



# Methodological Considerations for Developing the *Art & Architecture Thesaurus* in Chinese and its Applications

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# AAT in Chinese Language

Developed by the Academia Sinica Center for Digital Cultures (ASCDC) of Taiwan

<http://aat.teldap.tw/>

# ITWG

The International Terminology Working Group



- Academia Sinica Center for Digital Cultures, **Taiwan (Chinese)**
- Institute for Art History, **Netherlands (Dutch)**
- State Museums of Berlin and Institute for Museum Research, **Germany (German)**
- Center for Documentation of Cultural Heritage, **Chile (Spanish)**

## Pre-ITWG Meeting

1. 2008.07
2. 2009.07

## ITWG Meeting

1. 2010.08
2. 2011.11
3. 2012.01
4. 2013.01

5. 2014.09
6. 2016.08
7. 2017.08
8. 2019.02
9. 2020.02

# AAT as a Knowledge Tree

- AAT is a multilingual and hierarchical thesaurus structured in 7 facets and 21 hierarchies
- Current totals: 57,500 records (2016)
- Includes generic terms to describe art, architecture, design, artifacts, archival materials, archaeology, visual surrogates and other material culture



AAT

Expand

Facets and Hierarchies	
ASSOCIATED CONCEPTS FACET (關聯概念 層面)	
	Associated Concepts (關聯概念)
PHYSICAL ATTRIBUTES FACET (物理特質 層面)	
	Attributes and Properties (特質與屬性)
	Conditions and Effects (情況與作用)
	Design Elements (設計元素)
	Color (色彩)
STYLES AND PERIODS FACET (風格與時代 層面)	
	Styles and Periods (風格與時代)
AGENTS FACET (代理者 層面)	
	People (個體與群體)
	Organizations (組織)
	Living Organisms (活體有機體)
ACTIVITIES FACET (活動 層面)	
	Disciplines (學科)
	Functions (功能)
	Events (事件)
	Physical and Mental Activities (身體與心智活動)
	Processes and Techniques (過程與技術)
MATERIALS FACET (材料 層面)	
	Materials (材料)
OBJECTS FACET (物件 層面)	
	Built Environment (建築環境)
	Components (組件)
	Furnishings and Equipment (裝飾與設備)
	Object Genres (物件類型)
	Object Groupings and Systems (物件群集與系統)
	Visual and Verbal Communication (視覺及語言傳達)

學院藝術  
academic  
arts

玫瑰色  
rose (color)

昭和  
Showa

玫瑰  
roses

油畫 (技術)  
oil paintings  
(technique)

畫布  
canvas

靜物畫  
still lifes

**Rose**  
Paintings and  
Documents of  
Chen Zhi-chi/  
Showa

玫瑰/ 陳植棋畫作與文書  
/ 日本昭和



玫瑰 (1927)。選自：  
《數位典藏與數位學習聯合目錄》

<https://catalog.digitalarchives.tw/item/00/7f/86/b1.html>

# Record types in AAT: Concept

ID: 300015638  
Page Link: <http://vocab.getty.edu/page/aat/300015638>  
Record Type: [concept](#)

**(1)** still lifes (works by subject type>, visual works (works), ... Visual and Verbal Communication (hierarchy name))

**(2)** **Note:** Images in which the focus is a depiction of inanimate objects, as distinguished from art in which subjects are subsidiary elements in a composition. The term is generally applied to depictions of fruit, flowers, meat, game, vessels, eating utensils, and other objects, including skulls, candles, and hourglasses, typically arranged on a table. Such images were known since the time of ancient Greece and Rome; however, the subject was exploited by some 16th-century Italian painters, and was highly developed in 17th-century Dutch painting, where the qualities of form, color, texture, and composition were valued, and the images were intended to relay allegorical messages. The subject is generally seen in oil paintings, though it can also be found in mosaics, watercolors, prints, collages, and photographs. The term originally included paintings in which the focus was on living animals at rest, although such depictions would now be called "animal paintings."

**Terms:**

still lifes ([preferred](#), C,U,I,C,English-P,D,U,PN) **(3)**  
still life (C,U,English,AD,U,SN)  
still-life (C,U,English,AD,U,SN)  
still lives (C,U,English,UF,U,N)  
still-lifes (C,U,English,UF,U,N)  
bodegones (still lifes) (C,U,English,UF,U,N)  
(still lifes) (Spanish,UF,U,N)  
靜物畫 (C,U,Chinese (traditional)-P,D,U,U)  
靜物 (C,U,Chinese (traditional),UF,U,U)  
jǐng wù huà (C,U,Chinese (transliterated Hanyu Pinyin)-P,UF,U,U)  
jǐng wù huà (C,U,Chinese (transliterated Pinyin without tones)-P,UF,U,U)  
ching wu hua (C,U,Chinese (transliterated Wade-Giles)-P,UF,U,U)  
stillevens (C,U,Dutch-P,D,U,PN)  
stilleven (C,U,Dutch,AD,U,PN)  
nature morte (C,U,French-P,D,U,PN)  
(Italian,UF,U,N)  
Still-Leben (visuelles Werk) (C,U,German,D,B)  
Stilleben (visuelles Werk) (C,U,German-P,AD,B)  
Stilleben (C,U,German,UF,U,PN)  
natura morta (C,U,Italian-P,D,U,PN)  
naturaleza muerta (C,U,Spanish-P,D,U,PN)  
naturalezas muertas (C,U,Spanish,AD,U,PN)  
bodegón (still life) (C,U,Spanish,UF,U,N)  
cuadro de comedor (C,U,Spanish,UF,U,N)  
bodegoncillos (H,U,Spanish,UF,U,N)  
bodegóne (still lifes) (H,U,English,UF,U,N)  
bodegone (still lifes) (H,U,English,UF,U,N)  
bodegones (still lifes) (H,U,English,UF,U,N)  
nature mortes (H,U,English,UF,U,N)  
nature reposée (H,U,French,UF,U,N)  
still-leven (H,U,English,UF,U,N)

**Indication of term's historical usage**

..... in use from ca. 1650  
..... used from the mid-18th century  
..... in use from the early 19th century  
..... in use by the early 18th century in Spain to refer to still lifes without figures  
..... from the Spanish term  
..... from the Spanish term  
..... from the Spanish term  
..... early 18th-century French term  
..... an English spelling of the word derived from Dutch; not often used now

Facet/Hierarchy Code: [V,VF](#)

**(4)** Hierarchical Position:

Objects Facet  
.... Visual and Verbal Communication (hierarchy name) (G)  
..... Visual Works (hierarchy name) (G)  
..... visual works (works) (G)  
..... <visual works by subject type> (G)  
..... still lifes (G)

**Additional Notes:**

**Chinese (traditional)** ..... 主要是描繪無生命之物件的圖像，其與這類物件在構圖中是屬於附帶構成元素的藝術不同。一般來說，此一詞彙適用於水果、花卉、肉類或已被射殺的獵物、器皿、餐具及其他包括頭骨、蠟燭、沙漏等典型而言是放置於桌上之物件的描繪。這類圖像自從古希臘和羅馬時代即為人所知；然而，此一主題是由西元十六世紀的義大利畫家所開發出來，並且高度發展於西元十七世紀間的荷蘭繪畫中，其形式、色彩、結構及構圖的品質深受重視，且圖像本身也深富寓意性訊息。此一主題常見於油畫中，不過也可見於馬賽克、水彩畫、版畫、拼貼及相片。此一詞彙原本包括主要是靜止之活生生動物的繪畫，即使這類描繪現在已經被稱為「動物繪畫」。

**Dutch** ..... Afbeeldingen waarin de nadruk ligt op de weergave van levenloze voorwerpen, in tegenstelling tot kunst waarin zulke voorwerpen ondergeschikte elementen in een compositie zijn. De term wordt in het algemeen gebruikt voor voorstellingen van vruchten, bloemen, vlees of dode prooidieren, kruiken, eetgerei en andere voorwerpen, waaronder ook schedels, kandelaars en zandlopers, op bepaalde wijze gerangschikt op een tafel. Zulke afbeeldingen zijn bekend sinds de tijd van de oude Grieken en Romeinen, maar het onderwerp werd pas uitgewerkt door enkele 16de-eeuwse Italiaanse schilders en in hoge mate verfijnd in de 17de-eeuwse Nederlandse schilderkunst waar de kenmerken van vorm, kleur, materiaal en compositie werden gewaardeerd en de beelden vooral werden gebruikt om een allegorische boodschap over te brengen. Stillevens worden vooral aangetroffen in olieverfschilderingen, maar ook in mozaïeken, aquarellen, prenten, collages en foto's. De term omvatte oorspronkelijk ook schilderijen waarbij de nadruk lag op rustende levende dieren, maar zulke afbeeldingen worden nu 'dierenschilderingen'.

**Related concepts:**

distinguished from .... [animal art](#) (animal art, <visual works by subject type>, ... Visual and Verbal Communication (hierarchy name)) [300263554]  
involves .... [trompe-l'oeil](#) (illusionism, <visual and representational concepts>, ... Associated Concepts (hierarchy name)) [300056506]  
meaning/usage overlaps with .... [bodegones \(genre works\)](#) (genre pictures, <visual works by subject type>, ... Visual and Verbal Communication)

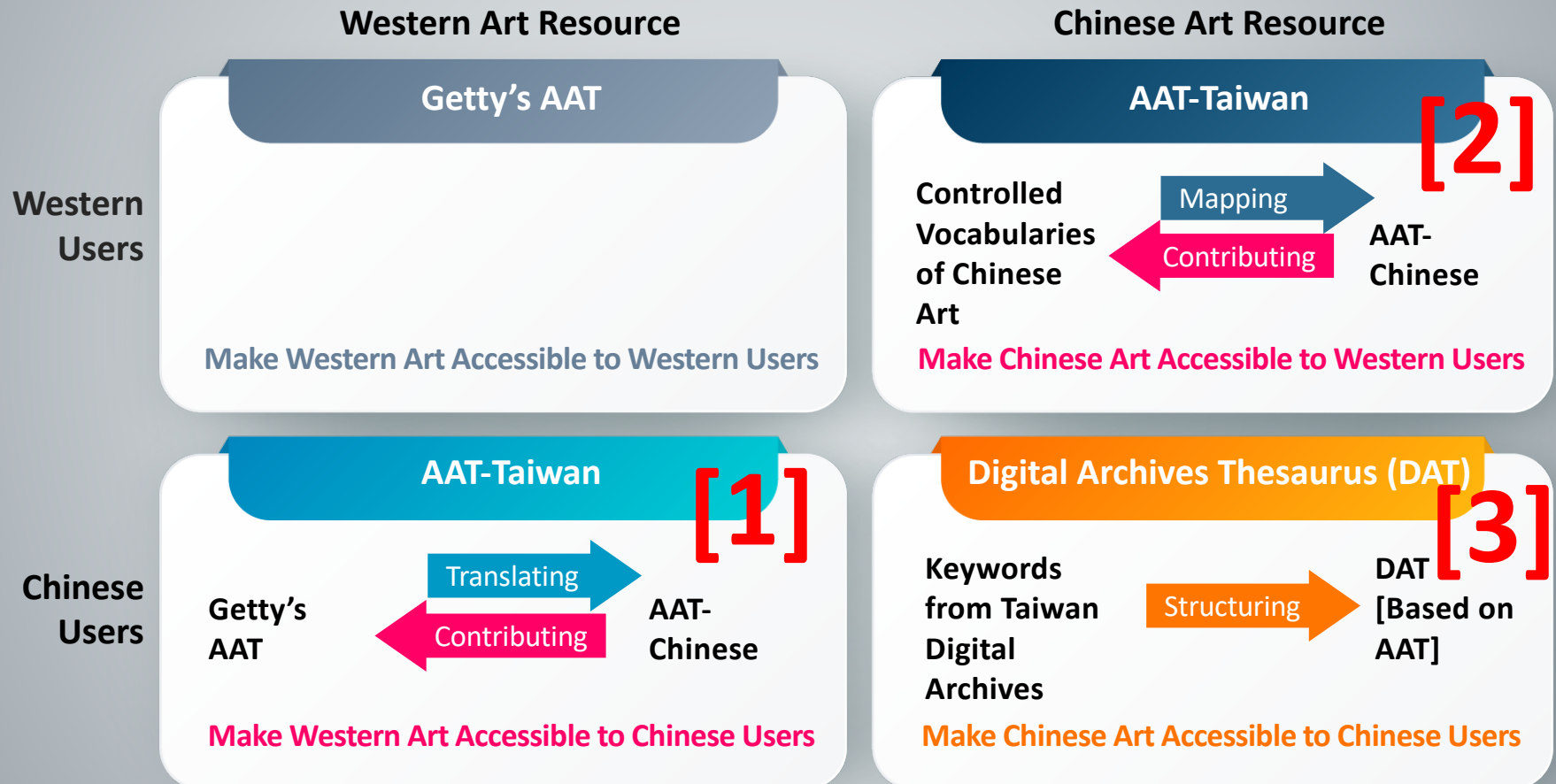
**Sources and Contributors:**

靜物畫 ..... [AS-Academia Sinica] [Preferred](#)  
..... 大英百科全書線上繁體中文版  
..... 智識城百科全書網 September 1  
..... 牛津當代大辭典 1807  
..... 藝術名詞與技法辭典 300, 437  
靜物 ..... [AS-Academia Sinica]  
..... 大英漢學藝術百科全書 Vol. 9, 191  
..... 雄獅西洋美術辭典 973, 974  
bodegón (still life) ..... [CDBP-SNPC, [VP](#), [Bazin](#), [Barroco y Lucie-Smith](#), [Dic](#), [Tesouro de Arte](#), [VP](#)]  
bodegoncillos ..... [VP]  
..... [Jordan](#), [Spanish Still Life \(1985\)](#) 17

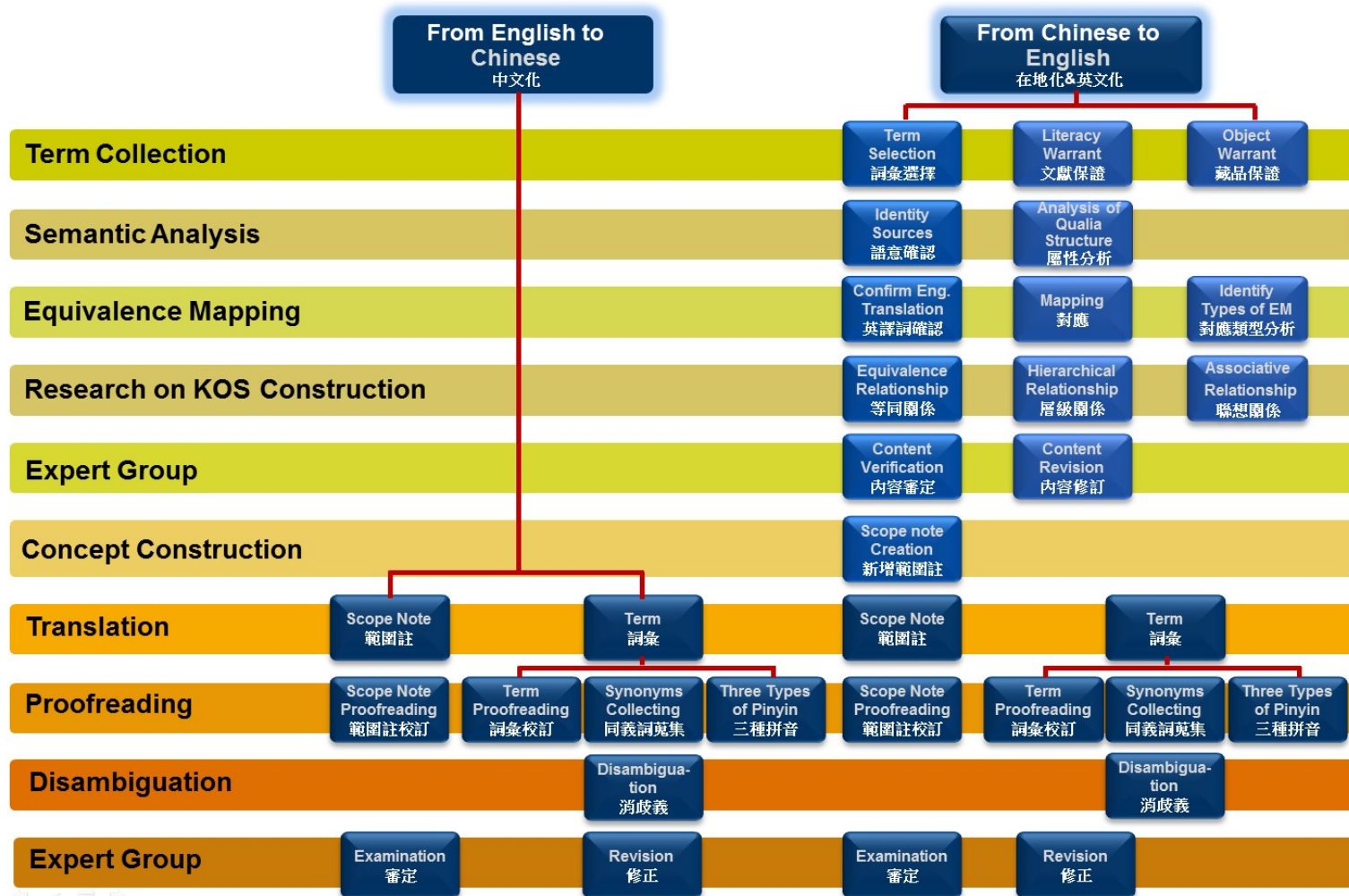
**Core information in AAT concept**

- (1) Preferred name
- (2) Scope note
- (3) Equivalence Relationships
- (4) Hierarchical Relationships
- (5) Associative Relationships
- (6) Sources of concept term

# Chinese-Traditional Version of AAT: The Purpose



# Working Model of AAT-Taiwan



# **From English to Chinese**

**Make Western Art Accessible to  
Chinese Users**

詞彙  查詢  
AND OR  
範圍註  [清空]

編號：300015637 詞彙類型：概念

## 肖像畫 portraits



Add on Loc

### 範圍註：

真實人物的畫像，用來繪錄一個已知或假設的外觀。若要查詢

### 詞彙：

肖像畫 (P,,U,繁體中文-偏好,D,U,U)

肖像 (,U,繁體中文-非偏好,UF,U,U)

hsiao hsiang hua (P,,U,韋氏拼音-偏好,UF,U,U)

xiào xiàng huà (P,,U,漢語拼音-偏好,UF,U,U)

xiao xiang hua (P,,U,漢語拼音(無聲調)-偏好,UF,U,U)

portraits (P,,U,英文-偏好,D,U,PN)

### 層級架構：

- 藝術與建築詞典根目錄
- 物件層面
- 視覺及語言傳達
- 視覺作品 (層級名)
- <視覺作品 (先導詞)>
- <依主題類型區分之視覺作品>
- 肖像畫

### 相關概念：

distinguished from....形象畫(畫像)

### 其他範圍註：

英文.... Representations of real individuals that are intended to capture a known or supposed likeness, usually including the face of the person. For representations intended to be anonymous, or of fictional or mythological characters, see "figures (representations)."

荷蘭語.... Voorstellingen van personen; gebruik 'figuren (voorstellingen)' voor voorstellingen van denkbeeldige of mythologische figuren.

西班牙語.... Representaciones de individuos reales que tienen el propósito de capturar una similitud conocida o (representación)".

### 外部連結：

Getty AAT: 300015637

聯合目錄： 肖像畫 、 肖像 、 hsiao hsiang hua 、 xiào xiàng huà 、 xiao xiang hua 、 portraits 、 portrait 、 portraiture 、 Porträt 、 portretten 、 portret 、 portrait 、 ritratti 、 ritratto 、 porträtt 、 retratos 、 retrato 、 retrato de cuerpo entero 、 retrato individual

### 引用：

[肖像畫 portraits(編號300015637)]。《藝術與建築索引典》。  
<http://aat.teldap.tw/AATFullDisplay/300015637> (2018/06/10瀏覽)。

權  
聯合目

712

is (1986)

LOSEX

# From Chinese to English

**Make Chinese Art  
Accessible to Western  
Users**



# Conceptual Mapping of the NPM Terms to AAT

- The study takes a total of 2100 Chinese controlled vocabulary terms from the National Palace Museum in Taiwan, and a total of 35,314 English concepts of AAT, and performing semantic mapping between Chinese and English terms. The study asked research questions including:
  - A. To what degree of semantic interoperability can be achieved between the two controlled vocabularies?
  - B. What patterns of interoperability are involved in the field of Chinese art in the bilingual conceptual structure?

Example of mapping sheet between NPM and AAT terms

	A	B	C	D	E	F
1	NPM id	NPM Term	AAT id	Mapped Terms in AAT	AAT Facet	AAT Hierarchy
2	P01001	書法	300266660	calligraphy (visual works) (G)	V	V.VC
3	P01002	繪畫	300033618	paintings (visual works) (G)	V	V.VC
4	P01003	繡絲	300227844	kesi (G)	M	M.MT
5	P01004	刺繡	300264024	embroidery (visual works) (G)	V	V.VC
6	P01007	刺繡	300103035	rubbings (visual works) (G)	V	V.VC
7	P02001	白描	300106458	Bai miao (G)	F	F.FL
8	P02002	工筆	300310140	gongbi (G)	K	K.KT
9	P02003	寫意	300310141	xieyi (G)	K	K.KT
10	P02005	沒骨	300310139	boneless	K	K.KT
11	P02007	指畫	300033706	finger paintings (visual works) (G)	V	V.VC
12	P02008	油畫	300033799	oil paintings (visual works) (G)	V	V.VC
13	P03012	山徑	300000626	trails (recreation areas) (G)	V	V.RG
14	P03017	瀑布	300008736	waterfalls (natural bodies of water) (G)	V	V.RD
15	P03018	雲	300343840	clouds (G)	B	B.BM
16	P03019	田疇	300008632	farmland (G)	V	V.RD
17	P03020	煙、霧	300055374	fog (G)	B	B.BM
18	P03021	石壁、峭壁	300008749	cliffs (G)	V	V.RD
19	P03022	岩洞	300008746	caves (G)	V	V.RD
20	P03023	島嶼	300008791	islands (G)	V	V.RD
21	P04001	帝王	300025480	emperors (G)	H	H.HG
22	P04002	聖賢	300150555	saints (G)	H	H.HG
23	P04004	官員(臣)	300025457	public officers (G)	H	H.HG
24	P04007	仕女	300375129	gentlewomen (G)	H	H.HG
25	P04008	孩童	300025945	children (people by age group) (G)	H	H.HG
26	P04011	農夫	300025607	farmers (G)	H	H.HG
27	P04013	樵夫	300025610	loggers (G)	H	H.HG
28	P04016	國人	300136457	horse breeders (G)	H	H.HG
29	P04017	商販	300025245	merchants (G)	H	H.HG
30	P04018	貨郎	300025250	peddlers	H	H.HG
31	P04019	行旅	300025879	travelers (G)	H	H.HG
32	P04022	獵人	300025619	hunters (people) (G)	H	H.HG
33	P04023	樂隊	300205065	bands (ensembles) (G)	H	H.HG

# Results of Mapping Types Between NPM and AAT

Code	Mapping Type	Quantity (percentage)	Example
<b>BM</b>	Hierarchical (narrower to broader)	1327 ( 63.19% )	剔犀 (ti xi) <b>BM</b> lacquering (A12067)
<b>=EQ</b>	Exact simple equivalence	638 ( 30.38% )	仰韶文化 (yang shao wen hua) <b>=EQ</b> Yangshao (A02002)
<b>EQ  </b>	Cumulative compound equivalence	52 ( 2.48% )	塔(ta ) <b>EQ</b> pagodas   towers (A11331)
<b>~EQ</b>	Inexact simple equivalence	37 ( 1.76% )	后妃 (hou fei) <b>~EQ</b> empresses (P04003)
<b>EQ+</b>	Intersecting compound equivalence	33 ( 1.57% )	春景 (chun jing) <b>EQ</b> springs + scenes (P03001)
<b>NM</b>	Hierarchical (broader to narrower)	9 ( 0.43% )	玉石器 (yu shi qi) <b>NM</b> jades (objects) (A04004)
<b>RM</b>	Associative mapping	4 ( 0.19% )	臺閣 (tai ge) <b>RM</b> pavilions (P14002)
總計		2100 ( 100% )	

# Interoperability of Conceptual Structures for NPM in AAT



		Structures	
		Specific category in AAT	No specific category in AAT
Vocabularies	Completely covered in AAT	<b>Pattern 1</b> A02 考古學文化 ( 13 values ) Archaeological Culture A17 時代 ( 66 values ) Chinese Periods	
	Incomplete covered in AAT	<b>Pattern 2</b> A03 窯系 ( 19 values ) Chinese Ceramic Style	<b>Pattern 3</b> A08 釉色 ( 69 values ) Chinese Ceramic Glazes P02 中國繪畫技法 ( 34 values ) Techniques of Chinese Painting
	None covered in AAT		<b>Pattern 4</b> P17 傳說動物 ( 7 values ) fabulous Animals P18 中國節令 ( 8 values ) Chinese Festivals



## Conceptual structures for the Chinese art concepts covered in AAT - Four Patterns

1. The values listed in a unit of the NPM are completely covered by the corresponding AAT category.
2. The values listed in a unit in NPM are not completely covered by that AAT category.
3. The values in a unit in NPM are across in various places in AAT.
4. No specific category and equivalent concept in AAT for the Chinese art concepts.

# The *Concept* Issues

- Chinese-Specific Culture
  - Create a Whole Set of Terms (Chinese Scripts )
  - **Re-Group Terms (Chinese Bronze Vessels)**
  - Term Disambiguation (Chinese Festivals)
    - Lantern Festival
- Western-Specific Culture
  - The Loanword Principle
  - Term Disambiguation (Translated Terms)
    - Principle 1. Add Qualifiers to Chinese Terms (The same terms exist when translated to Chinese). Chinese qualifiers are added according to the priority rules below:
      - Upper contexts
      - Combination of multiple parent nodes
      - Extracted from scope note
    - Principle 2. Remove Qualifiers from Chinese Terms (Different terms exist when translated to Chinese.)
      - Chinese qualifiers are removed according to the elimination of homograph

# AAT has these 19 ritual vessels...

## Example: Chinese ritual bronzes (re-grouping)

Top of the AAT hierarchies  
 .... Objects Facet  
 ..... Furnishings and Equipment (Hierarchy Name)  
 ..... Containers (Hierarchy Name)  
 ..... containers (receptacles)  
 ..... <containers by function or context>  
 ..... ceremonial containers  
 ..... ritual vessels  
 ..... ding (ritual vessels)  
 ..... fang ding  
 ..... dou  
 ..... gu (ritual vessels)  
 ..... gui  
 ..... he (vessel)  
 ..... jia  
 ..... jian  
 ..... jiao  
 ..... jue  
 ..... lei  
 ..... pan (ritual vessels)  
 ..... pou  
 ..... xu  
 ..... yan (ritual vessels)  
 ..... yi (ritual vessels)  
 ..... you (lidded vessel)  
 ..... yu (basin-shaped vessels)  
 ..... zun

<Wine  
Vessels>

<Food  
Vessels>

<Water  
Vessels>

爵

jue (goblet)

角

jiao

罍

jia

盃

he

尊

zun

觚

gu

卣

you

罍

lei

甗

pou

鼎

ding (cauldron)

鬲

yan

簋

gui

盥

xu

豆

dou

方鼎

fang ding

盤

pan (basin)

匜

yi

鑑

jian

盂

yu

- Guide Term Suggestion: We could classify them into 3 groups based on their historical usages.

# Need to add 19 NEW Chinese Ritual Bronzes!

## <Wine Vessels>

勺



shao (ladle)

觥



gong

壺



hu

缶



fou

(金和)



he

觶



zhi

方彝



fang yi

盃



ho

## <Musical Instruments>

鐘



zhong (bell)

鈴



ling

鐸



duo

鐃



nao

鉦



zheng

鐃



bo

鐃于



chun yu

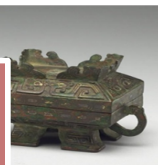
## <Food Vessels>

匕



bi (spoon)

簠



fu

敦



dun

鬲



li

Top of the AAT hierarchies  
 .... Objects Facet  
 ..... Furnishings and Equipment (Hierarchy Name)  
 ..... Containers (Hierarchy Name)  
 ..... containers (receptacles)  
 ..... <containers by function or context>  
 ..... ceremonial containers  
 ..... **ritual vessels**

### <Wine Vessels>

-----gu (ritual vessels)  
 -----he (vessel)  
 -----jia  
 -----jiao  
 -----jue  
 -----lei  
 -----pou  
 -----you (lidded vessel)  
 -----zun  
 -----fang yi  
 -----fou  
 -----gong  
 -----he  
 -----ho  
 -----hu  
 -----shao  
 -----zhi

### <Food Vessels>

-----ding (ritual vessels)  
 -----fang ding  
 -----dou  
 -----gui  
 -----xu  
 -----yan (ritual vessels)  
 -----bi  
 -----dun  
 -----fu  
 -----li

### <Water Vessels>

-----jian  
 -----pan (ritual vessels)  
 -----yi (ritual vessels)  
 -----yu (basin-shaped vessels)

## After completion... AAT will have 38 terms with classification

➤ Possible Hierarchical Position for Chinese Bronze Vessels- Musical Instruments

Top of the AAT hierarchies  
 .... Objects Facet  
 ..... Furnishings and Equipment (Hierarchy Name)  
 ..... Sound Devices (Hierarchy Name)  
 ..... sound devices (equipment)  
 ..... <sound devices by function>  
 ..... **ceremonial sound devices**  
 ..... atumpans [N]  
 ..... bembes (double-headed drums) [N]  
 ..... dotaku [N]  
 ..... double gongs [N]  
 ..... gavels (ceremonial mallets) [N]  
 ..... kakakis [N]  
 ..... striking blocks [N]

### <Musical Instruments>

-----bo  
 -----chun yu  
 -----duo  
 -----ling  
 -----nao  
 -----zheng  
 -----zhong

# What Are **Structural Issues** in an AAT Context?

- **The way we classify, organize and arrange terms**
- The AAT can be used to **guide users in enhancing their knowledge of specific topics and concepts, and can even affect their views on and perception of these concepts.**
- In terms of Chinese and English mapping, the study has noticed some definite patterns in the structural issues which arise.

Facet and hierarchical structures of AAT



# The Structural Issue

There is a conflicting structural arrangement  
between Western and Chinese cultures.....

*To begin with, the case of **ceramic glazes***

## Western v.s. Chinese

In the context of Western cultures, people tend to classify *ceramic glazes*

- **by composition**

alkaline glaze, blue-and-white, Bristol glaze, celadon, lead glaze

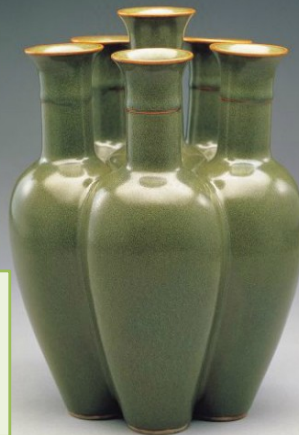
- **by form**

clear glaze

- **by technique**

blister glaze, crystalline glaze, matte glaze, overglaze

Tea dust glaze



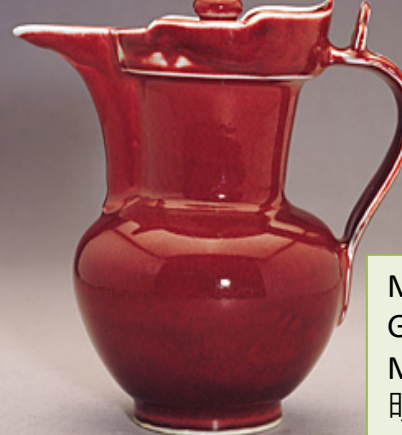
Six Conjoined Vases with Tea Dust Glaze  
Ch'ien-lung Reign (1736-1795)  
Qing (1644-1911)  
清 乾隆 茶葉末六聯瓶

From a Chinese perspective, curators and research studies tend to classify *ceramic glazes*

- **by color**

under different colors with varying compositions, forms and techniques

Red glaze

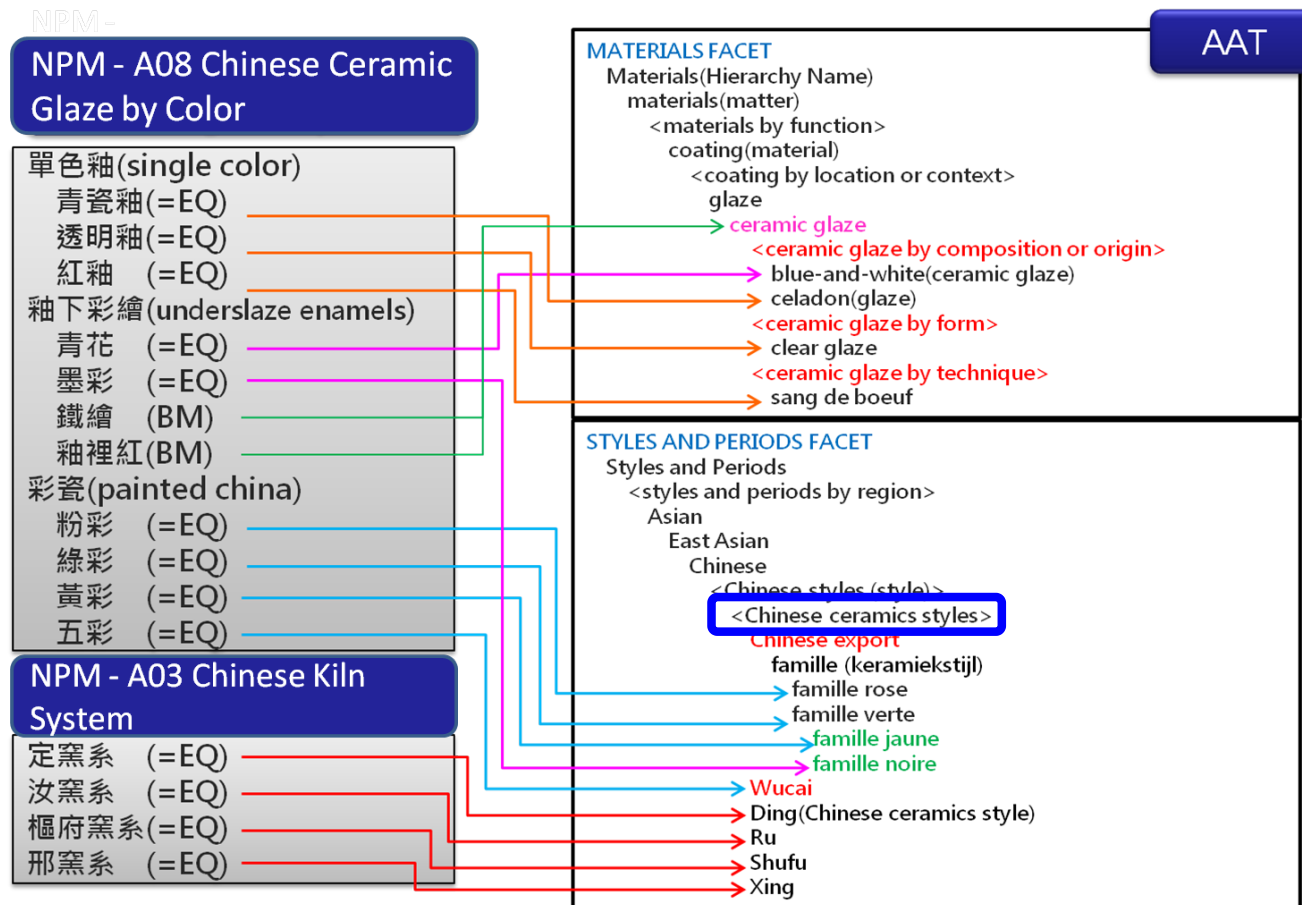


Monk's Cap Ewer with Ruby Red Glaze, Hsüan-te Reign (1426-1435)  
Ming (1368-1644)  
明宣德 寶石紅僧帽壺

# The Problem Includes

- Some terms are shared by Western & Chinese cultures. Where should these terms be located within the hierarchical structure of the AAT?
- Some terms are arranged in different FACETS by Western & Chinese cultures

# Ceramic Glaze by color vs. composition/origin vs. form vs. technique



# **AAT Applications: Linked Open Data (LOD) Supporting Digital Humanities**

# AAT as LOD(Linked Open Data) and its application in ASCDC



- Online portals for LOD Datasets, launched since 2018
  - ASCDC LOD Datasets (<http://data.ascdc.tw/>)
  - ASCDC LODLAB (<http://lodlab.ascdc.tw/>)
- Current results
  - Datasets: 13
  - Data records: 605,324
  - Triples: 5,270,200
- Topic types of ASCDC's LOD datasets
  - Anthropology (Indigenous people in Taiwan)
  - Arts (Art Textbooks of Elementary and Public Schools in the Japanese Colonial Period, Archives of Chen Cheng-po's Paintings and Document, Linked Taiwan Artists)
  - Audio-video files (Educational and Cultural Programs from Chinese Television System)
  - Biology (Taiwan fish species database, Taiwan's Fish Otoliths, Aquatic Animals in Taiwan)
  - History (Chinese Rare Books, Database for Names and Biographies, Database of Qing Official Titles, Wooden Slip Character Dictionary)
  - Religion (Tibetan Collection Audio Archive)

The screenshot displays the ASCDC LOD Datasets website. At the top, it says "Download Datasets" and "The platform will transform open data provided by the institutes into LOD listings." Below this, there are three main statistics: Datasets (13), Data records (605,324), and Triples (5,270,200). The website features a grid of 13 dataset cards, each with a representative image and a brief description of the dataset's content and the responsible institution.

Dataset Name	Category	Institution
Archive of the Art Textbooks of Elementary and Public Schools in the Japanese Colonial Period	Art	National Taipei University of Education Department of Digital Technology Design, Meng-Jhe Yang
The Tibetan Collection Audio Archive Research Project	Religion	Dharma Drum Institute of Liberal Arts
The Digital Collection of Taiwan's Fish Otoliths	Biology	National Museum of Marine Biology and Aquarium
The National Taiwan Museum's Formosan Aborigines Collections Digitizing Project	Anthropology	History & Ethnic Groups of National Taiwan Museum
Taiwan fauna database research: Taiwan digital fish species database	Biology	Biodiversity Research Center, Academia Sinica, K. Wang, Tsao Shao
Linked Taiwan Artists	Art	Academia Sinica Center for Digital Cultures
Linked Data for Name Authority Database at IH P	History	Institute of History and Philology, Academia Sinica, Dr. Cheng-Yun Liu
Constructing LOD (Linked Open Data) for Chinese Rare Books	History	Fu Sun-nien Library of the Institute of History and Philology, Academia Sinica

## Data Enrichment

### Overview on the reused vocabularies in ASCDC LOD datasets

 External resources  
 Local resources by ASCDC

	Biology	Anthropology	Religion	Arts	History	Audio-Video
Darwin Core	✓					
DBpedia	✓	✓	✓	✓	✓	✓
DC/ DCterms	✓	✓	✓	✓		✓
EDM	✓	✓	✓	✓		
GeoNames	✓	✓				✓
AAT	✓	✓	✓	✓	✓	✓
TGN				✓	✓	
ULAN				✓		
LOC					✓	
Linked Open Copac and Archives Hub(LOCAH)				✓		
Temporal Gazetteer (TGAZ, Harvard)				✓	✓	
VIAF	✓	✓	✓	✓	✓	✓
ASCDC	✓	✓	✓	✓	✓	✓
Linked Taiwan Artists (LTA)				✓		
Database for Names and Biographies (DNB)				✓	✓	

## Cross-dataset queries as strategy for data enrichment

*HOWEVER,*



- To link external resources is only one step for data enrichment, but to further reuse the data content of the linked external resources can further enlarge knowledge.

# AAT as LOD Resource for Cross-dataset Queries

**Dataset:** The Archival fonds of Chen Cheng-po's paintings and documents

**Query :** Which Western artists appear in Chen's scrapbooks? What were their **nationalities** and **major activities**?

**CCP LOD dataset**  
**Auguste Renoir's News**  
**Scrapbook**  
**雷諾瓦繪畫的雜誌剪貼圖片**  
[http://data.ascdc.tw/archive/ith/ccp/CCP\\_09\\_01033\\_AP1\\_091](http://data.ascdc.tw/archive/ith/ccp/CCP_09_01033_AP1_091)



**dc:subject**



**Auguste Renoir**  
雷諾瓦  
<http://data.ascdc.tw/Agent/archive/ith/ccp/006>

owl:sameAs

The screenshot shows the 'Renoir, Pierre Auguste' page on the 'Getty Vocabularies: LOD' website. The page features a dark blue header with the site logo and name. Below the header, there's a search bar with 'ULAN' selected and a search button. The main content area has a large title 'Renoir, Pierre Auguste' and a source link 'http://vocab.getty.edu/ulan/500115467'. A red arrow points to the 'Subject (144)' tab, which is active. Below the tabs, there's a table with columns 'Predicate' and 'Object'. The table contains one row with the predicate 'rdf:type' and the object 'ul:PersonConcept'. A green box highlights the bottom portion of the table, containing the text 'ULAN: Auguste Renoir'.

Getty Vocabularies: LOD

SPARQL Queries

ULAN = Search Search Brief

## Renoir, Pierre Auguste

Source <http://vocab.getty.edu/ulan/500115467>

Subject (144) Predicate Object All


Website Hierarchy Download in JSON JSON-LD RDF N3/Turtle

Inference Explicit only

Statements in which the resource exists as a subject

Predicate	Object
rdf:type	ul:PersonConcept

ULAN: Auguste Renoir



The screenshot shows the 'printmakers' entry on the 'Getty Vocabularies: LOD' website. The source URL is 'http://vocab.getty.edu/aat/300025164'. The interface includes tabs for 'Subject (123)', 'Predicate', 'Object', and 'All'. A red arrow points to the 'Subject (123)' tab. Below the tabs, there is a table with columns for 'Predicate' and 'Object'. The first row shows the predicate 'rdf:type' and the object 'aat:Printmakers'. A green box with the text 'AAT: Printmakers' is overlaid on the bottom right of the screenshot.

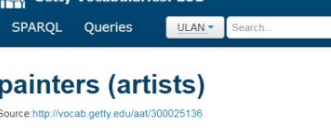
Source: <http://vocab.getty.edu/aat/300025164>

Subject (123) Predicate Object All Website Hierarch

Statements in which the resource

Predicate	Object
rdf:type	aat:Printmakers

**AAT: Printmakers**



The screenshot shows the 'painters (artists)' search results page. The header includes the 'Getty Vocab: LOD' logo and navigation links for 'SPARQL', 'Queries', and 'ULAN'. A search bar contains the text 'ULAN'. Below the header, the title 'painters (artists)' is displayed in large blue font, followed by the source URL 'http://vocab.getty.edu/aat/300025136'. A navigation bar contains links for 'Subject (134)', 'Predicate', 'Object', 'All', 'Website', and 'Hierarchy'. The main content area shows a table with two columns: 'Predicate' and 'Object'. The first row has 'rdf:type' in the predicate column and 'AAT: Painters' in the object column. The second row has 'rdfs:seeAlso' in the predicate column and is currently empty.

Predicate	Object
rdf:type	AAT: Painters
rdfs:seeAlso	



The screenshot shows the 'French (culture or style)' entry on the Getty Vocabularies: LOD website. The page has a dark blue header with the logo and navigation links for SPARQL, Queries, and a search bar. The main content area is white with a green border. The title 'French (culture or style)' is in large blue font. Below it is the source URL: http://vocab.getty.edu/aat/300111188. A red arrow points to the 'Subject (70)' button. Below the buttons are links for Website, Hierarchy, Download in .JSON, and Inferencer. A section titled 'Statements in which the resource exists as a subject' contains a table with two columns: Predicate and Object. The table lists three statements: 'rdf:type' with object 'gvp:c', 'rdfs:seeAlso' with object 'http://...', and 'dcterms:created' with object '1988-01-01T00:00:00Z'. A green box with the text 'AAT: French' is overlaid on the right side of the table.

Getty Vocabularies: LOD

SPARQL Queries

## French (culture or style)

Source <http://vocab.getty.edu/aat/300111188>

[Subject \(70\)](#) [Predicate](#) [Object](#) [All](#)

[Website](#) [Hierarchy](#) [Download in .JSON](#) [Inferencer](#)

Statements in which the resource exists as a subject

Predicate	Object
<a href="#">rdf:type</a>	<a href="#">gvp:c</a>
<a href="#">rdfs:seeAlso</a>	<a href="#">http://...</a>
<a href="#">dcterms:created</a>	<a href="#">1988-01-01T00:00:00Z</a>

**AAT: French**

~~**gvp:agentTypeNonPreferred**~~

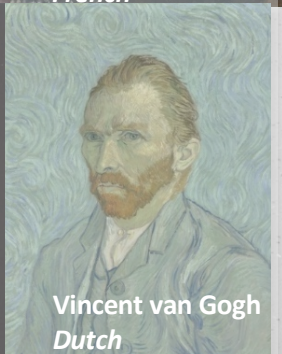
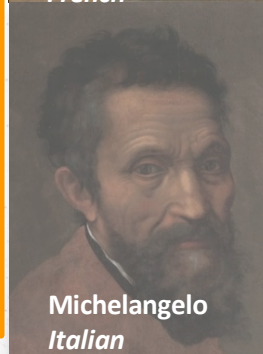
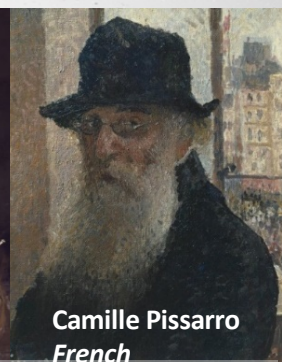
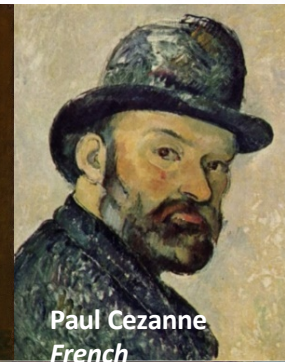
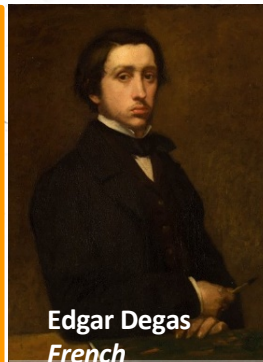
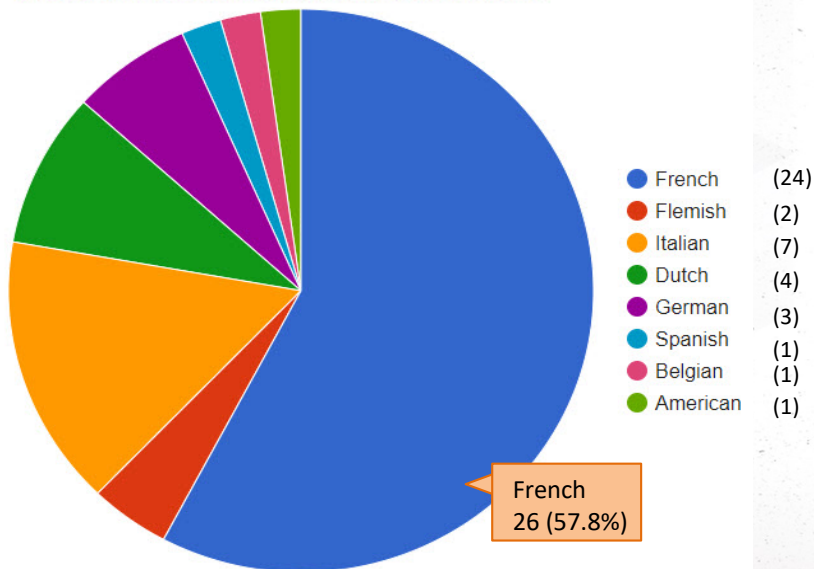
~~**gvp:nationalityPreferred**~~

## How can Linked Open Data enhance research? Data Enrichment Example of Cross-dataset Query for Knowledge Expansion

**Dataset:** The Archival fonds of Chen Cheng-po's paintings and documents

**Query :** Which Western artists appear in Chen's scrapbooks? What were their **nationalities** and **major activities**?

藝術家所屬國籍/ Nationalities of artists



**Thanks for your attentions**