Create Microthesauri and other datasets from the Getty LOD Vocabularies

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Slides will be available at
http://www.getty.edu/research/tools/vocabularies/training.html

Microthesaurus: designated subset of a thesaurus that is capable of functioning as a complete thesaurus.

-- ISO25964-2:2013
The needs of controlled vocabularies in the Semantic Web era

Using Art & Architecture Thesaurus (AAT) as an example

Situation:

- No controlled values \(\rightarrow\) controlled
  - Need to populate controlled vocab in dataset
    - Build new vocab based on AAT

- Controlled, but local \(\rightarrow\) standard or popular vocab
  - Need to map to standard vocab
    - Map to selected parts of AAT

- Controlled, standard vocab, but not on LOD
  - Need to have a LOD vocabulary (with URIs)
    - Export RDF data using AAT LOD for data values
Situations and decisions for a digital collection

Using AAT as an example
Looking into the structure of the AAT

<table>
<thead>
<tr>
<th>ID: 300198841</th>
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<tbody>
<tr>
<td><strong>rhyta</strong> (drinking vessels, &lt;vessels for serving and consuming food&gt;, ... Furnishings and Equipment (hierarchy name))</td>
</tr>
</tbody>
</table>

**Note:** Vessels from Ancient Greece, eastern Europe, or the Middle East that were typically made as a closed form with two openings, one at the top for filling and one at the base so that liquid could stream out. They are often in the shape of a horn or an animal's head, and were typically used as a drinking cup or for pouring wine into another vessel. Drinking was done by holding the rhyton above the drinker's head and catching the stream of liquid in the mouth.

**Terms:**
- **rhyta** (preferred, C,U,C,English-P,D,U,PN) (Greek,transliterated-P,D,U,PN) (Spanish,U,F,U,PN) (French,P,D,U,PN) (German,P,D,U,PN) (Italian,P,D,U,PN) (Chinese,P,D,U,PN) (Japanese,P,D,U,PN) (Russian,P,D,U,PN) (Portuguese,P,D,U,PN) (Hebrew,P,D,U,PN) (Arabic,P,D,U,PN) (Pinyin,P,D,U,PN)
- *Facet/Hierarchy Code: V.TQ*
- *Hierarchical Position: Objects Facet: Furnishings and Equipment (hierarchy name) (G) Containers (hierarchy name) (G) Containers (receptacles) (G) Containers by function or context (G) Culinary containers (G) Vessels for serving and consuming food (G) Drinking vessels (G) rhyta (G) *

Top of the AAT hierarchies

- Objects Facet
- Furnishings and Equipment (hierarchy name)
- Containers (hierarchy name)
- Containers (receptacles)
- Containers by function or context
- Culinary containers
- Vessels for serving and consuming food
- Drinking vessels
- rhyta

http://www.getty.edu/vow/AATFullDisplay?find=rhyta&logic=AND&note=&english=N&prev_page=1&subjectId=300198841
Facet: Objects

Hierarchy: Furnishing and Equipment

Concept: containers (receptacles)

Guide term: <containers by form>

concept: vessels (containers)

concept: rhyta
The units (facets, hierarchies) were recommended to be used e.g., by the **Canadian Heritage Information Network (CHIN)**
The units (facets, hierarchies) were recommended to be used.
Demo 1.
Use a <Guide Term> to obtain all concept URIs and preferred terms in the hierarchies (for a microthesaurus or a pick list)

Microthesaurus: designated subset of a thesaurus that is capable of functioning as a complete thesaurus.

-- ISO25964-2:2013
1. Go to AAT site http://www.getty.edu/research/tools/vocabularies/aat/
2. Choose Browse the AAT hierarchies

3. Explore one of the facet, all the way down, and see how far you could go.
Steps:
1. Choose a facet or a hierarchy from AAT...
2. Get the ID of it.
   (I chose <Object genres by function>,
   Click to open this entry’s page, and
   Got its ID 300117143)
3. Go to the SPARQL Endpoint →
Steps:
3. Go to Getty Vocab LOD SPARQL Endpoint: [http://vocab.getty.edu/sparql](http://vocab.getty.edu/sparql)
4. Choose ‘Queries’.

![SPARQL endpoint screenshot](image1.png)

---

2.2 Descendants of a Given Parent

Let's look for AAT descendants of 300194567 "drinking vessels". This finds "rhyta" and other interesting records, including "Fichtelgebirgehumpen":

```
select * {?x gvp:broaderExtended aat:300194567; skos:inScheme aat: ;
gvp:prefLabelGVP/kl:literalForm ?1}
```
Steps:
5. Choose "Descendants of a Given Parent" from the template, click.
   → Now, the template's text will show on the right.
6. Click ‘SPARQL’ to get the query text up.
Steps
7. Replace the ID 30017143 (= <Object genres by function>) in the Query template. [you may modify to add more requests if you know how.]
8. Submit
It gave me the results in two seconds.

Steps:
9. Download the datasets in a selected format.
What did I get?
--The URIs for every concept in this <object genres by function> family.
Additional: Can I sort the results?
-- Yes, go back to the template, just add `order by ?l` or `order by ?x`.

E.g., sort by AAT ID (x):
`order by ?x`.

E.g., sort by AAT label (l):
`order by ?l`.

**Sparql Query:**
```
select *
where {
  ?x gvp:broadereExtended aat:300117143; skos:inScheme aat: ;
gvp:prefLabelGVP/xl:literalForm ?l}
order by ?x
```
Demo 2.
Download the datasets for

300212133
<costume by function>
I got the dataset, sorted by AAT label (l), now, download the csv file.
Open the CSV file from spreadsheet on my laptop

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>x</td>
<td>300212133 &lt;costume by function&gt;</td>
</tr>
<tr>
<td>300210822 armor by form</td>
<td></td>
</tr>
<tr>
<td>300210823 armor by function</td>
<td></td>
</tr>
<tr>
<td>300224810 armor by function</td>
<td></td>
</tr>
<tr>
<td>300212546 body armor for hand and forearm</td>
<td></td>
</tr>
<tr>
<td>300205386 body armor for lower extremities</td>
<td></td>
</tr>
<tr>
<td>300205385 body armor for neck and head</td>
<td></td>
</tr>
<tr>
<td>300212545 body armor for the head</td>
<td></td>
</tr>
<tr>
<td>300205388 body armor for torso</td>
<td></td>
</tr>
<tr>
<td>300210829 body armor for upper extremities</td>
<td></td>
</tr>
<tr>
<td>300209268 &lt;underwear and accessories for shaping and supporting&gt;</td>
<td></td>
</tr>
<tr>
<td>300213522 Attic helmets</td>
<td></td>
</tr>
<tr>
<td>300216950 Balmorals (petticoats)</td>
<td></td>
</tr>
<tr>
<td>300262593 Bifwebe</td>
<td></td>
</tr>
<tr>
<td>300213531 Corinthian helmets</td>
<td></td>
</tr>
<tr>
<td>300213534 Illyrian helmets</td>
<td></td>
</tr>
<tr>
<td>300256778 Newmarket coats</td>
<td></td>
</tr>
<tr>
<td>300224862 Poldermittons</td>
<td></td>
</tr>
<tr>
<td>300224863 Rennhälte</td>
<td></td>
</tr>
<tr>
<td>300210834 Rennzeuge</td>
<td></td>
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<tr>
<td>300224865 Spangenhelme</td>
<td></td>
</tr>
<tr>
<td>300395594 Stahlhelm</td>
<td></td>
</tr>
<tr>
<td>300210833 Stechzeuge</td>
<td></td>
</tr>
<tr>
<td>300265060 academic helmens</td>
<td></td>
</tr>
<tr>
<td>3002650060 academic costumes</td>
<td></td>
</tr>
<tr>
<td>300404137 academic robes</td>
<td></td>
</tr>
<tr>
<td>300298733 adargas</td>
<td></td>
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<tr>
<td>300224228 afternoon dress</td>
<td></td>
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<tr>
<td>300226822 aketons</td>
<td></td>
</tr>
<tr>
<td>300210415 albs</td>
<td></td>
</tr>
<tr>
<td>300210416 almuses (hoods)</td>
<td></td>
</tr>
<tr>
<td>300210417 amices</td>
<td></td>
</tr>
<tr>
<td>300228304 animes (cuirasses)</td>
<td></td>
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<tr>
<td>30046131 aprons (protective wear)</td>
<td></td>
</tr>
<tr>
<td>300298894 armor alla romana</td>
<td></td>
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<tr>
<td>300197059 armor components</td>
<td></td>
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<tr>
<td>300241516 armor groupings</td>
<td></td>
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<tr>
<td>300213474 aspex</td>
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<tr>
<td>30036756 aventails</td>
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<tr>
<td>30036752 backplates (body armor)</td>
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<tr>
<td>30026707 armata</td>
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</tbody>
</table>
If I want to get data for each concept in this family…

300212133
<costume by function>
1. Download any format;
2. Convert to CSV;
3. Open from my spreadsheet.

---

<table>
<thead>
<tr>
<th>Subject/value</th>
<th>Predicate/type</th>
<th>Predicate/value</th>
<th>Object/type</th>
<th>Object/value</th>
<th>Object/xml:lang</th>
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</tbody>
</table>
1. Choose the facet or hierarchy you like to start;
2. Find the ID of that concept.
3. Use this template to get the URIs and labels:

```
select * {?x gvp:broadерExtended aat: 300194567; skos:inScheme aat: ; gvp:prefLabelGVP/xl:literalForm ?l}
order by ?x
```

- Replace the ID in the Query template
- Submit
- Get the URIs and labels in under this guide term.
- Sort by order (column x)

4. Use a tool that can treat CSV (or convert from JSON to CSV) to view and manage.
5. Extend from these URIs to get dataset for any concept.
6. Use other queries to get different datasets.
You can
• make a microthesaurus based on a facet, hierarchy, or sub-facets

You can
• use a microthesaurus

You can
• map to a microthesaurus
Could a LOD KOS dataset be considered

- as a knowledge base?
- as the foundation of a network analysis?
- as the building blocks of a framework

For Researchers
Demo 3. Using TGN

*Getty Thesaurus of Geographic Names*

1. Go to [http://vocab.getty.edu/queries](http://vocab.getty.edu/queries)
   - Refresh the query website
2. Find **section 4. TGN-specific queries**

**Demo: Look for castles around The Netherlands**

(within the boundary of 50.787185 3.389722 53.542265 7.169019)
TGN-Specific Queries

4.1 Places by Type
4.2 Places, with English or GVP Label
4.3 Places by Direct and Hierarchical Type
4.4 Breakdown of Sovereign States by Type
4.5 Inhabited Places That Were Sovereign States
4.6 Places by Type and Parent Place
4.7 Places by Type, with placeTypePreferred
4.8 Places by Triple FTS
4.9 Places by FTS Parents
4.10 Capitals by Association
4.11 Members of the European Union
4.12 Members of the United Nations
4.13 Geo Chart with sgvizler
4.14 Column Chart with sgvizler
4.15 Countries and Capitals By Type and Containment
4.16 Places by Coordinate Bounding Box
4.17 Places Within Bounding Box
4.18 Places by Type Within Bounding Box
4.19 Places Outside Bounding Box (Overseas Possessions)
4.20 Places Nearby Each Other

http://vocab.getty.edu/queries#Top-level_Subjects

SELECT ?place WHERE {
}

Browse the examples of queries

You can obtaining special RDF graphs or datasets for very complicated questions, and revealing unknown relationships
Steps: \[ \text{http://vocab.getty.edu/} \Rightarrow \text{Queries} \]

1. go to 4.18,
2. click on that SPARQL sign for 4.18,
3. submit. Note: Since this is a complicated query, it will run a few seconds.

**Query: Look for castles around The Netherlands**
(within the boundary of 50.787185 3.389722 53.542265 7.169019)

```
prefix ontogeo: <http://www.ontotext.com/owlim/geo#>
select distinct * {
  ?place skos:inScheme tgn: ;
  gvp:placeType|\(\text{gvp:placeType/gvp:broadereGenericExtended}) [rdfs:label "castles (fortificfoaf:focus [ontogeo:within(50.787185 3.389722 53.542265 7.169019]);
gvp:prefLabelGVP [xl:literalForm ?name];
gvp:parentString ?parents}]
```
E.g., Look for **castles around The Netherlands**

4. Download the datasets in a selected format.

5. Additional:
   - (5) Click on any castle’s ID, (6) open the single data record for this concept. Download the dataset as you wish.

6. (7) You may click on the Website to see its normal html view.
Another example: Look for caves on or around the Silk Road. Caves within bounding box (24.75083 28.95778 43.80722 108.92861)
Query a specific place type (e.g., caves) in a geographic boundary

Got the results & downloadable datasets:

caves within (24.75083 28.95778 43.80722 108.92861)
Demo 4. Using ULAN

Union List of Artist Names

1. You may go to ULAN to find the ID of someone you want to search for.  
   http://www.getty.edu/research/tools/vocabularies/ulan/

2. We will be at the same query templates page  
   http://vocab.getty.edu/queries .  
   – Refresh the query website

3. Find section 5. ULAN-specific queries

Demo: Find associative relationships of ulan:500020307 Wright, Frank Lloyd  
(American architect, 1867-1959); showing relationship type, associated persons, each person’s preferred name, preferred display biography, and other notes.
http://www.getty.edu/research/tools/vocabularies/ulan

From ULAN, find the ID of someone you want to search for.
Go to the same query templates page
http://vocab.getty.edu/queries

Find the section for ULAN.
➢ There are many interesting query examples.
Steps: (1) go to 5.2; (2) click on that SPARQL sign for 5.2; (3) replace the ID of the person you want to find. Note there are two IDs to replace. (4) Submit.

Query: Find associative relationships of urln:500020307 Wright, Frank Lloyd (American architect, 1867-1959); showing relationship type, associated persons, each person’s preferred name, preferred display biography, and other notes.
Results: associative relationships of ulan: 500020307 Wright, Frank Lloyd

<table>
<thead>
<tr>
<th>rel</th>
<th>x</th>
<th>name</th>
<th>bio</th>
<th>comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>gvp:ulan1000_related_to</td>
<td>ulan:500077136</td>
<td>Sullivan, Francis</td>
<td>Canadian architect and draftsman, 1882-1929</td>
<td>-</td>
</tr>
<tr>
<td>gvp:ulan1101_teacher_of</td>
<td>ulan:500125903</td>
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(5) Download the datasets in a selected format.
Summary: Follow the demos to obtain your datasets

- **Demo 1.** Use a <Guide Term> to obtain all concept URIs and preferred terms in the hierarchies (for a microthesaurus or a pick list), e.g., for <Object genres by function> (AAT ID 300117143)
- **Demo 2.** Download the datasets for <costume by function> (AAT ID 300212133)
- **Demo 3.** Use TGN to obtaining special RDF graphs or datasets for very complicated questions, e.g., castles around The Netherlands (within the boundary of 50.787185 3.389722 53.542265 7.169019)
- **Demo 4.** Use ULAN to find associative relationships of ulan:500020307 Wright, Frank Lloyd (American architect, 1867-1959); showing relationship type, associated persons, each person’s preferred name, preferred display biography, and other notes.
How to learn more about Linked Data?

Go to: http://explore.dublincore.net/
LD4PE Products

1. Competency Index
   - Four-levels of granularity (Topic Cluster, Topic, Competency, Benchmark)
   - Modeled after Achievement Standards Network (ASN)

2. Resource Description Tool
   - Resources are Indexed at the Topic and Competency Level
   - Saved to triple store connected to Word Press site

3. Exploring Linked Data - a Website
   - Browse Competency index
   - Search for Resources
     - By Competency
     - By Keyword
   - Saved Sets of Resources
   - Learning Trajectory Maps

http://explore.dublincore.net/
Create Microthesauri and other datasets from the Getty LOD Vocabularies

Marcia Lei Zeng
mzeng@kent.edu

Museums and the Web 2017 Conference
Cleveland, OH, 2017-04

Question?