. Longa aduerfus angues & uenena, drachmæ pondere in uino bibi # tur,& illinitur. Pota cum pipere & myrrha, menfes, partus, & omnia uulnerum oz tera effcit. Eadem efficit, fubdita pello. Easten enter, nubrata petto. I V V A M E N T A R O T V N D AE. Rounda ad eadem pollet. Infuper fingulabus, fuípirijs, rigoribus, lieni, conuulús laterum dos orbus, pota cum aqua fingulariter auxiliatur, Aculeos & fpicula extrahit. Omnes fouamas illita adimit. Vlcera putrida exeft. Sordida expurgat. Caua cum iri & melle explet. Gingiuas & dentes extergit. IVVAMENTA CLEMATITIS. Ad grauem febrem efficax eft. Si nidore, fubditis carbonibus, febricitans fuffiatur, febris leuatu Vulnera impolitu fanat. Carcinomatis narium cum Cyprio, & Dracunculi femine, & melle rodeft. Rigoribus medetur, cocta in oleo, aut adipe fuillo, illitacp. EX THEOPHRASTO. Malum terræ perutile ad caput, & ad reliqua ulcera, & ad ferpentes, & ad fomnum, & ad alia. Vlceribus in aqua fubactum adhibere præcipiunt : cæteris rafum , in elle, uino, tritum in oleo, uel bibitum acido uino, & morfui infperfum: fomnum in uino nígro auftero pertritum Si uulua prociderit, decocto abluiffe iuuabit, EXAPVLEIO. Ariftolochiæ radix fiftulis in Frata, celeriter expurgat, & ad fanitatem Artifolochia radix hitumsinenta, cerette expongance ante-berducet, Medici quocp fine ea, nihil feliciter procurarepoffunt. FRIGORE EXVSTITS. Herba Ariftolochia ex oleo, calefactoriam quoque uim habet, cum.





VALERIUS CORDUS Medicus excellens.

# **Opening the world of knowledge**

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DE RORELLA SIVE SALSIRORA, Eque ab alifs Ros Solis dicitur. ] CAP. I.



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rubelcens, & fine ramulis, in fummo paruos & pallidos flofeulos fuftinens, radicus hs habet paucas, breues, & capilli modo tenuilsimas. Nafcitur uliginofis & palus finbus arenis. Habent folia, caules, & flofculi, acerbum, leniter acetofum & modicaremfaporem,

Valerius Cordus, Historia plantarum 1561 (1544), published posthumously by Conrad Gesner.

> Records numerous plants not described by the ancients; emphasizes differences among similar plants.

By 1600, thousand of species are described, though in disorganized fashion.

Systems of description (not taxonomies) emerge. Plants bear four names (common, pharmacists' Latin, trad. Latin, Greek)



Drawing annotated by Gestner





John Ray, *Historia generalis plantarum*, 1686-Classified 6100 plant species by seeds, seeds, fruit and leaves. Produced first modern definition of the species.



"... no surer criterion for determining species has occurred to me than the distinguishing features that perpetuate themselves in propagation from seed. Thus, no matter what variations occur in the individuals or the species, if they spring from the seed of one and the same plant, they are accidental variations and not such as to distinguish a species...

"I reckon all Dogs to be of one Species, they mingling together in Generation, and the Breed of such Mixtures being prolifick"

#### The birth of "modern" *classification*

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Lunbrine

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Femine ovipara.

Digiti pedis antici 3. pofficus r. quorum extimus retrorfum fiezilis

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Caput crittatum.

Course plant , fubration di

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Per 4dact. Refr. gracile incurvum.

Per 4dact. Copar plumis criftatum.

Per adact. cujus digitus extimus medie adnechitur tribus articulis.

Per 4dact, Refer, triangulare.

Per adact. Reffrices exteriores gradatim

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VI VERMES

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Pfittacus.

Aquila. Buteo. Cyanopus. Laniur. Nifus.

Manncodiata. Avia Paradiflaca.

Otus. Ulula.

Vultur.

Falco. Milvus. Pygargus. Tinnuncul

Corniz. Lupus. Caryocata

Buho. Noctua

Pica.

Corvus. Monedula.

Glandaria.

Picus niger. viridia,

. . varius

Picus cinereus

Certhin.

Upupa.

Ifpids. Merops.

Grus.

Circasia

Cuculus. Torquilla f. Junz.



"I know no greater man on earth." Jean-Jacques Rousseau

Systema naturae 1735 29



### The birth of "modern" classification



Frontispiece to Linnaeus, *Hortus Cliffortianus* 1737 Plants classified into 24 classes according to length and number of stamens; further classified into orders etc. Established binary system of naming





Plate 156: An illustration by Georg Dionysius Elrest for the Hortus Cliffortianus (1735–48) in which the Swedish plantanan, Carl Linnaeus, first began to work out his 'methodus plantarum sexualis', grouping plants according to the number and arrangement of their stamens



## Organizing Knowledge Early modern solutions

#### The Tree of Bacon



#### Pragmatic Forces: Perceptions of "Information Overload"



Antonfrancesco Doni, 1550: there are "so many books that we do not have time to read even the titles."

"That horrible mass of books... keeps on growing, [until] the disorder will become nearly insurmountable." Gottfried Leibniz, 1680

## Strategies for Dealing with "Information Overload"

Note-taking system of Vincent Placcius, from De arte excerpendi, 1689









## **The Reorganization of Libraries**



Gabriel Naudé proposes library organization scheme to "find books without labor, without trouble, and without confusion." (1627)



Bibliothèque Mazarine (1643)



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#### **Creation of "reference" works**

Compendia and reference books (répertoires or trésors)

"I esteem these Collections extreamly profitable and necessary, considering, the brevity of our life, and the multitude of things which we are now obliged to know, e're one can be reckoned amongst the number of learned men, do not permit us to do all of ourselves." Gabriel Naudé, 1661

The Cyclopaedia will "answer all the Purposes of a Library, except Parade and Incumbrance." Ephraim Chambers, 1728


### ENCYCLOPEDIE, ou DICTIONNAIRE RAISONNÉ DES SCIENCES, DES ARTS ET DES MÉTIERS, PAR UNE SOCIÉTÉ DE GENS DE LETTRES.

Mis en ordre & publié par M. DIDEROT, de l'Académie Royale des Sciences & des Belles-Leures de Prufie ; & quant à la PARTIE MATHÉMATIQUE, par M. D'ALEMBERT, de l'Académie Royale des Sciences de Paris, de celle de Prufie, & de la Société Royale de Londres.

> Tantièm féries juncturaque pollet, Tantièm de medio fumptis accedit honoris! HORAT.

<section-header>

### **Creation of "reference" works**

Compendia and reference books (répertoires or trésors)

As long as the centuries continue to unfold, the number of books will grow continually, and one can predict that a time will come when it will be almost as difficult to learn anything from books as from the direct study of the whole universe. It will be almost as convenient to search for some bit of truth concealed in nature as it will be to find it hidden away in an immense multitude of bound volumes.

—Denis Diderot, Encyclopédie, 1755

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### **Creation of "reference" works**





The most accomplished way of using books at present is twofold. Either, first, to serve them as men do Lords, learn their titles exactly and then brag of their acquaintance :—or, secondly, which is indeed the choicer, the profounder, and politer method, to get a thorough insight into the Index, by which the whole book is governed and turned, like fishes, by the tail. For to enter the palace of Learning at the great gate requires an expense of time and forms ; therefore men of much haste and little ceremony are content to get in by the back-door. ... Thus men catch knowledge by throwing their wit on the posteriors of a book, as boys do sparrows by flinging salt upon the tail."

Jonathan Swift, "Tale of a Tub," 1704 How Index-learning turns no student

...How Index-learning turns no student pale, Yet holds the eel of Science by the tail.

Pope, "The Dunciad," 1728



## New Schemes of Organization: Philosophical Influences



Francis Bacon's scheme puts man at the center:
Nature (astronomy, meterology, etc.).
Man (anatomy, powers, actions),
Man acting on nature (medicine, visual arts, arithmetic),,,

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## Chamber's Cyclopædia 1728

Матвоноцоку

#### CTCLOPEDIA: UNIVERSAL DICTIONARY . . ARTS and SCIENCES; ----The DEFINITIONS of the TERMS. AN ACCOUNTS of The THINGS fignify'd thereby, In the formed ARTS. bob LISSESSE and NACHANICAL And the found SCIENCES. NONAN - BIFINE. The Figures, Kirels, Properties, Fault-Bines, Propertylans, and Ulin, of Ting: Havenas and Antonoonas ; The Bill, Progeck, and State of Things Harthannerteran, Crevel, Monorgan, and Communication With the Sound Splace, Safe, Optimer, dr. among Hildsglive, Human, Mathematican, Raylanan, Anaparte, Citada, dt. Th the looks a class of data and Manu LEAS HINC General from the left Authory, Dilkington, Jacobi, Minstein, Tendition, Sphemoids, dr. a broad Larguege. L TWO VOLUMES by E CH J H B E F I Cont. Notice at set to philos such likes, ......... Volume de Viser. ...... d is Juse of 26s France, 36t Tarle, Stand Halanse, Arter Architek a bain, Alari Galu, Ba Francesa & Halan et Sa har, 3at-size of 16 gene, 18ser Sarget, 38s (Sakaba, Sakaba, Sakaba, 19), 200, 200 architek, Barri Franc, Astro Sagle, and Franchike, March 1998.

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#### Semilife, committing in the perception of phaenomena, or external ob- Hyronocour pets-called Personaux, or Natural History; and which, Menesonaux ZOOLD-7 Powers, and Properties-called Persons, and Natural Processor Network and Scien-Abstract-called Metamovaca, which subdivides into Ontococo Processories of OR. officel, which as either .... ( ADDRESS KNOWLEDGE, is either Quantitie-called Post Ma- (Antronette-whence Rational; consisting in the ALLEMA perception of the intrinsic massarics - which divides TRUCCOURSE INV characters or habitudes of according to the subject of the GROMETEN-whence CONKE sensible objects-either quantity, into \_\_\_\_\_ Status .\_\_\_\_ Sectar: 1 shere ..... Relations to our happiness-called (Envice, or Natural (Politics REALON, or the doctrine of REALON-whence Low Oracia, which subdivides into Traceouv, or Revision Immed; employed in discovering their agreement and disagreement; or their relations in respect of truth-OR. called Locacy Latest powers and properties of bodies - [Assesses called Communey-whence Naruasi Mauri, etc. OPTICS, CATOPTINGS, DIOPTINGS, [PERSPECTIVE -whence PARTIN. Property-whence Music Quantities of bo-HYDROSTATICS, HYDRAULE'S Anificial and Techdim - called PARLMATICS. must, (consisting Maxie Marsa-ANCHERCTURE. in the application ( OR. somes; which, Maussiance Manager Southouse according to the different of natural nonces Teares, and Monutecturas to further purpo-Real, employ-ed in disco-The MILITARY ANT Prioricona-whence ses) which is essubjects, re-FORTHW ATTON ther \_\_\_\_ vening, and solves into \_\_\_\_ CHRONOLOU.Y Astronowy-whence applying the LUNALDER GEOGRAPHY, HYDRO- INNEL-STORY GAAPITY,--- Whence COMMENCE External. Structure and economy of organical bodies-called Assertions OR. which m (Animals \_\_\_\_\_ called {Maincase Prostation either \_ Relations thereof to the presercalled ALARTATUM Vegetables ...... vation and improvement ---(HUNTING risher of -FALCONET FIDHING, MC. (Work, or articulate signs of ideas-called GROOMS Symbolical, employed in Armona-called Hanacony framing and applying Tropic and Pipers-called Rotrosa: Faile-called Poersy

The Tree of Chambers



## The Encyclopédie



#### **ENCYCLOPÉDIE**, ou DICTIONNAIRE RAISONNÉ DES SCIENCES, DES ARTS ET DES MÉTIERS, PAR UNE SOCIÉTÉ DE GENS DE LETTRES.

Mis en ordre & publié par M. DIDEROT, de l'Académie Royale des Sciences & des Helles-Lemes de Prufée, & quare à la Partie Matrié Matrié Matriçue, par M. D'ALEMBERT, de l'Académie Royale des Sciences de Paris, de colle de Prufée, & de la Societe Royale de Londres.

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It is only the presence of man that makes the existence of other beings significant... Why should we not introduce man into our Encyclopedia, giving him the same place that he occupies in the universe? Why should we not make him the center of all that is? ... With man at the center, how lively and pleasing will be the ensuing relations between man and other beings, between other beings and man!" (Diderot, p. 80-81).

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## The spatialization of knowledge



Jean d'Alembert

[T]he encyclopedic arrangement of our knowledge ... consists of collecting knowledge into the smallest area possible and of placing the philosopher at a vantage point, so to speak, high above this vast labyrinth, whence he can perceive the principle sciences and the arts simultaneously. From there he can see at a glance the objects of their speculations and the operations which can be made on these objects; he can discern the general branches of human knowledge, ...and sometimes he can even glimpse the secrets that relate them to one another. It is a kind of world map which is to show the principle countries, their position and their mutual dependence, the road that leads directly from one to the other.

### "Sciences, Arts Libéraux, Arts Méchaniques"



Formier





Economie Rustique (silk-making)

## "Sciences, Arts Libéraux, Arts Méchaniques"





...the advantage that the *liberal* arts have over the *mechanical* arts, because of their demands upon the intellect and because of the difficulty of excelling in them, is sufficiently counter-balanced by the quite *superior* usefulness which the latter for the most part have for us....while justly respecting great geniuses for their enlightenment, society ought not to degrade the hands by which it is served"

d'Alembert, Preliminary Discourse to the Encyclopédie

Economie Rustique (silk-making)



## Material Representations of Knowledge



Presentation of the Pomeranian Kunstschrank to Duke Philip II of Pomerania-Stettin

## Material Representations of Knowledge

Knowledge and the role of the "trésor"

Libraries, anthologies, dictionaries, in a word "treasuries" [trésors], alongside of encyclopedic collections, delimit a vast territory on which are cast the signs required for knowledge, the expression of identities, and communication among the members of the group.

-Alain Rey, "Les trésors de la langue," 1986



## Material Representations of Knowledge



Curriculum mirrored in form of library (bibliographies)



## Knowledge and the "Virtuosi"



"He Trafficks to all places, and has his Correspondents in every part of the World; yet his Merchandizes serve not to promote our Luxury, nor encrease our Trade, and neither enrich the Nation, nor himself. A Box or two of Pebbles or Shells, and a dozen of Wasps, Spiders and Caterpillers are his Cargoe. He values a Camelion, or Salamander's Egg, above all the Sugars and Spices of the West and East-Indies... He visits Mines, Cole-pits, and Quarries frequently, but not for that sordid end that other Men usually do, viz, gain; but for the sake of the fossile Shells and Teeth that are sometimes found there." (Mary Astell, "*Character of a Virtuoso*," 1696)

## Representations of Knowledge: The Kunstkammer

Organization of knowledge mirrored in form of Kunstkammer, cabinets of curiosities, Wunderkammer, etc.



Museum Wormiamum, 1655

## Representations of Knowledge: The Kunstkammer



Natural History Kabinet, Naples, 1599

## Representations of Knowledge: The Kunstkammer



The Kunstkammer of Rudolph II was a carefully organized "museum' articulated through an understanding of the world... Its contents were organised to exhibit a world picture, with objects that symbolised all aspects of nature and art, as conceptualized by the occult philosophers... This organisation depended on the concept of resemblance, where the objects and their proximities suggested macrocosmic microcosmic links.

Eilean Hooper-Greenhill, Museums and the Organisation of Knowledge

## Representations of Knowledge: The Studiolo & the Kunstschrank







Kunstkammer, 1636

Studiolo of Francsco I Florence (1570)



Painting Galleries, Schloss Belvedere, Vienna, 1781





29 Histories of Art were created in many of the galleries of Europe. This plan of the paintings gallery in the Schloss Belvedere in 1778, shows how the works were grouped by country, and within that, by date, by (geographical) school, or by individual artist. This is in marked contrast to the form of display shown in Plate 23.

## )

### **The Enlightement Plan**



Jean d'Alembert

"The tree of human knowledge could be formed in several ways, either by relating different knowledge to the diverse faculties of our mind or by relating it to the things that it has as its object. The difficulty was greatest where it involved the most arbitrariness. But how could there not be arbitrariness? Nature presents us only with particular things, infinite in number and without firmly established divisions. Everything shades off into everything else by imperceptible nuances. )

### **The Tree of Diderot & D'Alembert**

### MAP of the SYSTEM of HUMAN KNOWLEDGE

#### UNDERSTANDING



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### The Tree of Diderot & D'Alembert



### **The Tree of Diderot & D'Alembert**

#### ESSAI D'UNE DISTRIBUTION GÉNÉALOGIQUE DES SCIENCES ET DES ARTS PRINCIPAUX.

Selon l'Explication détaillée du Système des Connaissances Humaines dans le Discours préliminaire des Editeurs de l'Encyclopédie publiée par M. Diderot et M. d'Alembert, À Paris en 1751

> Reduit en cette forme pour découvrir la connaissance Humaine d'un coup d'oeil. Par Chrétien Frederic Guillaume Roth, À Weimar, 1769

uliere de la le Discours . Chaque mon parole). vement de l'ame dit Cr ceron, às on expres. IMPRIMER sion naturelle dans est l'art de tirer or du papier l'em les traits du visage printe des lettres, dans le geste, et le caracteres mobil dans la voix le jettés en fonte, et ne servent de moule or l'appelle autre TOMIME de ment, art Typo 1 Le nom de Pantomine HIFFRER graphique M un signific imitateur de 'est lart d'expli toutes choses, fut donne à CARA uer un chiffre, c'e. ette espece de Comédiens tire de deviner le HIER mi jouvient toutes sortes o ns d'un discours rieces de Théâtre sans rien PHIO crit en caracterea prononcer; mais en imitant differens des ca Qui sont et en expliquant toutes racteres ordi du mond Fortes de sujets aves nairer2 Jours gestes, soit no son ent RIRE turels, soit d'ins at l'art de peindre Sitution tracer avec laple me sur le papier et are de l'encre, des ca reteres propres a) fire conneitre sape Al, ou a conserver ue caracters amorro de ce us combinais on



## The Politics of Knowledge: The advent of the dictionary

## Print, the Public, and Linguistic Anxiety



[Britain] has become a nation of readers. --Samuel Johnson, 1781

The problem of the public sphere:

How to coordinate public opinion via an impersonal print discourse between people who are anonymous to one another, in the absence of context...



## **The Growing Sense of Crisis**





John Dryden (1693): "we have yet no prosodia, not so much as a tolerable dictionary, or a grammar, so that our language is in a manner barbarous.

William Warburton (1747): the English language is "destitute of a Test or Standard to apply to, in cases of doubt or difficulty.... For we have neither Grammar nor Dictionary, neither Chart nor Compass, to guide us through this wide sea of Words."

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## **The Growing Sense of Crisis**



Continuing desire to fix ("ascertain") the language:

"Suffer not our Shakespear, and our Milton, to become two or three centuries hence what Chaucer is at present, the study only of a few poring antiquarians, and in an age or two more the vicitms of bookworms." Thomas Sheridan

Short is the date, alas! of modern rhymes, And 'tis but just to let them live betimes. No longer now that Golden Age appears, When partiarch wits survived a thousand years: Now length of fame (our second life) is lost, And bare threescore is all ev'n that can boast: Our sons their fathers' failing language see, And such as Chaucer is shall Dryden be. Cf Alexander Pope, "Essay on Criticism"

## An academy to "ascertain" the language?





1712: Swift writes "A Proposal for Correcting, Improving, and Ascertaining the English Tongue in a Letter to Lord Harley My Lord; I do here in the Name of all the Learned and Polite Persons of the Nation, complain to your Lordship, as First. Minister, the our Language is extremely imperfect; that its daily Improvements are by no means in proportion to its daily Corruptions; and the Pretenders to polish and refine it, have chiefly multiplied Abuses and Absurdities; and, that in many Instances, it offends against every Part of Grammar. ..

## **The Rejection of an Academy**

If an academy should be established for the cultivation of our stile, which I, who can never wish to see dependance multiplied, hope the spirit of English liberty will hinder or destroy...

Johnson, Preface to the Dictionary



As to a publick academy... I think it not only unsuitable to the genius of a *free nation*, but in itself ill calculated to reform and fix a language. We need make no doubt but that the best forms of speech will, in time, establish themselves by their own superior excellence...

Joseph Priestly, Rudiments of Grammar, 1761

Contrast the role of the state in French....

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1747: The "Plan of an English Dictionary" appears

1755: Appearance of Johnson's Dictionary of the English Language.

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## The Success of the Dictionary



Talk of war with a Briton, he'll boldly advance, That one English soldier will beat ten of France, Would we alter the boast from the sword to the pen, Our odds are still greater, still greater our men . . . First Shakspeare and Milton, like Gods in the fight, Have put their whole drama and epick to flight... And Johnson, well-arm'd like a hero of yore, Has beat forty French, and will beat forty more!"

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#### The Persistence of Form



The dictionary: the most conservative and conventionalized of literary genres.

> Cf Adam Makkai: "Nothing significantly new has happened in lexicography since the first printed dictionaries after Gutenberg invented the printing of books."

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Meanings illustrated by citations from English writers: "The book written by books"

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#### **Some Johnsonian Definitions**

Excise: A hateful tax levied upon commodities, and adjudged not by the common judges of property, but wretches hired by those to whom excise is paid.

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Oats: A grain, which in England is generally given to horses, but in Scotland appears to support the people.



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#### The Didactic Uselessness of Definitions

Weakness of genus-differentia definitions

**Disappointed** MW: defeated in expectation or hope

disappointment is when you expect something to happenAnd you want it to happenAnd when the time comes for it to happenIt doesn't happenAnd you feel bad

## )

#### **The Methodology of Lexicography**

Method for isolation & circumscription of relevant precedents (identification of "the language" in terms of public discourse) Method for isolating and abstracting contributions of individual words to interpretation, independent of both linguistic and extralinguistic contexts Method of reducing use of word to a "mechanical" rule that determines correct application of word.

#### The Symbolic Function of the Dictionary



#### The Americanization of the Dictionary



Noah Webster

You have corrected the dangerous doctrines of European powers, correct now the languages you have imported... The American language will thus be as distinct as the government, free from all the follies of unphilosophical fashion, and resting upon truth as its only regulator. William Thornton, 1793.

From the changes in civil policy, manners, arts of life, and other circumstances attending the settlement of English colonies in America, most of the language of heraldry, hawking, hunting, and especially that of the old feudal and hierarchical establishments of England will become utterly extinct in this country; much of it already forms part of the neglected rubbish of antiquity. Noah Webster, 1806

#### The Americanization of the Dictionary

Cf Webster's Spelling reforms: honor, theater, etc., but also tung, iz...

"A capital advantage of this [spelling] reform in these States would be, that it would make a difference between the English orthography and the American.... I am confident that such an event is an object of vast political consequence."

AN

AMERICAN DICTIONARY OF THE ENGLISH LANGUAGE:

INTENDED TO EXHIBIT

AN EXTREMUCTION DISSERTATION UNIT ORIGEN, HISTORY AND CONSECTION OF THE LANGUAGES OF WESTERN ANIA AND OF EUROPE AND A CONCESS GRAMMAR UNIT ENGLISHI LANGUAGE.

BY NOAH WEBSTER, LL. D.

VOL. I. 26 baseleber of possity, was old, by he was hill, is the way NEW YORK: PUBLISHED BY S. CONVERSE

#### **Development of the Dictionary**



# 1857-1928: Preparation of the OED; historical record of the entire language...

**Abbreviate** (ăbrivi,ett), v., also 5-7 abreviate. [f. ABBREVIATE ppl. a.; or on the analogy of vbs. so formed; see -ATE. A direct representative of L. *abbreviāre*; as ABRIDGE, and the obs. ABREVY, represent it indirectly, through OFr. *abregier* and mid. Fr. *abrévier*. Like the latter, *abbreviate*, was often spelt *a-breviate* in 5-7.] To make shorter, shorten, cut short in any way.

1530 PALSGR., I abrevyate: I make a thynge shorte, *Jeabrege*. 1625 BACON Essays xxiv. 99 (1862) But it is one Thing to Abbreviate by Contracting, Another by Cutting off.

+1. trans. To make a discourse shorter by omitting details and preserving the substance; to abridge, condense. Obs.

a 1450 Chester Pl. I. 2 (Sh. Soc.) This matter he abbrevited into playes twenty-foure. 1593 GREENE Comp catching III. To The queane abreviated her discourse. 1637 RALEIGH Makomet 34 Abreviated out of two Arabique writers translated into Spanish. 1673 MANLEY Interpreter pref., I have omitted several Matters. contracted and abbreviated Others.

+ b. To make an abstract or brief of, to epitomize. Obs.

c 1450 TREVISA Higden's Polychr. I. 21 (Rolls Ser.) Trogus Pompeius, in hys Xl<sup>4</sup> iii). bookes, allemoste of alle the storyes of the worlde, whom Iustinus his disciple did abbreuiate. 1603 FLORIO Montaigne (1634) 627 To reade, to note, and to abbreviate Polibius. 1648-9 The Kingdomes Weekly Intelligencer Jan. 16 to 23 The high court of Justice did this day sit again concerning the triall of the King. The charge was brought in and abreviated.

+ c. Math. To reduce (a fraction) to lower terms. Obs.

1796 Mathem. Dict. I. 2 To abbreviate fractions in arithmetic and algebra, is to lessen proportionally their terms, or the numerator and denominator.



James Murray



#### **Political Significance of the OED**



We could scarcely have a lesson on the growth of our English tongue, we could scarcely follow upon one of its significant words, without having unawares a lesson in English history as well, without not merely falling upon some curious fact illustrative of our national life, but learning also how the great heart which is beating at the centre of that life, was being gradually shaped and moulded.

**Richard Chevenix Trench** 



#### **The Popular Dictionary**



Isaac Funk

[The dictionary] is the national key to human knowledge.... It behooves all those who are concerned in the education of the young to place this book on the same plane as the churchmen of old placed the English Bible. The dictionary should be placed on a lectern in every school throughout the land. Frank Vizetelly, 1898



### Spatializing the Domain of Knowledge

# Circumscribing cultural knowledge



"Cultural literacy" from E. D. Hirsch: "What every American needs to know," "the basic information needed to thrive in the modern world"

What [Jeanne S. Chall] calls world knowledge I call cultural literacy, namely, the network of information that all competent readers possess. It is the background information, stored in their minds, that enables them to take up a newspaper and read it with an adequate level of comprehension, getting the point, grasping the implications, relating what they read to the unstated context which alone gives meaning to what they read.

# Circumscribing cultural knowledge



"Cultural literacy" from E. D. Hirsch: "What every American needs to know," "the basic information needed to thrive in the modern world"

CULTURAL LITERACY What Every American Needs to Know. By E. D. Hirsch Jr. Appendix: What Literate Americans Know. By E. D. Hirsch Jr., Joseph Kett and James Trefil. 251 pp. Boston: Houghton Mifflin Company.

List includes: Juno, Sir Galahad, Blarney Stone, apple of discord, "Don't give up the ship," "Close, but no cigar," *éminence grise*, golden parachute, Fabian tactics, *ergo*, NIMBY, Eucharist, François Rabelais, Tomas de Torquemada, yarmulke, personal pronoun, Count Basie, W.C. Fields, Walter Lippmann, Foggy Bottom...

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#### **Defining "The Language"**

Why include 'all the words'? Why bother to define simple words?

Cf defs in Nathan Bailey's dict., 1721: cat: "a creature well known"

black: "a colour"

strawberry: "a well known fruit"

Are there "undefinable" words? (left, heartburn...)

#### Defining the Compass of the Language

Let any man of correct taste cast his eye on such words as denominable, opionatry, ariolation, assation, clancular, and comminuible, and let him say whether a dictionary which gives thousands of such items, as authorized English words, is a safe standard of writing. Noah Webster on Johnson's Dictionary

Words have been admitted in the language that are not only disreputable in origin, not only offensive in all their associations, not only vulgar in essence, but unfit at all points for suvival. The *New York Herald* (1890) on Funk & Wagnall's inclusion of *chesty* "bold"

"...that most monstrous of non-words." Life Magazine on Webster's Third International's inclusion of irregardless

#### The"canonicity" of knowledge.

Canonicity: All elements of all subdomains are ordered with regard to "centrality" of membership (i.e., discursive space is metrical, not just topological)

What defines a "reference book"

<u>words:</u> civet > panther > cat

<u>authors</u>: Michael Crichton > John Updike > Herman Melville <u>news events</u>: rescued cat > school budget vote > earthquake Also: tourist attractions (travel guides), artists (national collections), etc.

Buf cf. world records: ??Most hot dogs eaten> largest waistline > longest kiss

#### Canonicity, cont.



E-L. Boulée, plan for the Bibliothèque du Roi, 1785

#### Canonicity permits "essentialist" abridgement:

"[M]en of good will have extracted the substance of a thousand volumes and passed it in its entirety into a single small duodecimo, a bit like skillful chemists who press out the essence of flowers to concentrate it in a phial while throwing the dregs away." L-S.Mercier, *L'An 2440*, 1771

Cf sense of "library" and "bibliothèque" to denote comprehensive publication series & catalogues

If the lexicon of a language is indeed something like that of a circle, then... if one moves away from the center in concentric circles, the result should be a faithful image of the total lexicon. Henri Béjoint, *Tradition and Innovation in English Dictionaries*, 1992

i.e., In theory, every large dictionary contains every small dictionary

## The Spatialization of the Language



That vast aggregate of words and phrases which constitutes the Vocabulary of English-speaking men presents... the aspect of one of those nebulous masses familiar to the astronomer, in which a clear and unmistakable nucleus shades off on all sides, through zones of decreasing brightness, to a dim marginal film that seems to end nowhere, but to lose itself imperceptibly in the surrounding darkness....

James Murray, "General Explanation" to the OED



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#### **The Form of Collections, 1**



Library of the Escorial, 1543



E-L. Boulée, plan for the Bibliothèque du Roi, 1785



Labrouste, Bibliothèque Ste. Geneviève, 1851

#### The Form of Collections, 2: The dassical version

Smirke, British Musem Reading Room, 1851







Pelz/Casey Reading Room, LOC, ca 1898

Labrouste, Bibliothèque Nationale 1868



Asplund, Stockholm City Library, 1928

#### Circumscription of Knowledge: Modern Interpretations



D. Perrault, Bibliothèque Nationale de France, 1994

#### Pop

- Adult contemporary music
  - Adult oriented pop music
  - Adult standards
  - Afropop
  - Arab pop
  - Austropop
  - Baroque pop
  - Britpop
  - Bastard pop
  - Brazilian pop
  - Bubblegum pop
  - Chinese pop
  - Contemporary Christian
  - Country pop
  - Dance-pop
  - Disco
  - Disco polo
  - Dream pop
  - Electropop/Technopop
  - Eurobeat
  - Euro disco
  - Europop
  - Experimental pop mucic
  - French pop
  - Greek Laïkó pop
  - Hindi pop
  - Hong Kong and Cante
  - Hong Kong English pr
  - Hot Adult Contempora

# Wikipedia: The logical end destructuring?

**Ilma Julieta Urrutia Chang** was Guatemala's national representative for the major beauty pageants in 1984.

**The N battery is a type of battery.** It has a battery. It has a diameter of 12 mm and a height of 30.2 mm. For a typical alkaline battery, the N size weighs 9 grams.

**A System Requirements Specification** (SRS) is a document where the requirements of a system that is planned to be developed are listed.

Protestants in Eritrea are about 91,232, which are 2% of the population.

Categories: 1926 births I 1991 deaths I African American musicians I American jazz bandleaders I American jazz composers I American jazz trumpeters I American songwriters I Avant-garde trumpeters I Bebop trumpeters I Cool jazz trumpeters I Deaths from stroke I Deaths from respiratory failure I People with sickle-cell disease I Grammy Award winners I Grammy Lifetime Achievement Award winners I Columbia Records artists I Capitol Records artists I Hard-bop trumpeters I Musicians from Illinois I Juilliard School of Music alumni I Miles Davis I Modal jazz trumpeters I People from Madison County, Illinois I People from St. Clair County, Illinois I Rock and Roll Hall of Fame inductees I St. Louis music I Third Stream trumpeters I Deaths from pneumonia I Burials at Woodlawn Cemetery (The Bronx) I Infectious disease deaths in California

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#### Assignment for 3/15

Wikipedia conceives of itself on the model of a traditional encyclopedia in many respects -- as witness not just its name, but its frequent comparisons of itself to the Britannica. Pick a (small) area of knowledge with which you are familiar and look at a bit of Wikipedia's treatment of the topics in that area. For the present purposes, don't concern yourself with the accuracy or consistency of the articles. The question you want to address, rather, is whether Wikipedia's treatment of this area suggests an implicit picture of the organization of knowledge; what features of Wikipedia reflect or indicate that picture; and how consistent or coherent the picture is.

For purposes of comparison (and because it's pretty interesting) you might to look at the selections I compiled from d'Alembert's Preliminary Discourse to the *Encyclopédie*, which I've added to the readings; these outline the approach to knowledge that the Encyclopedists assumed.