

I 202: INFORMATION ORGANIZATION & RETRIEVAL FALL 2025

Class 7: Faceted Categories & Navigation

Today's Outline

Hierarchy / Taxonomy Brief Review

Faceted Categories

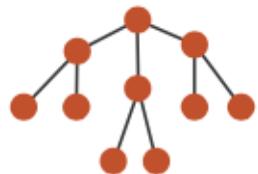
Review Tuesday's Exercise

Facets vs Tags

WHAT DEFINES A HIERARCHY?

- Can be represented as a tree data structure:
 - *There is one root node*
 - *Every node except the root has exactly one parent*
- How this relates to category systems:
 - *Nodes represent categories and subcategories*
 - *An information item is assigned to one and only one node at some level in the tree*

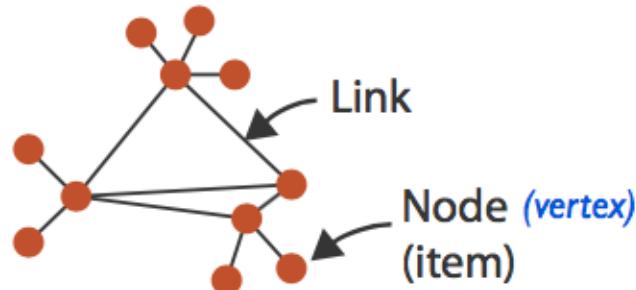
→ *Trees*



Tree = network with hierarchical structure

→ Networks

Network = graph of relationships between discrete objects



Primary Ways to Visualize Trees / Hierarchies

→ **Node–Link Diagrams**

Connection Marks

✓ NETWORKS ✓ TREES



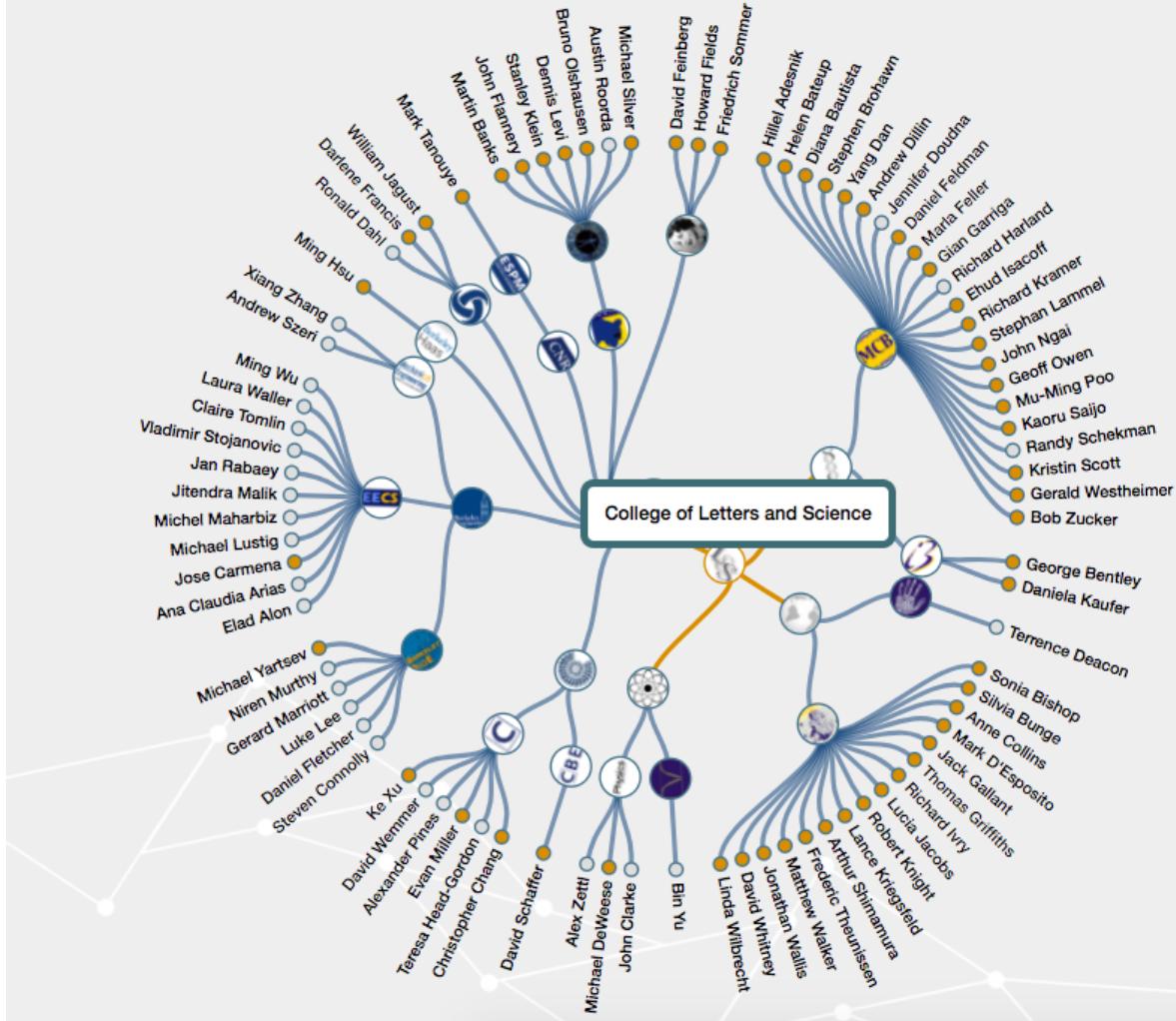
→ **Enclosure**

Containment Marks

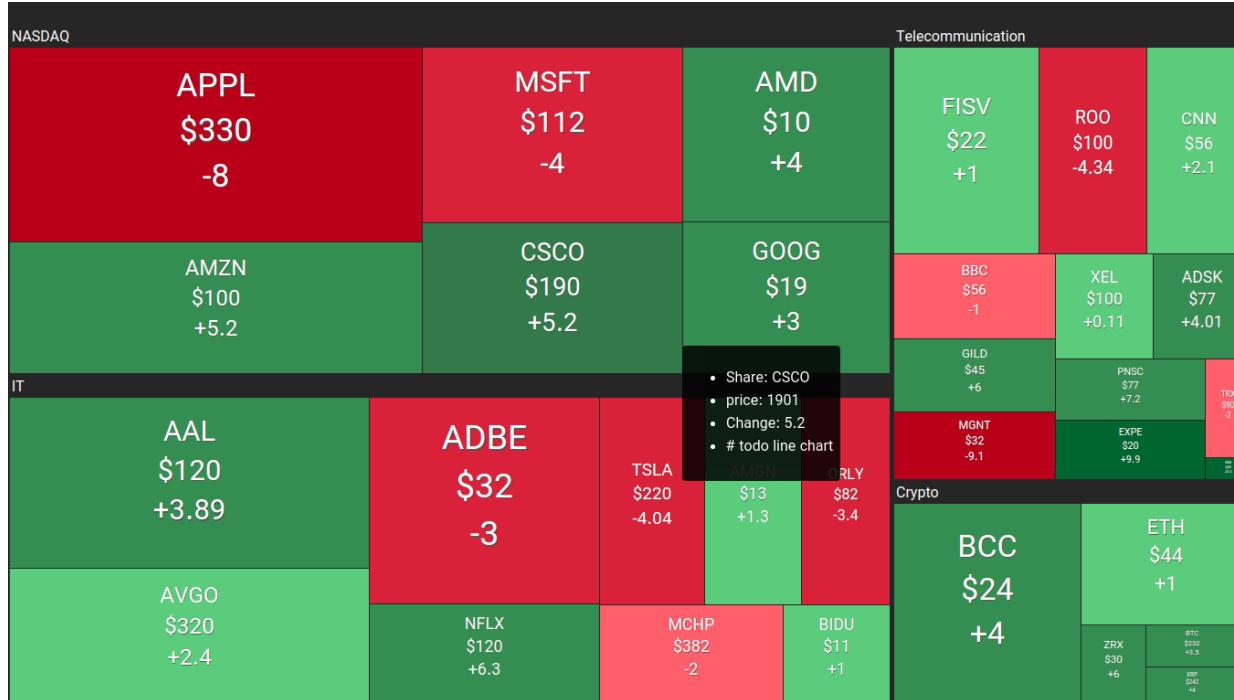
✗ NETWORKS ✓ TREES



Showing a Hierarchical Org Chart with a Node and Link Diagram

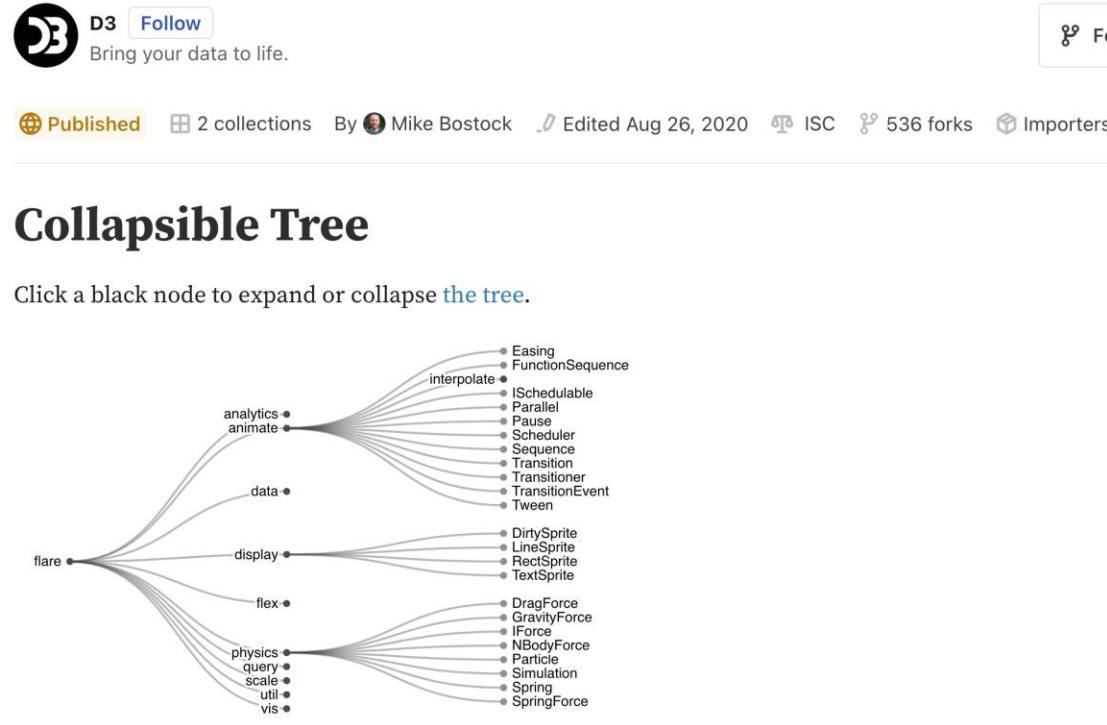


Using Enclosure to Show Nested Hierarchy

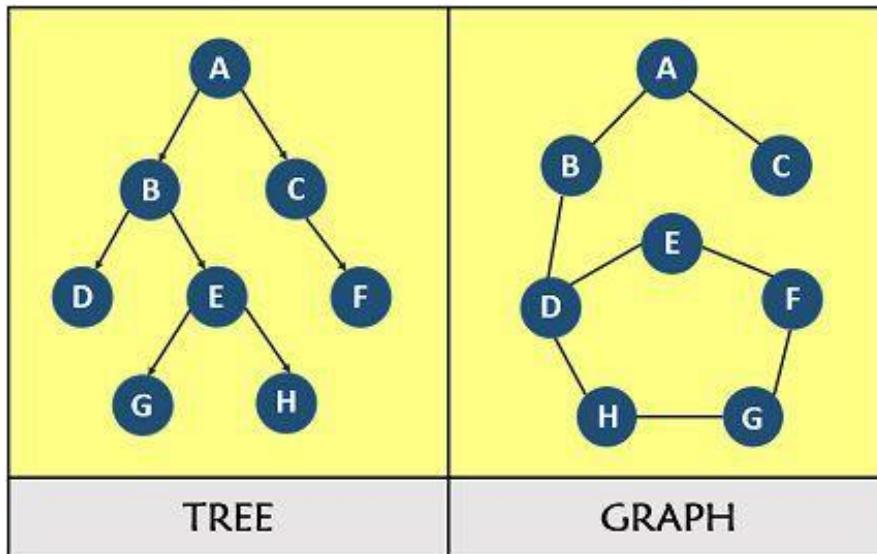


The Treemap visualization organizes stocks into a hierarchy by their market sector. The relative size shows the market capitalization, and color shows if prices increased or decreased

Often the Entire Tree is Too Large to Visualize



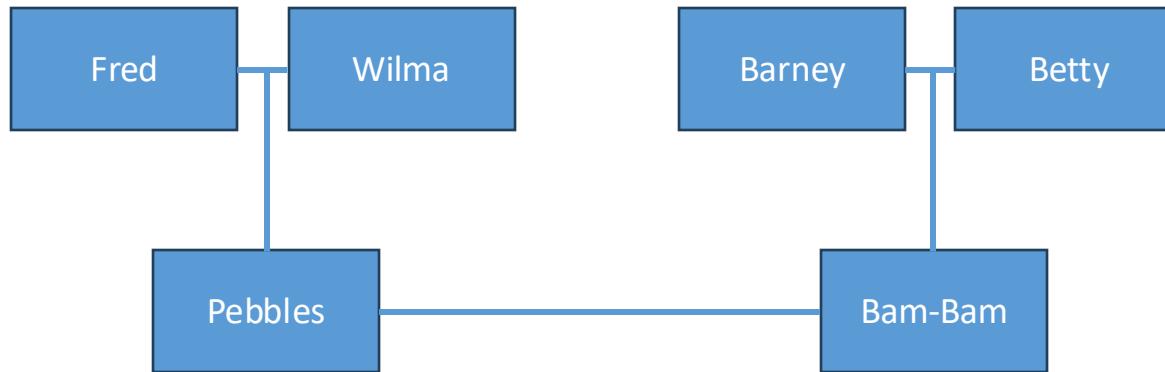
Tree vs Network (Graph): Comparison



BASIS FOR COMPARISON	TREE	GRAPH
Root node	It has exactly one root node.	Graph doesn't have a root node.
Cycles	No cycles are permitted.	Graph can have cycles.
Complexity	Less complex	More complex comparatively
Number of edges	$n-1$ ($n = \#$ of nodes)	Not defined
Model type	Hierarchical	Network

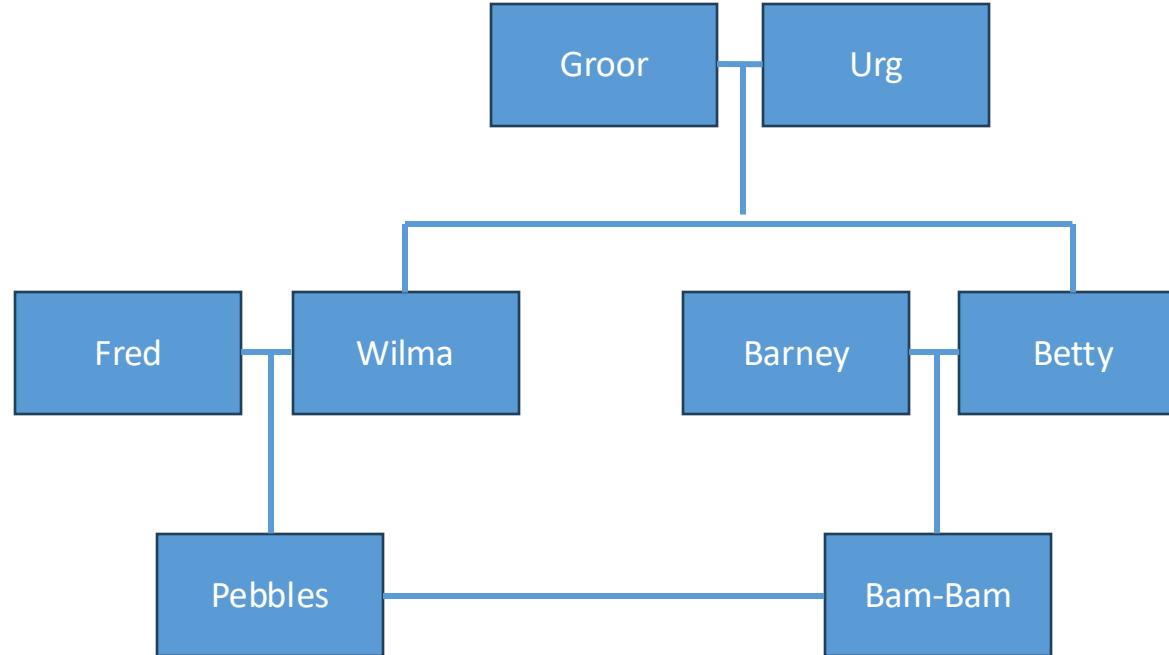
Family Trees?

(Not really a tree ... people have more than one parent)



Family Trees

(And people can be distantly related, thus making a cycle...)



HIERARCHY VS TAXONOMY

- Both have hierarchical organization
- In a taxonomy, the principle for containment is consistent all the way down the tree;
 - *is-a*
 - *part-of*
- By contrast, for a hierarchy, the principle for containment can vary
 - *In our find-the-bird hierarchy, the first level is sound-of, the second level is habitat-of, and the third level is beak-type-of*

Hierarchy Composed of a Mix of Concepts Is Difficult to Navigate

Chirps > Swimmer > Stubby beak
 Long beak

Tree climber > Stubby beak
 Long beak

Ground Based > Stubby beak
 Long beak

Caws > Swimmer > Stubby beak
 Long beak

Tree climber > ...
 Ground Based

Sings > Swimmer
Tree climber
Ground Based



Solution:

For easier navigation, we should break these out into different features or **facets**

Sound: Chirps, Caws, or Sngs

Habitat: Swimmer, Tree climber, or Ground Based

Beak: Stubby or Long

Navigation systems with faceted categories let the information explorer decide which facet to start with.

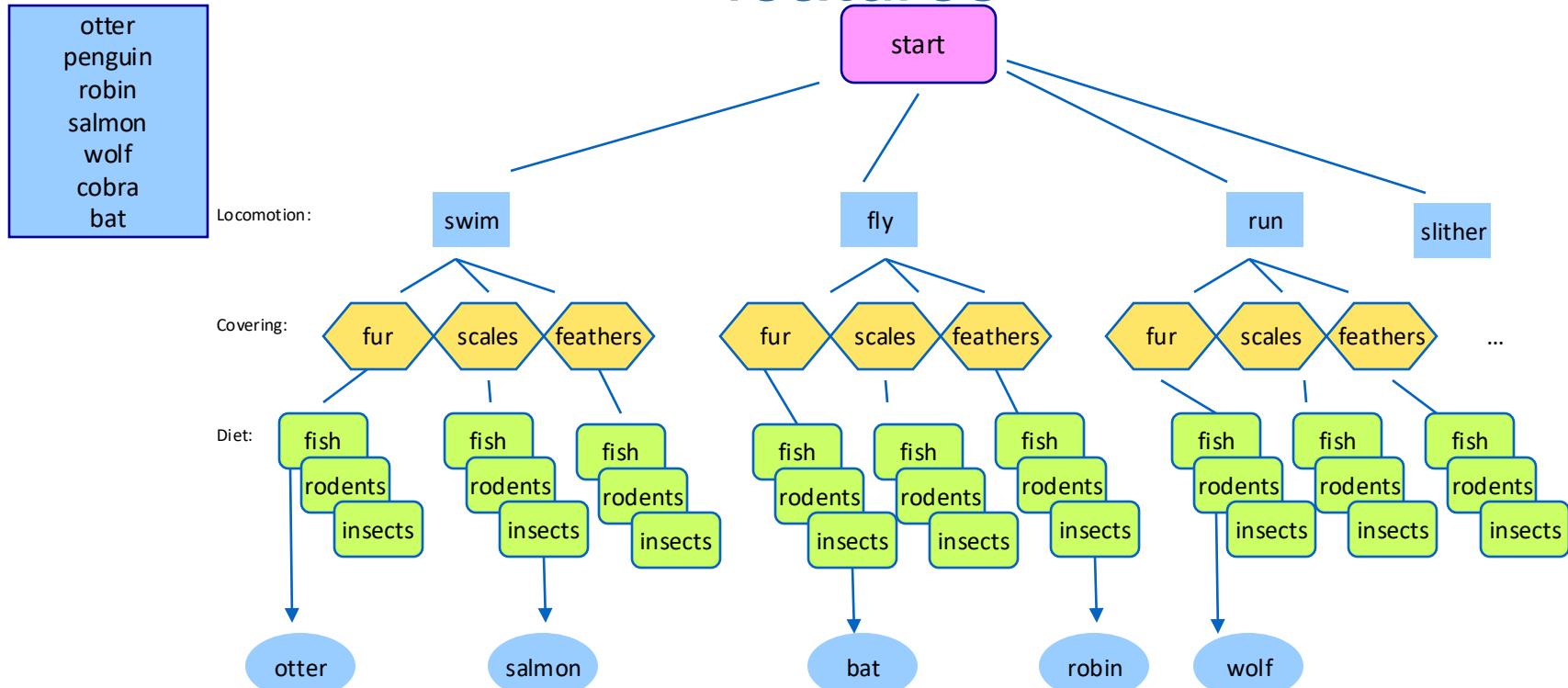
By using facets instead of hierarchy, we don't have to repeat each category multiple times.



Say I want to classify these animals along 4 features

- otter
- penguin
- robin
- salmon
- wolf
- cobra
- bat

A hierarchy requires me to repeat the features



THE PROBLEM WITH HIERARCHY

- Inflexible
 - *Force the user to start with a particular category*
 - *What if I don't know the animal's diet, but the interface makes me start with that category?*
- Wasteful
 - *Have to repeat combinations of categories*
 - *Makes for extra clicking and extra coding*
- Difficult to modify
 - *To add a new category type, must duplicate it everywhere or change things everywhere*

FACETED CATEGORIES

Also known as Faceted Metadata, Faceted Navigation, Faceted Search, Poly
Hierarchy

FACETED CATEGORIES

- A **set** of categories for describing a collection
 - Each facet has **distinct** attributes, or features
 - Resources are identified by **multiple** categories
 - Each category can be **hierarchical**
 - **Consistent relationship within each hierarchy**

Example: Recipes

Would you want to browse
a hierarchy of recipes?



Faceted Categories Instead!

Dish > tacos

Cuisine > Mexican

Occasion > Party
Occasion > Tailgate

Ingredients > Cod
Ingredients > Red Onion
Ingredients > Tortilla

Preparation > Saute



We can (optionally) add hierarchy to facets

Dish > main > tacos

Cuisine > Mexican

Occasion > Party
Occasion > Tailgate

Ingredients > Meat > Fish > Cod
Ingredients > Veg > Onion > Red Onion
Ingredients > Bread > Tortilla

Preparation > Saute

CONSTRUCTING FACETS

- Break out each of the important concepts into their own facet
- Sometimes the facets are flat, sometimes hierachal
- Assign labels to items from **multiple** facets

Preparation Method

Fry
Saute
Boil
Bake
Broil
Freeze

Desserts

Cakes
Cookies
Ice Cream
Sorbet
Flan

Fruits

Cherries
Berries
Blueberries
Strawberries
Bananas
Pineapple

ASSIGNING FACETS

This allows multiple navigation paths to each

item

Preparation Method

- Fry
- Saute
- Boil
- Bake
- Broil
- Freeze

Desserts

- Cakes
- Cookies
- Ice cream
- Sorbet
- Flan

Fruits

- Cherries
- Berries
- Blueberries
- Strawberries
- Bananas
- Pineapple

Fruit > Pineapple
Dessert > Cake
Preparation > Bake



Dessert > Sorbet
Fruit > Berries > Strawberries
Preparation > Freeze



Flamenco Project: (Prof Hearst's Research in the 2000's) Theory and Practice behind Faceted Navigation

flamenco search
uc berkeley school of information



[Home](#) [Demos](#) [Download](#) [Documentation](#)

The Flamenco Search Interface Project
Search Interfaces that Flow

- [!\[\]\(2fff3c9e4afb192f04e878e77fb552ed_img.jpg\) introduction](#)
- [!\[\]\(424424d14aba49c86d1c60a64247128f_img.jpg\) people](#)
- [!\[\]\(c6faaa65325805483013e4324c1f0b1d_img.jpg\) publications](#)
- [!\[\]\(f6f1ff747f29b1ba7a1aa997c3088970_img.jpg\) tutorials / talks](#)
- [!\[\]\(4f6d2f227e742921ab30098a02f8c8ef_img.jpg\) press / related](#)

The *Flamenco* search interface framework has the primary design goal of allowing users to move between information spaces in a flexible manner without feeling lost. A key property of the interface is its ability to provide users with context-aware navigation hints, category metadata, to guide the user toward possible choices, and to organize the collection's structure. The interface uses hierarchical faceted metadata in a manner that allows users to both explore the collection's structure and perform text search, allowing the user to follow links, then add search terms, then follow more links, all while maintaining a consistent representation of the collection's structure. This user-centered design approach allows users to interact with the system in a natural way, while maintaining a consistent representation of the collection's structure.

FLAMENCO stands for FFlexible information Access using MEtadata in Novel COMmunities. It was funded by a CAREER grant awarded to Prof. Marti Hearst from the National Science Foundation.

Flamenco goes open source!

EXAMPLE: NOBEL PRIZE WINNERS

Faceted navigation to easily explore who won which awards when

(Data from 2004)

Overview shows which categories are available

Nobel Prize Winners
1901 to 2004

Save Search History and Settings Return to Search New Search Logout

search Show tooltip previews of subcategories Username default Password Log In [Create a New Account](#)

GENDER
[female](#) (33) [male](#) (698)

COUNTRY
[Argentina](#) (5) [China](#) (2)
[Australia](#) (6) [Colombia](#) (1)
[Austria](#) (12) [Costa Rica](#) (1)
[Belgium](#) (11) [Czechoslovakia](#) (2)
[Burma](#) (1) [Denmark](#) (13)
[Canada](#) (9) [more...](#)
[Chile](#) (2)

AFFILIATION
[Allied Reparation Commission](#) (1)
[Argentina](#) (3)
[Australia](#) (2)
[Austria](#) (6)
[Belgium](#) (7)
[Berlin University](#) (1)
[Briand-Kellogg Pact](#) (3)
[Brussels](#) (1)
[Canada](#) (6)
[Committee for the Defense of National Interests and International Conciliation](#) (1)
[Conseil national économique](#) (1)
[Costa Rica](#) (1)
[more...](#)

PRIZE
[chemistry](#) (138) [medicine](#) (182)
[economics](#) (55) [peace](#) (108)
[literature](#) (101) [physics](#) (166)

YEAR
[1900s](#) (57) [1960s](#) (79)
[1910s](#) (40) [1970s](#) (103)
[1920s](#) (54) [1980s](#) (97)
[1930s](#) (56) [1990s](#) (98)
[1940s](#) (43) [2000s](#) (56)
[1950s](#) (72)

Let's start with the prize for literature

Nobel Prize Winners
1901 to 2004

Save Search History and Settings Return to Search New Search Logout

search Show tooltip previews of subcategories Username default Password Log In [Create a New Account](#)

GENDER
[female \(33\)](#) [male \(698\)](#)

COUNTRY
[Argentina \(5\)](#) [China \(2\)](#)
[Australia \(6\)](#) [Colombia \(1\)](#)
[Austria \(12\)](#) [Costa Rica \(1\)](#)
[Belgium \(11\)](#) [Czechoslovakia \(2\)](#)
[Burma \(1\)](#) [Denmark \(13\)](#)
[Canada \(9\)](#) [more...](#)
[Chile \(2\)](#)

PRIZE
[chemistry \(138\)](#) [medicine \(182\)](#)
[economics \(55\)](#) [peace \(108\)](#)
[literature \(10*\)](#) [physics \(166\)](#)

YEAR
[1900s \(57\)](#) [1960s \(79\)](#)
[1910s \(40\)](#) [1970s \(103\)](#)
[1920s \(54\)](#) [1980s \(97\)](#)
[1930s \(56\)](#) [1990s \(98\)](#)
[1940s \(43\)](#) [2000s \(56\)](#)
[1950s \(72\)](#)

AFFILIATION
[Allied Reparation Commission \(1\)](#) [Brussels \(1\)](#)
[Argentina \(3\)](#) [Canada \(6\)](#)
[Australia \(2\)](#) [Committee for the Defense of National Interests and International Conciliation \(1\)](#)
[Austria \(6\)](#) [Conseil national économique \(1\)](#)
[Belgium \(7\)](#) [Costa Rica \(1\)](#)
[Berlin University \(1\)](#) [more...](#)
[Briand-Kellogg Pact \(3\)](#)

This shows us that 40 people have won for literature, 10 women, 91 men, and the country distribution

Nobel Prize Winners
1901 to 2004

Save Search History and Settings Return to Search New Search Logout

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

PRIZE: literature

Items 1 to 40 of 101 results
Group by: [prize](#)
Sort by: [usual name](#), [year of birth](#), [year of death](#), [country](#)

Refine your search further within these categories:

GENDER (group results)
[female](#) (10) [male](#) (91)

COUNTRY (group results)
[Australia](#) (1) [Denmark](#) (3)
[Austria](#) (1) [Egypt](#) (1)
[Belgium](#) (1) [Federal Republic of Germany](#) (2)
[Chile](#) (2) [Germany](#) (2)
[Colombia](#) (1) [Finland](#) (1)
[Czechoslovakia](#) (1) [more...](#)

AFFILIATION (group results)

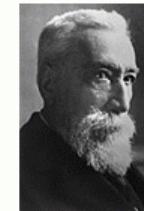
PRIZE: all > literature

YEAR (group results)
[1900-1909](#) [1900-1909](#)

1 41 81


[Albert Camus](#)
1913-1960


[Aleksandr Solzhenit...](#)
1918-


[Anatole France](#)
1844-1924


[André Gide](#)
1869-1951






Let's group these results by the decade they were awarded in

Nobel Prize Winners
1901 to 2004

Save Search History and Settings Return to Search New Search Logout

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

PRIZE: literature

Items 1 to 40 of 101 results
Group by: [prize](#)
Sort by: [usual name](#), [year of birth](#), [year of death](#), [country](#)

Refine your search further within these categories:

GENDER (group results)
[female](#) (10) [male](#) (91)

COUNTRY (group results)
[Australia](#) (1) [Denmark](#) (3)
[Austria](#) (1) [Egypt](#) (1)
[Belgium](#) (1) [Federal Republic of Germany](#) (2)
[Chile](#) (2) [Germany](#) (2)
[Colombia](#) (1) [Finland](#) (1)
[Czechoslovakia](#) (1) [more...](#)

AFFILIATION (group results)

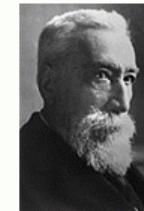
PRIZE: all > literature

YEAR (group results)
[1800-1850](#) [1850-1900](#)

1 41 81


Albert Camus
1913-1960


Aleksandr Solzhenit...
1918-


Anatole France
1844-1924


André Gide
1869-1951






Let's narrow down to just the literature winners in the 1920s.

Nobel Prize Winners
1901 to 2004

Save Search | History and Settings | Return to Search | New Search | Logout

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

PRIZE: literature 

101 items, grouped by YEAR ([view ungrouped items](#))

1900s (10)



[Bjørnstjerne Bjørnson
1832-1910](#) [Frédéric Mistral
1830-1914](#) [Giosuè Carducci
1835-1907](#) [Henryk Sienkiewicz
1846-1916](#) [all 10 items...](#)

1910s (9)



[Carl Spitteler
1845-1924](#) [Gerhart Hauptmann
1862-1946](#) [Henrik Pontoppidan
1857-1943](#) [Karl Gjellerup
1857-1919](#) [all 9 items...](#)

1920s (10)



Notice we've made a complex query with a few easy clicks: Prize > literature AND Year > 1920s

Nobel Prize Winners
1901 to 2004

Save Search History and Settings Return to Search New Search Logout

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

PRIZE: literature
YEAR: 1920s

Refine your search further within these categories:

GENDER (group results)
[female](#) (2) [male](#) (8)

COUNTRY (group results)
[France](#) (2) [Norway](#) (2)
[Germany](#) (1) [Poland](#) (1)
[Ireland](#) (1) [Spain](#) (1)
[Italy](#) (1) [United Kingdom](#) (1)

AFFILIATION (group results)

PRIZE: all > literature (group results)

YEAR: all > 1920s (group results)

[1920](#) (1) [1925](#) (1)
[1921](#) (1) [1926](#) (1)
[1922](#) (1) [1927](#) (1)

10 results
Group by: [prize](#), [year](#)
Sort by: [usual name](#), [year of birth](#), [year of death](#), [country](#)

Anatole France
1844-1924

George Bernard Shaw
1856-1950

Grazia Deledda
1871-1936

Henri Bergson
1859-1941

Now we can **broaden** the query by removing one of the categories; this changes the query to just Year > 1920s

Nobel Prize Winners
1901 to 2004

Save Search History and Settings Return to Search New Search Logout

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

PRIZE: literature **X**

YEAR: 1920s **X**

Refine your search further within these categories:

GENDER (group results)

[female](#) (2) [male](#) (8)

COUNTRY (group results)

[France](#) (2) [Norway](#) (2)
[Germany](#) (1) [Poland](#) (1)
[Ireland](#) (1) [Spain](#) (1)
[Italy](#) (1) [United Kingdom](#) (1)

AFFILIATION (group results)

PRIZE: all > literature (group results)

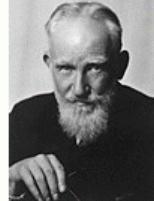
YEAR: all > 1920s (group results)

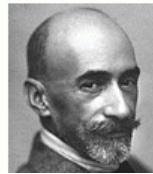
[1920](#) (1) [1925](#) (1)
[1921](#) (1) [1926](#) (1)
[1922](#) (1) [1927](#) (1)

10 results

Group by: [prize](#), [year](#)
Sort by: [usual name](#), [year of birth](#), [year of death](#), [country](#)

Anatole France George Bernard Shaw Grazia Deledda Henri Bergson
1844-1924 1856-1950 1871-1936 1859-1941





The Flamenco system allowed the user to group by a category value; this hasn't been adopted by commercial systems

Nobel Prize Winners
1901 to 2004

Save Search History and Settings Return to Search New Search Logout

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

YEAR: 1920s

Items 1 to 40 of 54 results
Group by: [year](#) Sort by: [usual name](#), [year of birth](#), [year of death](#), [country](#)

Refine your search further within these categories:

GENDER (group results)
[female](#) (2) [male](#) (52)

COUNTRY (group results)
[Austria](#) (2) [Italy](#) (1)
[Canada](#) (2) [Norway](#) (4)
[Denmark](#) (3) [Poland](#) (1)
[France](#) (8) [Spain](#) (1)
[Germany](#) (11) [more...](#)
[Ireland](#) (1)

AFFILIATION (group results)
[Allied Reparation Commission](#) (1) [Dawes Plan](#) (1)
[Austria](#) (2) [Denmark](#) (3)
[Berlin University](#) (1) [France](#) (6)
[Briand-Kellogg Pact](#) (2) [French Parliament](#) (1)
[more...](#)

1
[Adolf Windaus](#)
1876-1959

[Albert Einstein](#)
1879-1955

[Anatole France](#)
1844-1924

[Archibald V. Hill](#)
1886-1977

Notice across all of the 1920's, only 2 women got awards, while 52 men did. Let's drill into 1921

Nobel Prize Winners
1901 to 2004

Save Search History and Settings Return to Search New Search Logout

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

YEAR: 1920s

Refine your search within these categories:

GENDER (group results)

female (2) male (52)

COUNTRY (group results)

Austria (2) Italy (1)
Canada (2) Norway (4)
Denmark (3) Poland (1)
France (8) Spain (1)
Germany (11) more...
Ireland (1)

AFFILIATION (group results)

Allied Reparation Commission (1) Dawes Plan (1)
Austria (2) Denmark (3)
Berlin University (1) France (6)
Briand-Kellogg Pact (2) French Parliament (1)
Brussels (1) more...
Canada (2)

PRIZE (group results)

chemistry (10) peace (11)
literature (10) physics (12)
medicine (11)

1920 (5)

August Krogh 1874-1949
Charles Edouard Gu... 1861-1938
Knut Hamsun 1859-1952
Léon Bourgeois 1851-1925

1921 (5)

Walther Nernst 1864-1941










Einstein! Cool! Let's take a detailed look at him

Nobel Prize Winners
1901 to 2004

Save Search History and Settings Return to Search New Search Logout

These terms define your current search. Click the to remove a term.
YEAR: 1920s > 1921

Refine your search within these categories:

GENDER (group results)
male (5)

COUNTRY (group results)
France (1) Sweden (1)
Germany (1) Switzerland (1)
Norway (1) United Kingdom (1)

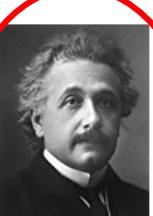
AFFILIATION (group results)
Brussels (1) Sweden (1)
Germany (1) United Kingdom (1)
League of Nations (1)

PRIZE (group results)
chemistry (1) peace (2)
literature (1) physics (1)

YEAR: all > 1920s > 1921

Recently Viewed Items
[Go to Item History](#)

5 results
Group by: [year](#)
Sort by: [usual name](#), [year of birth](#), [year of death](#), [country](#)




[Albert Einstein](#)
1879-1955


[Anatole France](#)
1844-1924


[Christian Lange](#)
1869-1938


[Frederick Soddy](#)
1877-1956


[Hjalmar Branting](#)
1860-1921

We can see the associated metadata and categories in the item description

Nobel Prize Winners
1901 to 2004

Save Item History and Settings Return to S

Item 1 of 4 ([back to results](#)) Current search:
[next](#) ►



Albert Einstein
1879-1955
[Biography](#)
[Nobel Lecture](#)

Select any link to see items in a related category.

[Find Similar Items](#)

more general categories	information about this item
GENDER	GENDER
	male (698) <input type="checkbox"/>
COUNTRY	COUNTRY
	Germany (44) <input type="checkbox"/>
	Switzerland (27) <input type="checkbox"/>
AFFILIATION	AFFILIATION
└ Germany (41)	Kaiser-Wilhelm-Institut für Physik (2) <input type="checkbox"/>
└ Berlin (10)	
PRIZE	PRIZE
	physics (166) <input type="checkbox"/>
YEAR	YEAR
└ 1920s (54)	1921 (5) <input type="checkbox"/>
USUAL NAME:	Albert Einstein
LONG NAME:	Albert Einstein
YEAR OF BIRTH:	1879
YEAR OF DEATH:	1955

Let's do a free text search, find all the awardees from California

Nobel Prize Winners
1901 to 2004

Save Search History and Settings Return to Search New Search Logout

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

PRIZE: physics

Items 1 to 40 of 166 results
Group by: prize
Sort by: usual name, year of birth, year of death, country

Refine your search within these categories:

GENDER (group results)
male (4)

COUNTRY: all > Switzerland

AFFILIATION (group results)
France (1) Switzerland (2)
Germany (1)

PRIZE: all > physics

YEAR (group results)
1920s (2) 1980s (2)

Recently Viewed Items
[Go to Item History](#)

1 41 81 121 161

Aage N. Bohr 1922-

Abdus Salam 1926-1996

Albert A. Michelson 1852-1931

Albert Einstein 1879-1955

Aleksandr M. Prokhorov 1916-2002

Alexei A. Abrikosov 1928-

Alfred Kastler 1902-1984

Anthony J. Leggett 1938-

Note that category structure remains after the free text search

"California" appears in these category names:

- affiliation > [California](#)
- affiliation > ... > Berkeley > [University of California](#)
- affiliation > ... > Irvine > [University of California](#)
- affiliation > ... > La Jolla > [University of California](#)
- affiliation > ... > [University of California](#)

- affiliation > ... > [University of Southern California](#)
- affiliation > ... > [California Institute of Technology](#)
- affiliation > ... > San Diego > [University of California](#)
- affiliation > ... > [University of California](#)
- affiliation > ... > [University of California](#)

all items in current results

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

keyword "California" 

Refine your search within these categories:

GENDER (group results)

[female](#) (1) [male](#) (64)

COUNTRY (group results)

Canada (1)	Norway (1)
Egypt (1)	United Kingdom (2)
Federal Republic of Germany (1)	United States of America (60)

AFFILIATION (group results)

Federal Republic of Germany (1)	United States of America (65)
---	---

PRIZE (group results)

chemistry (20)	peace (1)
economics (8)	physics (25)
medicine (12)	

YEAR (group results)

1920s (1)	1970s (3)
1930s (3)	1980s (11)
1940s (1)	1990s (15)

1  41



[A. Michael Spence](#)
1943-



[Ahmed Zewail](#)
1946-



[Alan Heeger](#)
1936-



[Arthur Kornberg](#)
1918-



[Arthur L. Schawlow](#)
1921-1999



[Burton Richter](#)
1931-



[Carl D. Anderson](#)
1905-1991



[Clive W.J. Granger](#)
1934-

So let's select a category -- economics

"California" appears in these category names:

- affiliation > [California](#)
- affiliation > ... > Berkeley > [University of California](#)
- affiliation > ... > Irvine > [University of California](#)
- affiliation > ... > La Jolla > [University of California](#)
- affiliation > ... > [University of California](#)

- affiliation > ... > [University of Southern California](#)
- affiliation > ... > [California Institute of Technology](#)
- affiliation > ... > San Diego > [University of California](#)
- affiliation > ... > [University of California](#)
- affiliation > ... > [University of California](#)

search
 all items in current results

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

keyword "California" 

Refine your search within these categories:

GENDER (group results)

[female](#) (1) [male](#) (64)

COUNTRY (group results)

Canada (1)	Norway (1)
Egypt (1)	United Kingdom (2)
Federal Republic of Germany (1)	United States of America (60)

AFFILIATION (group results)

Federal Republic of Germany (1)	United States of America (65)
---	---

PRIZE (group results)

chemistry (20)	peace (1)
economics (6)	physics (25)
medicine (12)	

YEAR (group results)

1920s (1)	1970s (3)
1930s (3)	1980s (11)
1940s (1)	1990s (15)

1 41



[A. Michael Spence](#)
1943-



[Ahmed Zewail](#)
1946-



[Alan Heeger](#)
1936-



[Arthur Kornberg](#)
1918-



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1921-1999



[Burton Richter](#)
1931-



[Carl D. Anderson](#)
1905-1991



[Clive W.J. Granger](#)
1934-

Cool! Economists from UC Berkeley!

Nobel Prize Winners

1901 to 2004

[Save Search](#) [History and Settings](#) [Return to Search](#) [New Search](#) [Logout](#)

all items in current results

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

keyword "California"

PRIZE: economics

Refine your search within these categories:

GENDER (group results)

[male](#) (8)

COUNTRY (group results)

[Norway](#) (1) [United States of America](#) (6)
[United Kingdom](#) (1) [United States of America](#) (6)

AFFILIATION (group results)

[United States of America](#) (8)

PRIZE: all > economics

YEAR (group results)

[1980s](#) (1) [2000s](#) (5)
[1990s](#) (2)

Recently Viewed Items
[Go to Item History](#)



A. Michael Spence
1943-



Clive W.J. Granger
1934-



Daniel L. McFadden
1937-



Finn E. Kydland
1943-



George A. Akerlof
1940-



Gerard Debreu
1921-2004



John C. Harsanyi
1920-2000



William F. Sharpe
1934-

FACETED METADATA ALLOWS FOR FLEXIBLE NAVIGATION

- Faceted categories can be taxonomic
- They can also be based on properties of the items being organized
- They can also be based on cross-cutting themes

Mixing and Matching with Facets

If you have cleanly separated facets, you can mix and match in really powerful ways, to allow many kinds of navigation

clothing

equipment

season

sport

age

gender

size color price material

Mixing and Matching with Facets

This boot can be assigned to **clothing, season, sport, age, gender, size, color, price, and material**, and shown under any combination of these.

clothing

equipment

season

sport



age

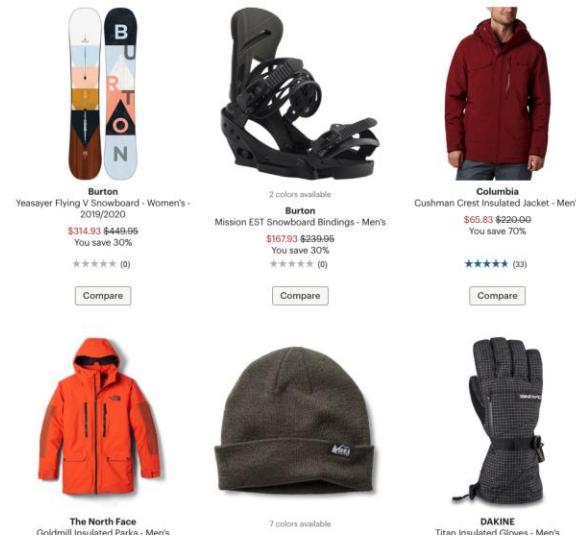
gender

size color price material

Mixing and Matching with Facets

These items can appear after filtering by **sport > snowboarding**

clothing
equipment
season
sport



size color price material

age
gender

Mixing and Matching with Facets

Filtering by **equipment > snowboards** narrows these results to contain only snowboards

clothing

equipment

season

sport



Lucky Bums
nowplay Snowboard - 120 cm



Lib Tech
T. Rice Pro Snowboard - 2021/2022



Lib Tech
T. Rice Orca Snowboard - 2021/2022

age

gender

size

color

price

material

Mixing and Matching with Facets

Filtering by **age** can then narrow the results to show only kids' snowboards

clothing
equipmer
season
sport



Jess Kimura Mini Snowboard - Kids' -
2021/2022



Burton
Process Smalls Snowboard - Kids' -
2021/2022



Burton
Feelgood Smalls Snowboard - Kids'
-2021/2022

age
gender

size color price material

Quantitative facets

For quantitative facets like price, a range of numbers is often better than selecting individual values

clothing
equipment
season
sport



age
gender

size color price material

How To DEFINE THE FACETS?

- Depends on the makeup of the collection
- Depends on the goals of the use
- Then ask the classic questions:
 - *Who, what, when, where, why, how much, under what circumstances?*

ADVANTAGES OF FACETED METADATA

- Seamless to add new facets and subcategories
- Seamless to add new items.
- Helps with “categorization wars”
 - *Don’t have to agree exactly where to place something*
- Can be implemented using a relational database.
- May be easier for automatic categorization

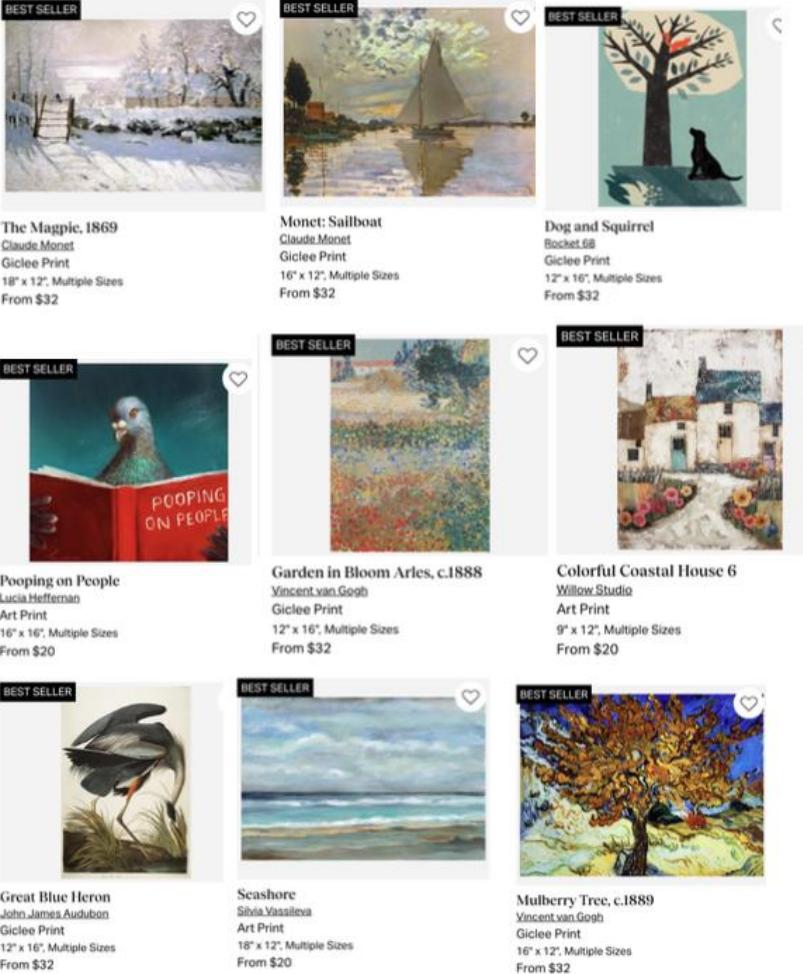
ADVANTAGES OF FACETED NAVIGATION

- Helps user infer what is in the collection;
- Evokes a feeling of “browsing the shelves”
- Let’s the user decide how to start, what order to apply categories
- Seamlessly integrates keyword search with the organizational structure
- Easy to build complex queries without encountering empty results
- After refinement, categories that are no longer relevant to the results disappear.

DRAWBACKS OF FACETED NAVIGATION

- Need good metadata
- There are **many** ways to design the interface poorly
 - *Not showing results, just categories*
 - *Not showing item count previews*
 - *Not integrating search*
 - *Not allowing flexible breadcrumb manipulation*
 - *Poor layout, poor font use*

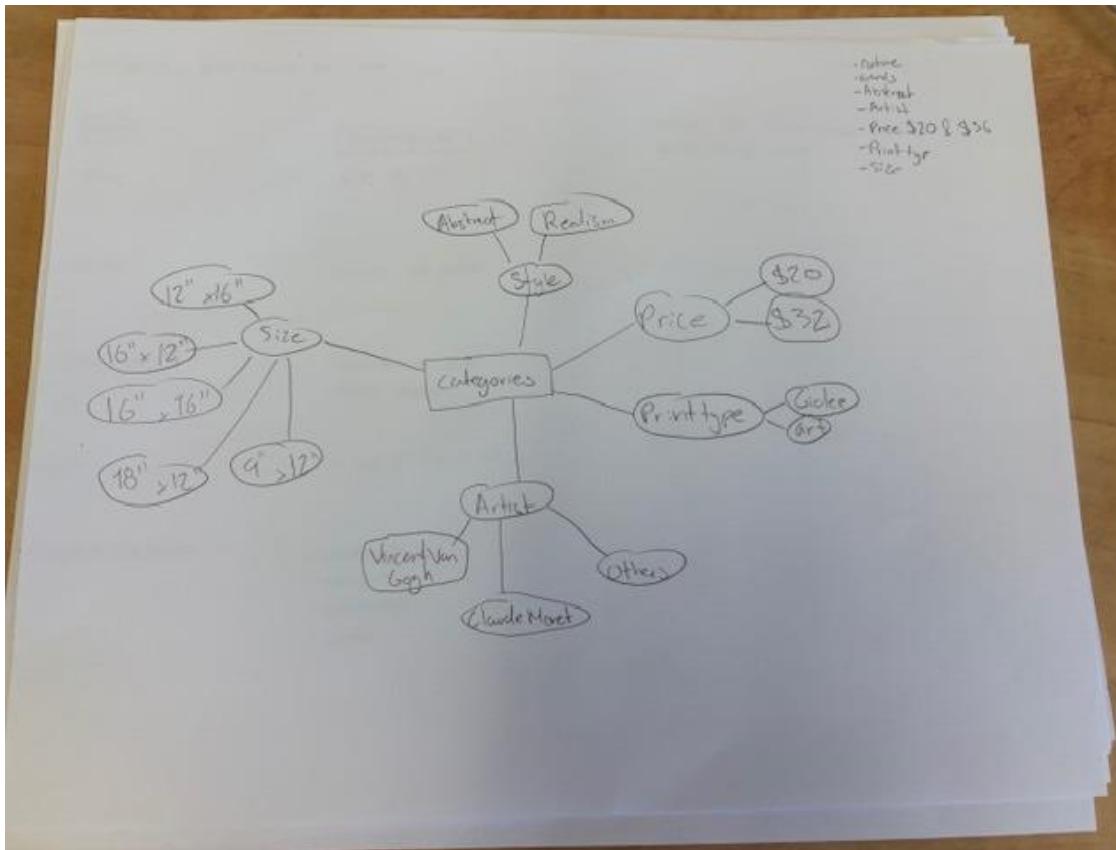
How DID YOU ORGANIZE THE ART IMAGES?



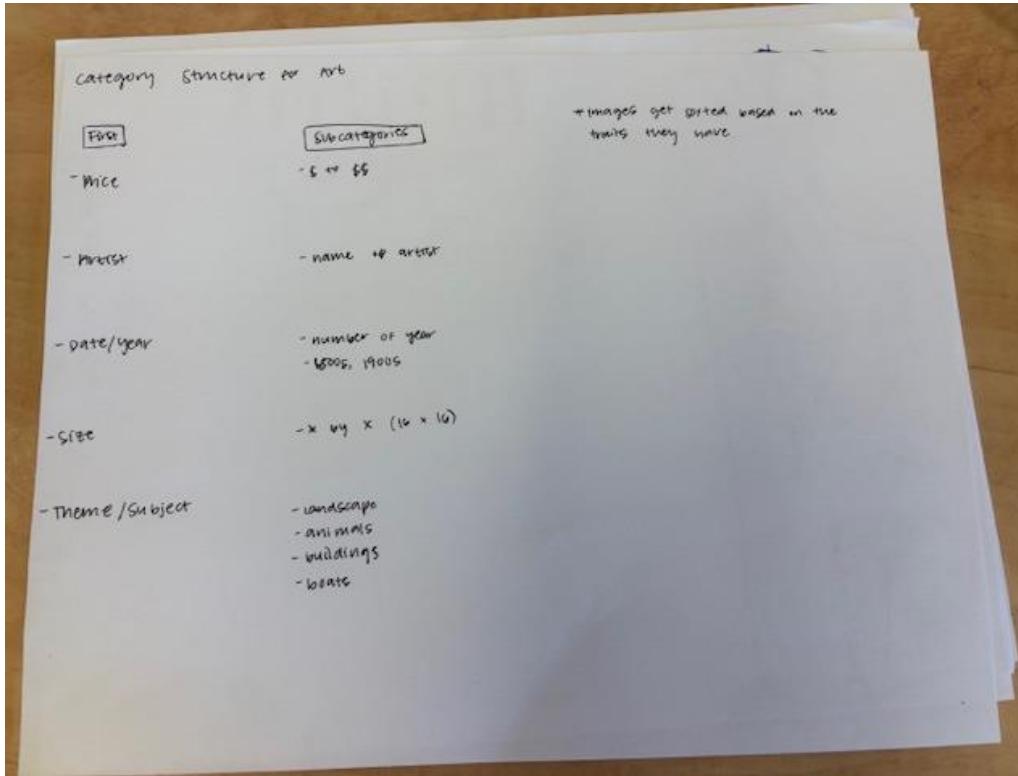
CHALLENGES

- Navigate by the subjects / content of the images
 - *Can you find images with both birds and trees?*
 - *Can you find images with red birds?*
 - *Can you find images with trees in a seascape?*
- Need to support metadata-type attributes in all combinations
 - *Price*
 - *Artist (this needs to be in a hierarchy, or an alphabetical list)*
 - *Print type*
 - *Size*

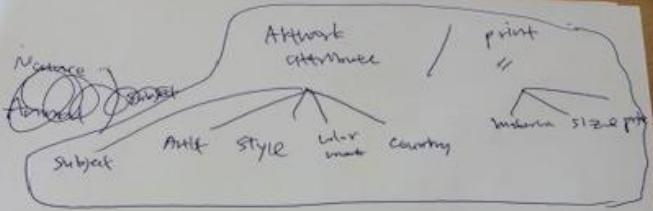
Hierarchical Facets Focused on Metadata (does not have subject of painting)

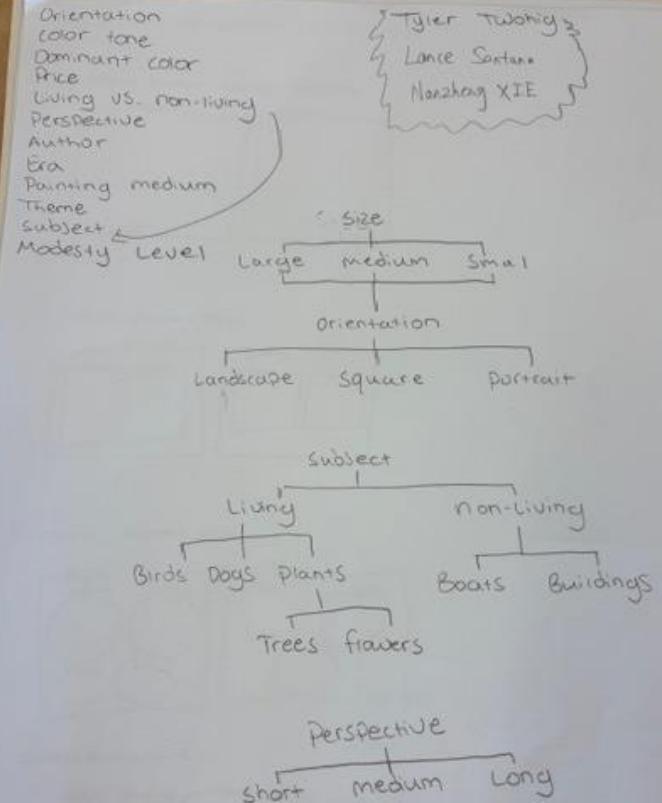


Flat Facets with an underspecified subject category



Hierarchical structure on top
Interlinked structure beneath
No subject category





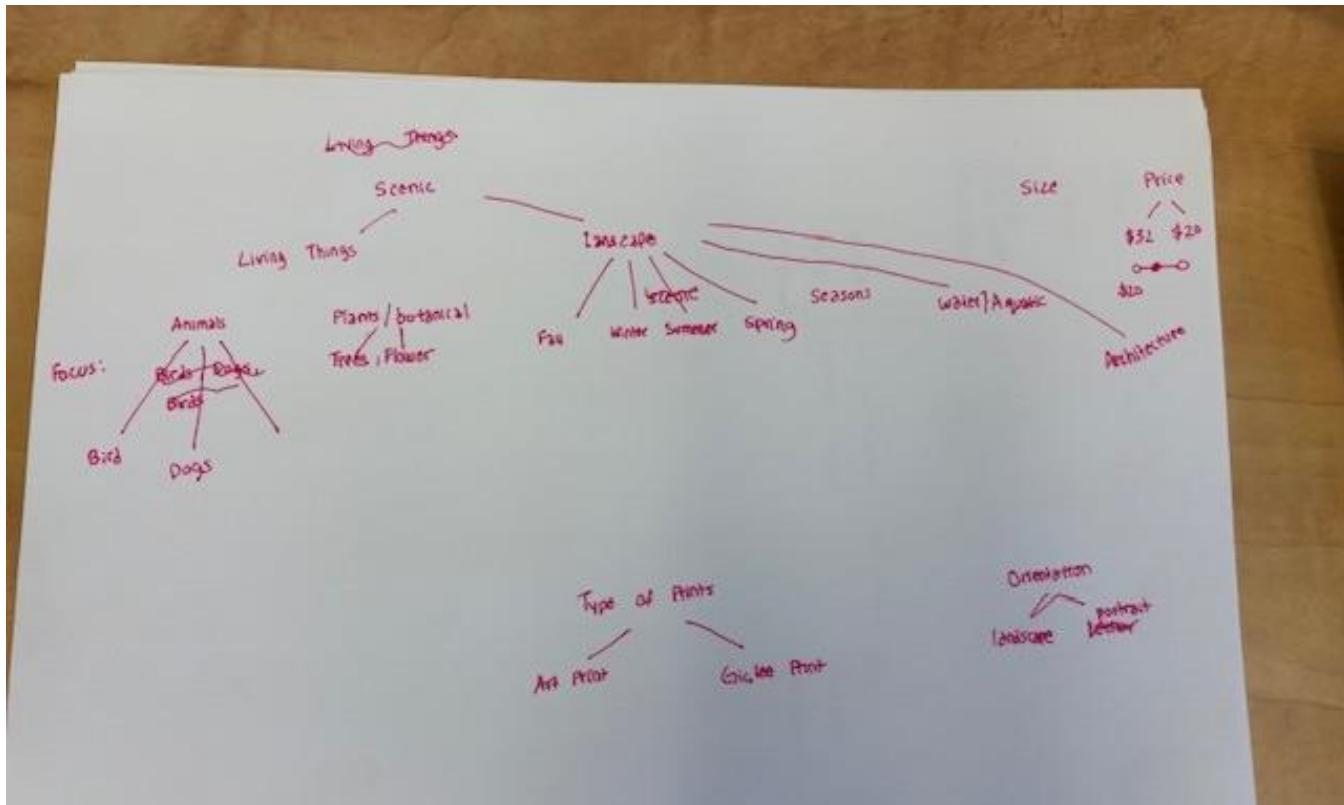
Hierarchical Taxonomy for subject

Hierarchical Taxonomy for perspective

Size and orientation combined into a hierarchy

(so orientation has to be repeated 3 times, under large, medium and small)

Attempted to cover subject matter
However, concepts are mixed; living things are under
scenic, but what about non-scenic bird pictures?



Art Categories

- Artist (by name of Artist)
 - ↳ Seascapes
 - ↳ Cityscapes
- Landscapes
 - ↳ Natural Landscapes
- Animals
- Art Styles
 - ↳ Realism
 - ↳ Abstract
 - ↳ etc...
- Price
 - ↳ High to Low
 - ↳ Low to High
- Size
 - ↳ 16" x 12"
 - ↳ 18" x 12"
 - ↳ 12" x 16"
 - ↳ Etc...

by Artist
↳ Van Gogh
↳ Claude Monet
...

Landscapes
↳ Seascapes
↳ Cityscapes
↳ Natural Landscapes
...

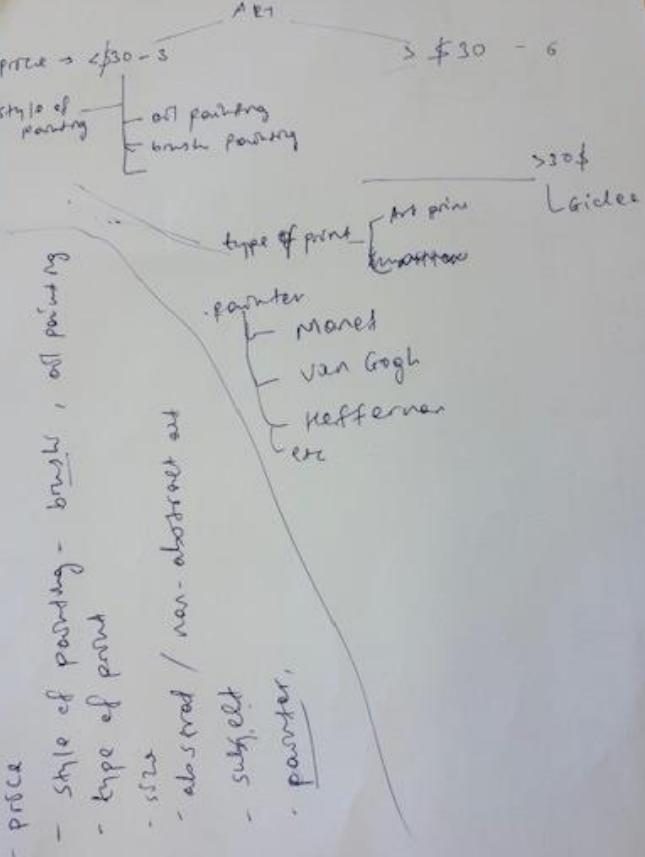
Art Styles
↳ Realism
↳ Abstract
...

Price
↳ Sort by High to Low
↳ Sort by Low to High
↳ Items on Sale

Size
↳ 16" x 12"
↳ 18" x 12"
↳ 12" x 16"
↳ etc.

Very clean
hierarchical faceted
organization

Still missing some
subjects like trees
and metadata like
print type



A mixture of organizations with some facets and some mixed hierarchy

THESE CHALLENGES CAN BE MET WITH WELL-DESIGNED HIERARCHICAL FACETED METADATA

- The key is to be able to mix from many different hierarchically-organized attributes
- Say I want to see seascapes with pine trees in them that are romantic style, in acrylic, cost less than \$100, silver print, and with blue and red colors in them
- Well-designed hierarchical facets can allow me
 - *Media > Paint > Acrylic*
 - *Style > Romantic*
 - *Subject > Nature > Trees > Pine Trees*
 - *Subject > Nature > Sea/Ocean*
 - *Color > Red*
 - *Color > Blue*
 - *Price > 50 - 100*

Subject matter is often the hardest part because it is huge!

HOMEWORK EXERCISE

- Three different questions
- Question 3 shows some images and asks you to first make a hierarchical taxonomy and then make a faceted category system

NEXT WEEK

- Information Architecture and Categories
- Ontologies
- Overlapping categories / clusters