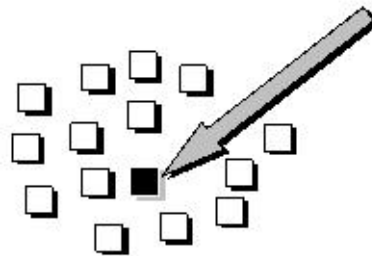


Taxonomies, thesauri, classification schemes

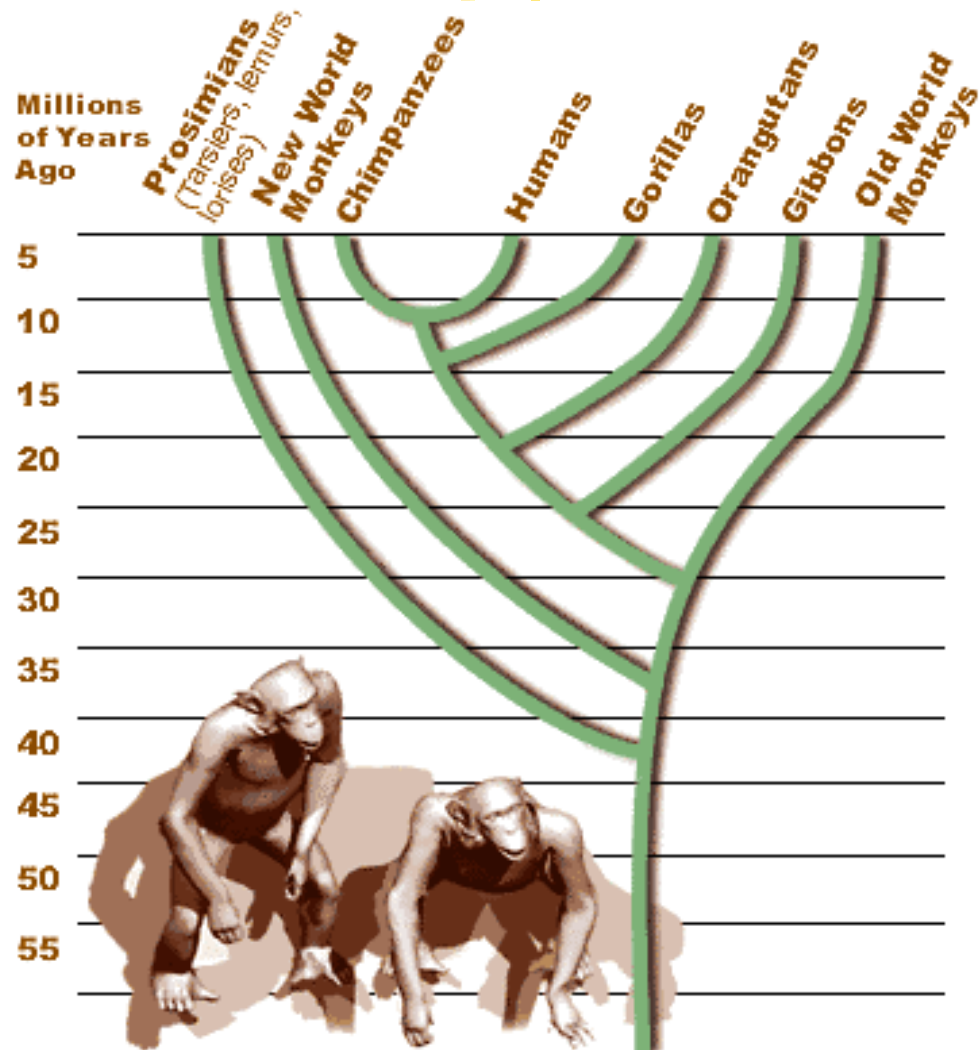
Structuring concepts and navigating structures

Leonard Will




<http://www.willpowerinfo.co.uk/>

What is a taxonomy?



Taxonomies = controlled vocabularies



◆ **"Taxonomy"**

- ◆ woolly meaning -> confusion

◆ **My definition:**

- ◆ monohierarchical classification of concepts, as used, for example, in the classification of biological organisms

◆ **Knowledge organization systems (KOS)**

- ◆ a better expression for the general concept

Flat lists

- ◆ Short lists without relationships
 - ◆ Typically used as drop-down menus e.g. for format, language, countries, rights



Authority files



- ◆ Generally used for proper names
 - ◆ People, organisations, places, vessels
- ◆ Show preferred form of name
 - ◆ "See" references from alternative forms
- ◆ May contain biographical and other information
- ◆ May contain links such as: *see also*, *formerly*, *subsequently*, *part of*, *contains*.

Subject



“Typically, Subject will be expressed as keywords, key phrases or classification codes that describe a topic of the resource.

Recommended best practice is to select a value from a **controlled vocabulary** or formal **classification scheme**.”

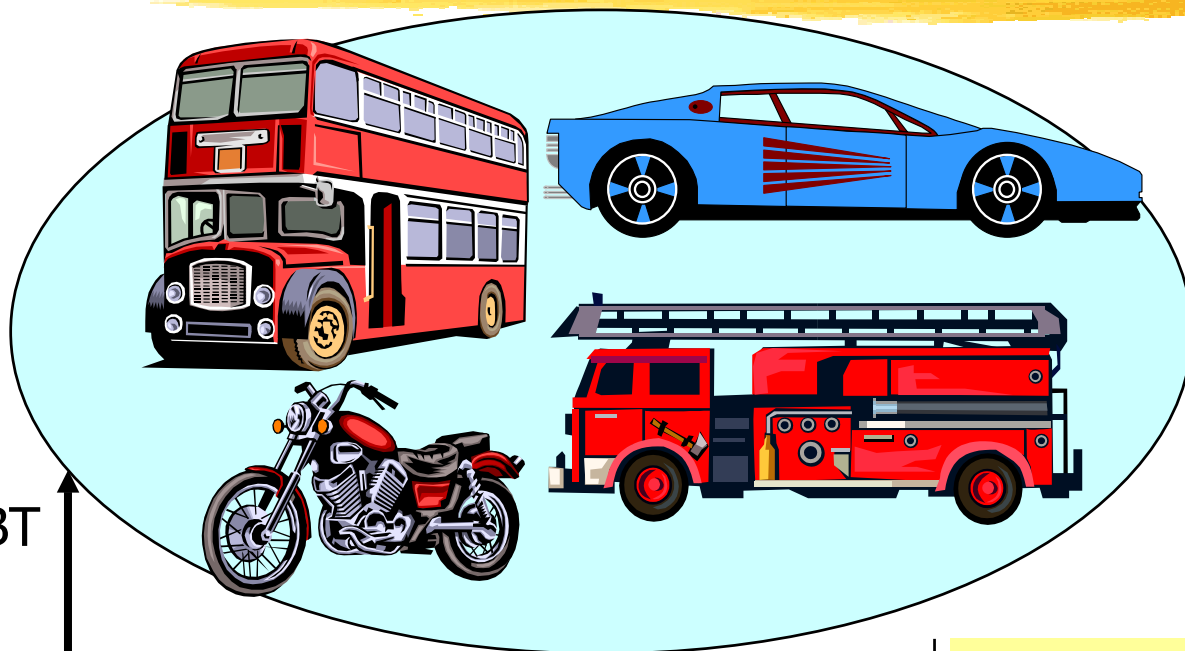
- Dublin Core

Concepts rather than words



- ◆ **Concept:** a unit of thought, formed by mentally combining some or all of the characteristics of a concrete or abstract, real or imaginary object.
- ◆ Concepts exist in the mind as abstract entities independent of terms used to express them [ANSI/NISO Z39.19]

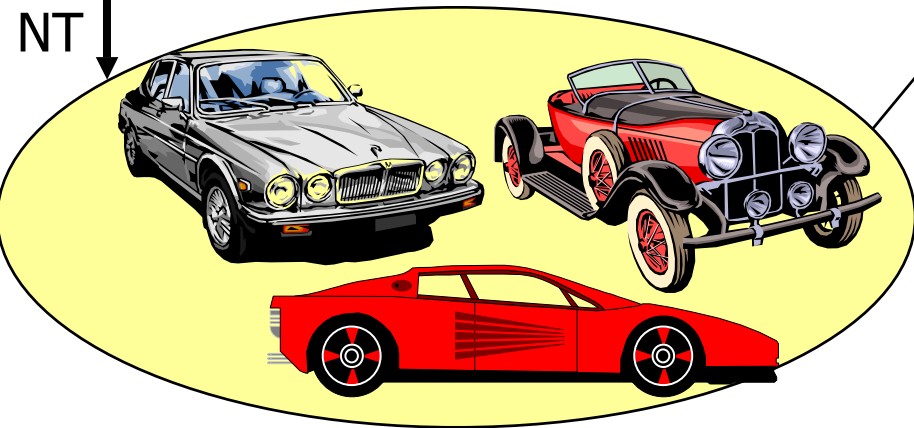
Relationships are between concepts, not words



vehicles
road vehicles
conveyances
voitures
388.34
629.2

BT

NT



cars
automobiles
autos
private cars
388.342
629.222

Choose one term
as a descriptor to
label the concept:

cars
USE automobiles

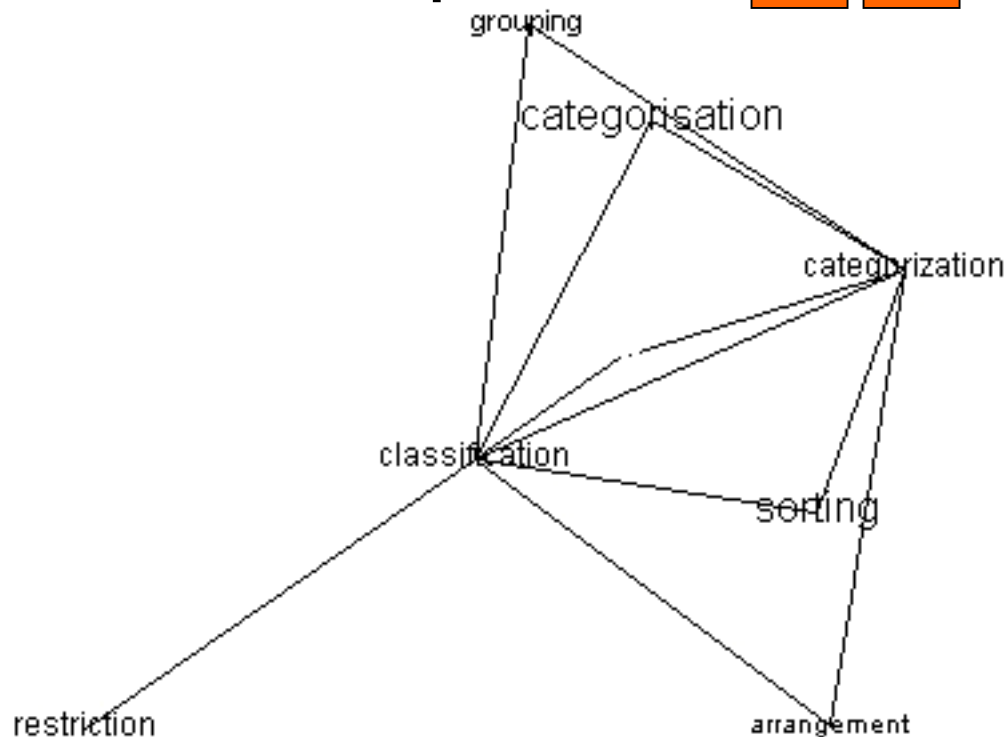
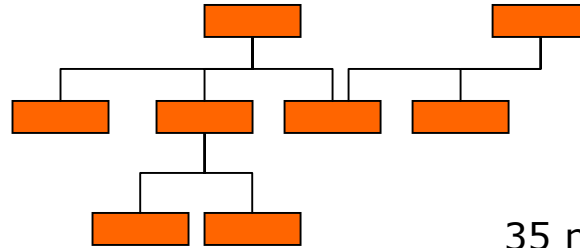
Choice of terms



- ◆ Many terms may be used for the same concept, e.g. *agriculture, farming, husbandry*
- ◆ Choose one term to represent this cluster
- ◆ There is no implication that the chosen term is “better” or “more correct” than the others
- ◆ Provide a scope note defining the concept
SN *rearing of plants and animals on the land; includes market gardening, horticulture; excludes forestry, pet breeding*

Building blocks of all knowledge organisation schemes

- ◆ concepts
- ◆ relationships



35 m cameras
CC:H012
BT: film cameras

aqualungs
CC: D002
BT: diving equipment

camera accessories
CC: H002
BT: photographic equipment

NT: flash guns
light meters
tripods
RT: cameras

Relationships between concepts

- ◆ Paradigmatic, or *a priori*: apply generally, independently of any specific document
 - ◆ shoes BT footwear
 - ◆ shoes RT shoemakers
- ◆ Syntagmatic, or *a posteriori*: concepts that are related only in the context of a specific document
 - ◆ shoes : history
 - ◆ shoes : prices

A thesaurus can show these

A classification scheme can also show these

Compound concepts : terms or strings?



◆ Post-coordinate indexing

Document: ***Cameras save lives***

Indexed as:

accidents

road traffic

speed cameras

◆ Pre-coordinate indexing (“strings”)

Document: ***Cameras save lives***

Indexed as: **road traffic : accidents : speed cameras**

Ways of providing access to concepts



- ◆ Free text searching
- ◆ Uncontrolled tagging
- ◆ Controlled vocabularies

Tags and folksonomies



◆ Advantages

- ◆ Users tag items with words they find familiar

◆ Disadvantages

- ◆ No control of consistency
- ◆ A person may use different tags for the same concept at different times
- ◆ Different people use different tags for the same concept

.imported .net 3d academic accessibility activism advertising ajax animation anime apache api apple apps architecture art
article articles asp.net audio bittorrent blog blogging blogs book bookmarks books browser business c# c++
canada career china christian christianity cms code coding collaboration color comic comics community computer computers
computing cooking cool copyright css culture daily data database debian del.icio.us delicious design dev
development dhtml dictionary directory diy documentation dom dotnet download downloads dvd ebooks eclipse ecommerce
economics economy education electronics emacs email english entertainment environment extension fashion film finance firefox
flash flickr folksonomy fonts food forum framework free freeware friends fun funny gadgets gallery game games
gaming geek geo geography german gis google googlemaps government gps graphics greasemonkey gtd gui guide guitar hack
hacking hacks hardware health history home hosting howto html humor humour ideas illustration image images
india info information inspiration interesting internet ipod iraq it itunes j2ee japan japanese java javascript job jobs
journalism language latex law learning libraries library life lifehacks links linux literature mac macosx magazine mail management
manga map mapping maps marketing math media memory metadata microsoft misc mobile money movie movies mozilla mp3
music mysql mythtv network networking news nyc online opensource oracle organization os osx p2p palm patterns pc pda pdf
people perl personal philosophy phone photo photography photos photoshop php pictures plugin podcast
podcasting politics portal privacy productivity programming project projects pvr python radio rails read read_later
reading recipes reference religion research resource resources retro review reviews rss ruby science scripting
search security seo server service sex shop shopping social socialsoftware society software sports sql standards
syndication sysadmin tag tagging tags tech technology temp tips to-read todo tool tools toread torrent torrents travel
tutorial tutorials tv typography ui uk unix usa usability useful utilities video videogames visualization voip war web web2.0
webdesign webdev weblog weblogs webservice weird wiki windows wireless wishlist wordpress work world writing
xhtml xml xmlhttprequest xslt yahoo

Search [advanced](#)

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[Baseball](#), [Soccer](#), [Basketball](#)...

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Thesauri and classification schemes



- ◆ Thesauri and classification schemes are alternative ways of showing concepts and their relationships
- ◆ They are complementary and both approaches are needed
- ◆ They can both be built on the principles of facet analysis

Equivalence relationship

◆ USE / USE FOR [preferred / non-preferred terms]

agriculture

USE FOR *farming*

USE FOR *husbandry*

farming

USE

agriculture

husbandry

USE

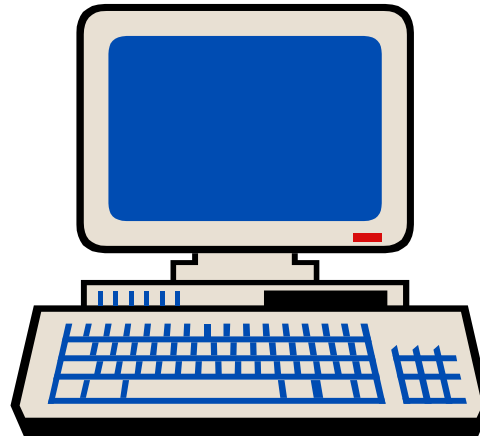
agriculture

Preferred term substitution

Anything
on farming?



I use the term
agriculture for
farming, so I'll
search for that



Hierarchical relationship

- ◆ Relationship should be generic / specific

A bus IS A KIND OF road vehicle

buses BT road vehicles 

A bus IS NOT A KIND OF travel

buses BT travel 

- ◆ Part / whole relationships in a few restricted cases

Paris BT France 

blades BT knives 

Polyhierarchy



vehicles

road vehicles

buses

cars

lorries

passenger vehicles

buses

cars

goods vehicles

lorries

Searching hierarchies

I need information
on road vehicles



I know that
buses, cars and
lorries are all
kinds of *road*
vehicles, so I'll
search for these
terms as well as
for *road vehicles*

Associative relationship



- ◆ RT / RT [related term / related term]
- ◆ Use when someone searching for one term is likely to be interested in items indexed with the other

agriculture RT *farms*

farms RT *agriculture*
 livestock

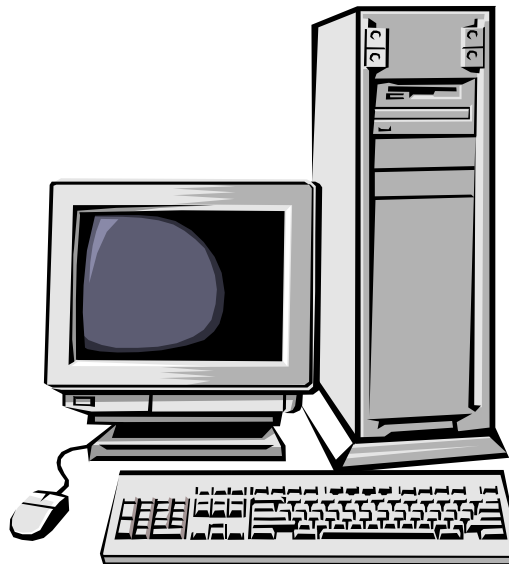
livestock RT *farms*

Searching related terms

Please give me information
about agriculture



OK, I'll look for that.
Would you also be
interested in items
dealing with
*forestry, livestock
or pet breeding?*



Grouping of terms



◆ Microthesauri

- ◆ Groups of terms, and hierarchies of terms, on related topics, e.g. education, science, culture (e.g. UNESCO thesaurus)

◆ Facets

- ◆ Groups of terms of the same kind, e.g. materials, actions, disciplines, buildings, place, time (e.g. Art & Architecture Thesaurus)

What is a facet?

(Sometimes called a fundamental facet)



A high-level grouping of *concepts* of the same inherent category, e.g. activities, disciplines, people, materials, places, times. For example:

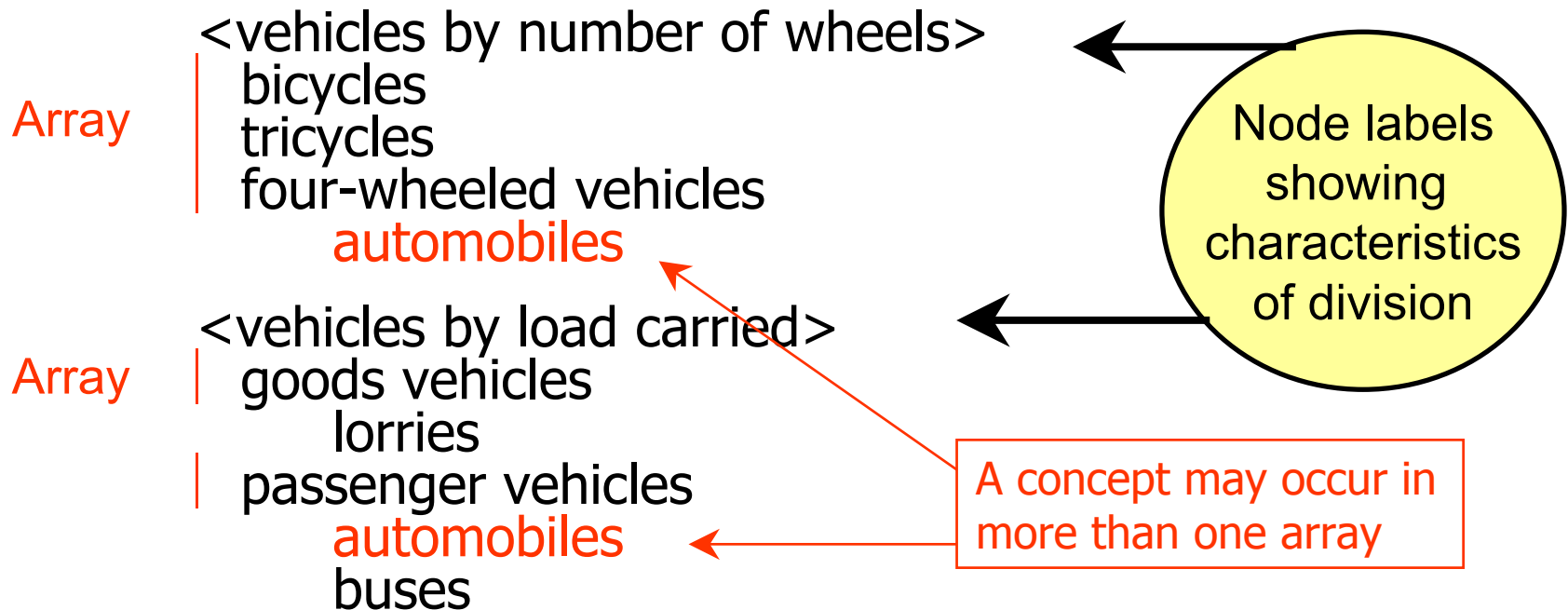
- *animals, mice, daffodils* and *bacteria* could all be members of a *living organisms* facet;
- *digging, writing* and *cooking* could all be members of an *activities* facet;
- *birthdays, wars* and *football matches* could all be members of an *events* facet.

A concept cannot belong to more than one facet

What is an array?

A grouping of *concepts* within a *facet* by some stated *characteristic of division*.

vehicles



Parametric search



- ◆ Searching for resources that have one or more specified characteristics
- ◆ e.g. vehicles which
 - ◆ have three wheels AND
 - ◆ are used for carrying passengers
- ◆ This is an important and useful aspect of post-coordinate searching, but it is *not* faceted classification

Ways of displaying concepts and their paradigmatic relationships



1. Alphabetically, with their relationships

35 mm cameras

BT: film cameras

aqualungs

BT: diving equipment

camera accessories

BT: photographic equipment

NT: flash guns

light meters

tripods

RT: cameras

Ways of displaying concepts and their paradigmatic relationships

2. Hierarchically - *one tree for each facet*

(fields of work)

- . diving
- . photography
- . physics
- . . optics

(people)

<people by age>

- . infants
- . children
- . adults

<people by occupation>

- . divers
- . models (people)
- . photographers
- . physicists

(equipment)

- . diving equipment
 - . . aqualungs
 - . . diving suits
 - . . . dry suits
 - . . . wet suits
 - . . face masks
- . photo equipment
 - . . cameras

Ways of displaying concepts and their paradigmatic relationships



3. In subject groups or categories (microthesauri) ◆ *one tree for each facet in each category*

770: PHOTOGRAPHY

(fields of work)

- . photography
- . . colour photography

(people)

- . models (people)
- . photographers

(equipment)

- . photo equipment
 - . . cameras
-

797.23: DIVING

(fields of work)

- . diving
- . . scuba diving
- . . snorkel diving

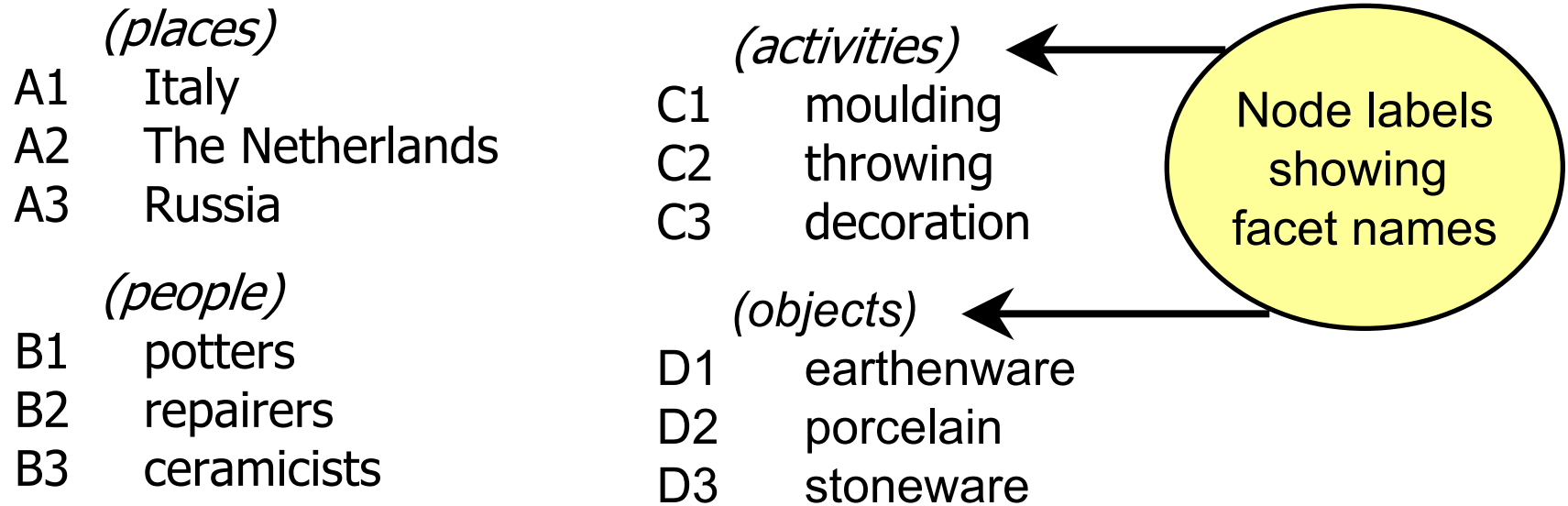
(people)

- . divers

(equipment)

- . diving equipment
- . . aqualungs
- . . diving suits
- . . . dry suits

Combining concepts : syntagmatic relationships



Combine to express compound subjects -

either post-coordinate, for searching:

porcelain AND decoration AND Russia

or pre-coordinate, for browsing:

porcelain decoration in Russia: D2C3A3

Faceted classification generation of subject strings

B *(objects)* ceramics
BB earthenware
(processes)
BB.AA forming
BB.AAB moulding
BB.AB decoration
BB.ABA glazing
BB.ABB transfer printing
BC porcelain
(processes)
BC.AA forming
BC.AAB moulding

ceramics > earthenware > forming
ceramics > earthenware > forming > moulding
ceramics > earthenware > decoration
ceramics > earthenware > decoration > glazing
ceramics > earthenware > decoration > transfer printing
ceramics > porcelain
ceramics > porcelain > forming
ceramics > porcelain > forming > moulding

Alphabetical index



ceramic production processes	A
ceramics	B
coiling : forming : ceramic production	AAA
decoration : ceramic production	AB
decoration : earthenware : ceramics	BB.AB
earthenware : ceramics	BB
forming : ceramic production	AA
forming : earthenware : ceramics	BB.AA
forming : porcelain : ceramics	BC.AA
glazing : decoration : ceramic production	ABA
glazing : decoration : earthenware : ceramics	BB.ABA
moulding : earthenware : ceramics	BB.AAB
moulding : forming : ceramic production	AAB
moulding : porcelain : ceramics	BC.AAB
porcelain : ceramics	BC
throwing : forming : ceramic production	AAC
transfer printing : decoration : ceramic production	ABB
transfer printing : decoration : earthenware : ceramics	BB.ABB

The same concepts viewed in different ways



Classification view

- Good for browsing or surveying a topic
- Like a map
- Like a book's contents page
- Shows related concepts together
- Usually arranged by discipline
- Shows syntagmatic and paradigmatic relationships
- Shows compound topics as pre-combined subject strings

Thesaurus view

- Good for searching if you know what you want
- Like a gazetteer
- Like a book's index
- Gets quickly to individual concepts
- Usually arranged by facet
- Shows paradigmatic relationships
- Lets you combine concepts when searching

Some clarifications



- ◆ A classification can be both hierarchical and faceted
- ◆ A classification built on faceted principles can be enumerative
- ◆ A symbolic notation is not essential, and should not determine the structure
- ◆ A classification can arrange compound topics in a useful linear sequence - a thesaurus cannot
- ◆ One-to-one mapping between a thesaurus and a classification is not possible
- ◆ A “guide to popular topics” may be used to supplement a systematic classification

An ambiguous search interface

subject ▾	lorries	Or ▾
subject ▾	cars	And ▾
subject ▾	diesel	And ▾
subject ▾		And ▾
words or phrase ▾		And ▾
title ▾		

Search Catalogue

Clear Search

Does this mean: (lorries OR cars) AND diesel ?
or does it mean: lorries OR (cars AND diesel) ?

Search interfaces using a thesaurus

Demonstrations

Art and Architecture

Courtauld Institute of Art

Flamenco

ARKive

Social Science Information

Gateway (SOSIG)





MONTAGUE INSTITUTE REVIEW

Site search

go

[A] [B] [C] [D-E] [F-G-H] [I] [J-K] [L-M-N] [O-P-Q] [R-S] [T-Z]
[Subjects] [By date] [Organizations] [People] [Products/Services] [Member Q&A] [Home]

Subjects

See also similar subjects in the
[Knowledge Base Editor's Digest](#)

applications

..... [case studies](#)
..... [product companies](#)
..... [service companies](#)
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..... [sales and marketing](#)
knowledge base publishing
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..... [authoring and editing](#)
..... [content management](#)
..... [organizing information](#)

..... [indexes](#)
..... [taxonomies](#)
..... [usability and user behavior](#)
management tools and techniques
..... [knowledge management](#)

Index detail

[Montague Institute Terms](#)

taxonomies

Systems for naming and organizing things into groups that share similar characteristics.

see also [organizing information](#)
[folk taxonomies](#)
[categorization](#)
[classification](#)
[faceted classification](#)
[taxonomies](#) [[Digest](#)]

Documents for this term:

[Indexing images](#)

The Internet is changing the way images are distributed, and that affects the way images are indexed. This Member Q&A article summarizes responses to a query about indexing tools and navigation schemes. We compare three different indexing approaches: stock photography, image search engines, and photo sharing Web sites.
Montague Institute Review 1/26/2005

Media

[Book](#) (309)
[Ceramic](#) (896)
[Drawing](#) (1547)
[Glass](#) (403)
[Metalwork](#) (134)

[Objects](#) (1689)
[Painting](#) (115)
[Photograph](#) (333)
[Print](#) (18206)
[Sculpture](#) (193)

Date

[1 - 1000 a.d.](#) (135)
[12th century](#) (3)
[13th century](#) (1)
[14th century](#) (3)
[15th century](#) (76)
[16th century](#) (1225)
[17th century](#) (3058)

[18th century](#) (2287)
[19th century](#) (7551)
[20th century](#) (1667)
[21st century](#) (14)
[B.c.](#) (240)
[more...](#)

Location

[Africa](#) (101)
[Asia](#) (945)
[Australia](#) (5)
[Central america](#) (57)
[Europe](#) (17758)

[Middle east](#) (60)
[North america](#) (3634)
[Oceania](#) (72)
[Roman empire](#) (4)
[South america](#) (158)

Occupations

Built Places

[Bridge](#) (431)
[Building](#) (2571)
[Built open space](#) (912)
[Dwelling](#) (1528)
[Part of building](#) (3159)
[Road](#) (1204)

Objects

[Clothing](#) (6018)
[Containers](#) (2632)
[Food and meals](#) (3580)
[Fuel](#) (453)
[Lighting](#) (386)
[Musical instruments](#) (634)
[Timepieces](#) (73)
[Vehicles](#) (3457)
[Weapons](#) (15)
[Writing tools](#) (15)

Subcategories:
chariot
boats and ships
truck
stagecoach
cart
wheelbarrow
car
carriage
caravan
wheel
train
locomotive

Themes

[Military](#) (2600)
[Mortality](#) (423)
[Music, writing, and sport](#) (5499)
[Nautical](#) (13)
[Religion](#) (41)


Shapes, Colors, and Scenes

[Color](#) (4149)
[Decoration](#) (1680)
[Metal](#) (256)
[Scene](#) (6526)
[Shape](#) (1566)

Artists

SEARCH

☒ all items ☐ within current results

These terms define your current search. Click the  to remove a term.

Objects: [Vehicles](#) > boats and ships 

1240 items ([Ungroup items](#))

Refine your search further within these categories:

Media ([group results](#))

Book (4)	Objects (12)
Ceramic (17)	Painting (6)
Drawing (82)	Photograph (6)
Glass (4)	Print (1117)

Date ([group results](#))

15th century (7)	20th century (67)
16th century (32)	B.c. (1)
17th century (131)	Date
18th century (100)	unknown (6)
19th century (472)	Multiple centuries (424)

Location ([group results](#))

Asia (72)	North america (292)
Europe (872)	Oceania (1)
Middle east (1)	

Occupations ([group results](#))

[barge](#) 73



(#23 from) Set o...
Meyerinch
17th - 18th cent...



3 boats on lake,...
Anonymous
post World War II



530, Paris, Cham...
Hauteclur
ca. mid 19th cen...



Ale Porte del Do...
Canaletto
circa 1735 - 1744

[all 73 ite](#)

[boat](#) 762



(Landscape with ...
Boissieu



(Landscape with ...
Boissieu



(Landscape with ...
Boissieu



(One from)The N...
Callot

Location ([group results](#))

[Asia](#) (12) [North](#)
[Europe](#) (82) [america](#) (23)
 [Oceania](#) (1)

Occupations ([group results](#))

[Combatant,](#) [Professional](#) (4)
[guard](#) (10) [Worker](#) (13)
[Entertainer](#) (3)
[Leader](#) (28)

Animals and Plants: [all](#) > Birds

[Chicken](#) (1) [Eagle](#) (5)
[Cormorant](#) (2) [Egret](#) (1)
[Crane](#) (3) [Fowl](#) (1)
[Crow](#) (36) [Hen](#) (26)
[Dove](#) (3) [more...](#)
[Duck](#) (5)

Heaven and Earth ([group results](#))

[Dawn, dusk,](#) [Rivers, lakes,](#)
[night](#) (3) [seas](#) (61)
[Islands,](#) [Storms, clouds,](#)
[deserts,](#) [floods](#) (10)
[forests](#) (4) [Sun, moon,](#)
[Mountains, hills,](#) [stars](#) (17)
[valleys](#) (20)

Built Places ([group results](#))

[Bridge](#) (8) [Dwelling](#) (15)

[cormorant](#) 2



Cormorant Fishin...
Eisen
circa 1835 - 1836



Tea Bowl and Sau...
Caughtley
circa 1785

[crane](#) 3



Bokugi (Play of ...
Kansai
circa 1890

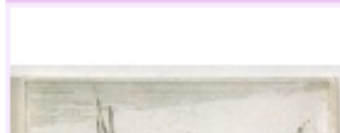


Liverpool Docks
Weir
1889



The Ferry on the...
Eisen
circa 1835 - 1836

[crow](#) 36



Cormorant Fishing on the Nagara River near Kodo, Station 55 on the Kisokaido (Kodo nagaragawa ukaibune), from the series Sixty-nine Stations of the Kisokaido (Kisoji no eki)



Current search:

Animals and Plants: [Birds](#) > cormorant

Objects: [Vehicles](#) > boats and ships

Select any link to see items in a related category.

Find Similar Images

more general categories

MEDIA

[Print](#) (18206)

DATE

[19th century](#) (7551)

LOCATION

[Asia](#) (945)

ANIMALS AND PLANTS

[Birds](#) (2569)

information about this item

MEDIA

[woodcut](#) (1332)

DATE

[1830 - 1839](#) (472)

LOCATION

[Japan](#) (538)

ANIMALS AND PLANTS

[Fish and Molluscs](#) (402)

[cormorant](#) (6)

[duck](#) (62)



Search ARKive

Keyword Search:

You are currently searching:

- ☐ General Overviews ☐ Movies
☐ More Information ☐ Still Images
☒ All Pages

ARKive Advanced Search (18103)

- ☒ Page Type (18103)
☐ Species Characteristics (18103)
☒ ARKive Chapter (18103)
☒ Taxonomic Classification (18103)
☒ Geographic Location (17748)
☒ Habitat (17918)
☒ Behavioural Adaptations (17892)
☒ Conservation Status (17598)
☐ Image Characteristics (18101)
☒ Biological Content (18095)
☒ Media Donor (18101)

Search results:

18103 documents found. Viewing page 1 of 1811.

Sort By... Select page...

- 1 Movie - White-tailed eagle - Haliaeetus albicilla - Juvenile white-tailed eagle in gliding flight
- 2 Movie - White-tailed eagle - Haliaeetus albicilla - White-tailed eagles squabbling over food
- 3 Movie - White-tailed eagle - Haliaeetus albicilla - White-tailed eagles catching fish
- 4 Movie - Tiger - Panthera tigris - Male bengal tiger following female, bengal tigers copulating
- 5 Movie - White-tailed eagle - Haliaeetus albicilla - White-tailed eagle chicks in nest
- 6 Movie - White-tailed eagle - Haliaeetus albicilla - White-tailed eagle - overview
- 7 Movie - White-tailed eagle - Haliaeetus albicilla - Large white-tailed eagle chicks being fed by adults and exercising wings
- 8 Movie - White-tailed eagle - Haliaeetus albicilla - Fisherman feeding white-tailed eagle
- 9 Movie - White-tailed eagle - Haliaeetus albicilla - Adult white-tailed eagles feeding chicks at cliff-top nest
- 10 Movie - Wandering albatross - Diomedea exulans - Wandering albatross chick hatching and being fed by adult

Search ARKive

You are currently searching:

- ☐ General Overviews ☐ Movies
☐ More Information ☐ Still Images
☒ All Pages

ARKive Advanced Search (35)

Page Type (35)

Species Characteristics (35)

ARKive Chapter (35)

Taxonomic Classification (35)

Animals (Animalia) (35)

☒ Vertebrates (Mammalia, Aves, Reptilia, ...)

Geographic Location (35)

Habitat (35)

☒ Aquatic (35)

☐ Terrestrial (34)

Behavioural Adaptations (35)

Conservation Status (35)

Image Characteristics (35)

Biological Content (35)

☐ Physical Appearance (13)

☐ Feeding (1)

☐ Locomotion (3)

☒ Grooming (35)

☐ Reproduction (3)

☐ Intra Specific Behaviours (1)

☐ Sounds (1)

☐ Other Behaviours (5)

☐ Habitat (5)

☐ Children (1)

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Northern fur seal (*Callorhinus ursinus*)



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Northern fur seal bull scratching

Credit:

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