# Mapping Manuscript Migrations

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*LinkedMusic project meeting, Montreal, November 2022*

# Reflections from MMM

## 1. Research Process

- Mediating research questions, model development, and tooling
- (and managing expectations)

## 2. Staying true to sources

- ‘Compromised’ modelling

## 3. Linked Data tools for scholarship

- Visualisation vs. research



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# 1. Research Process

- Workshop with scholars in the field
  - Explained our data sources
  - Gathered a ‘wish list’ of research questions
  - Prioritisation of apparently viable questions
  - Further exploration of those questions (expectation management)

- The scope of model development was bounded by research questions
  - Research questions were prioritised according to data available

*This took a long time!*

- Deploy the model through visualisation and tooling
  - First deployment is ‘cheating’ - we know(ish) it will work
  - Expectation that ‘real’ research happens once data and tool are available for open-ended exploration

# 2. Staying true to sources

| | | |
|---|---|---|
| **Medieval Manuscripts in Bodleian Libraries** | Text Encoding Initiative (TEI) XML documents | 10,000 catalogue records; more than 1,000 with detailed provenance information |
| **Schoenberg Database of Manuscripts** | Relational database - bespoke data model | 247,000 records containing provenance-related observations of manuscript histories |
| **Bibale** | Relational database - bespoke data model | More than 16,000 manuscript records with detailed provenance information |



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# Medieval Manuscripts in the Bodleian Libraries

Fine miniature, border, initial. By William Abell. Fine drawing (retouched) of 16th century, end, fol. 9. (P&A iii. 974, pl. XCI)



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# Medieval Manuscripts in the Bodleian Libraries

```
<decoNote>Fine miniature, border, initial. By
<persName role="Art" key="person_96012549">
William Abell</persName>. Fine drawing (retouched) of
16th century, end, fol. 9. (P&A iii. 974, pl.
XCI)</decoNote>
```

Reminder: dates



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# Medieval Manuscripts in the Bodleian Libraries

Rich, complex data.
No prescribed structure.



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# Schoenberg Database of Manuscripts

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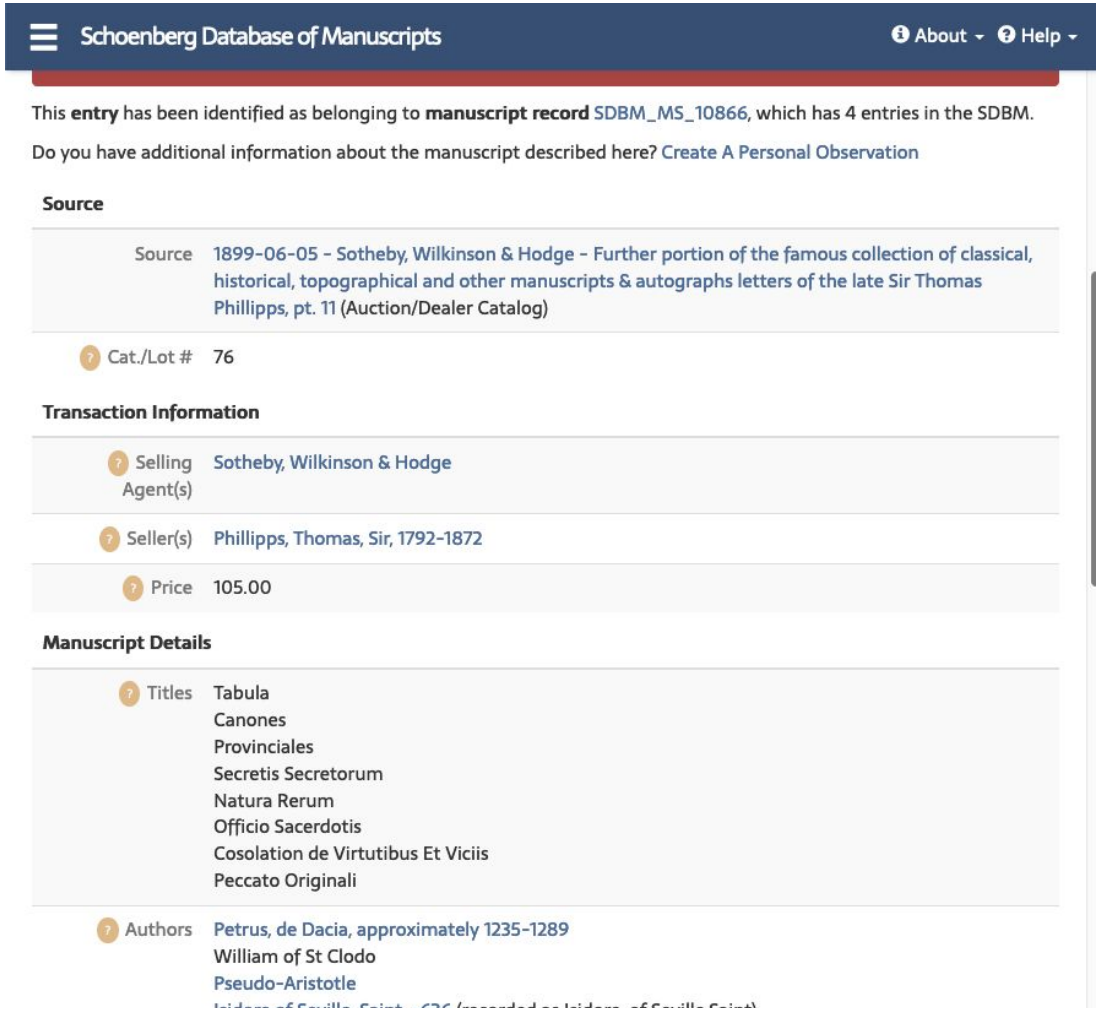
# Schoenberg Database of Manuscripts



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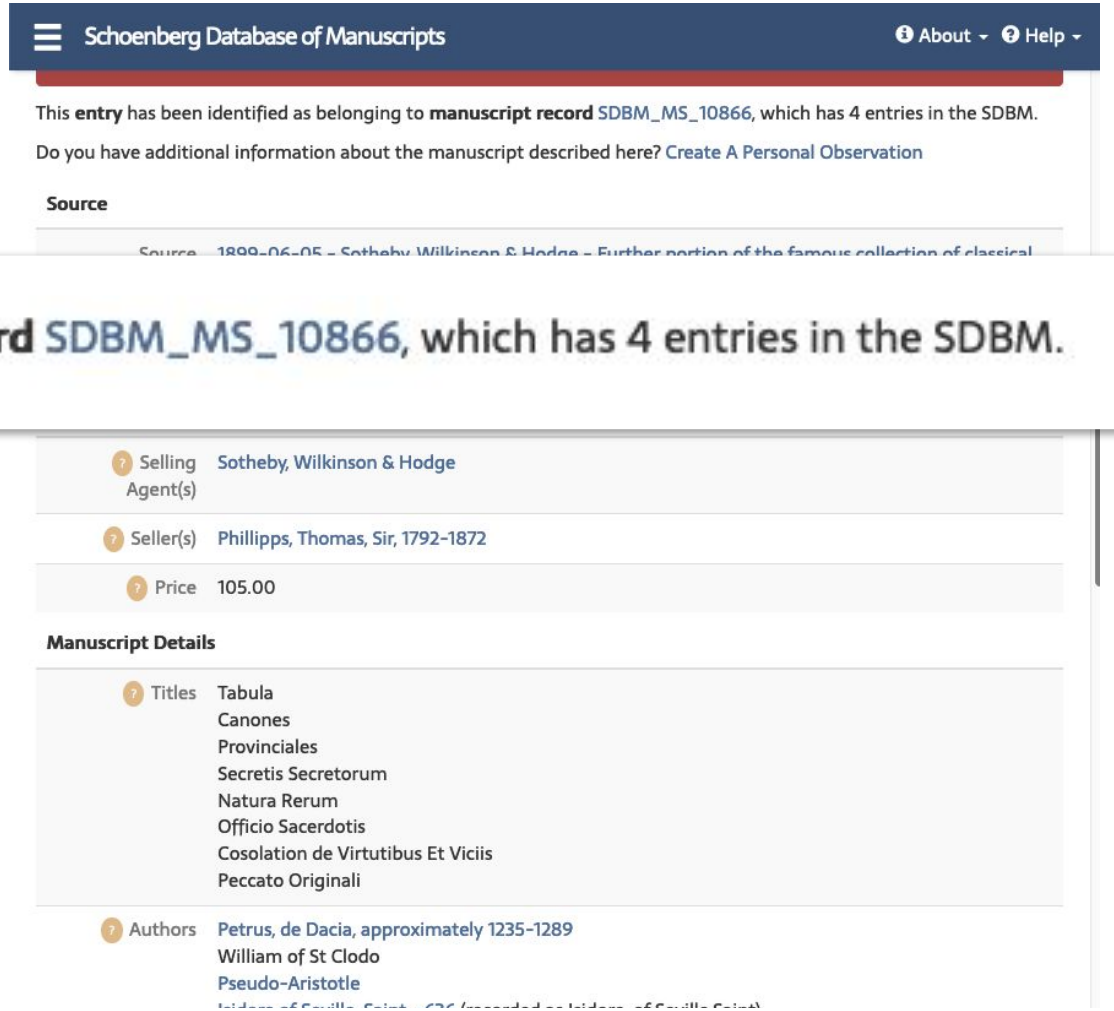
# Schoenberg Database of Manuscripts




This **entry** has been identified as belonging to **manuscript record** SDBM_MS_10866, which has 4 entries in the SDBM.



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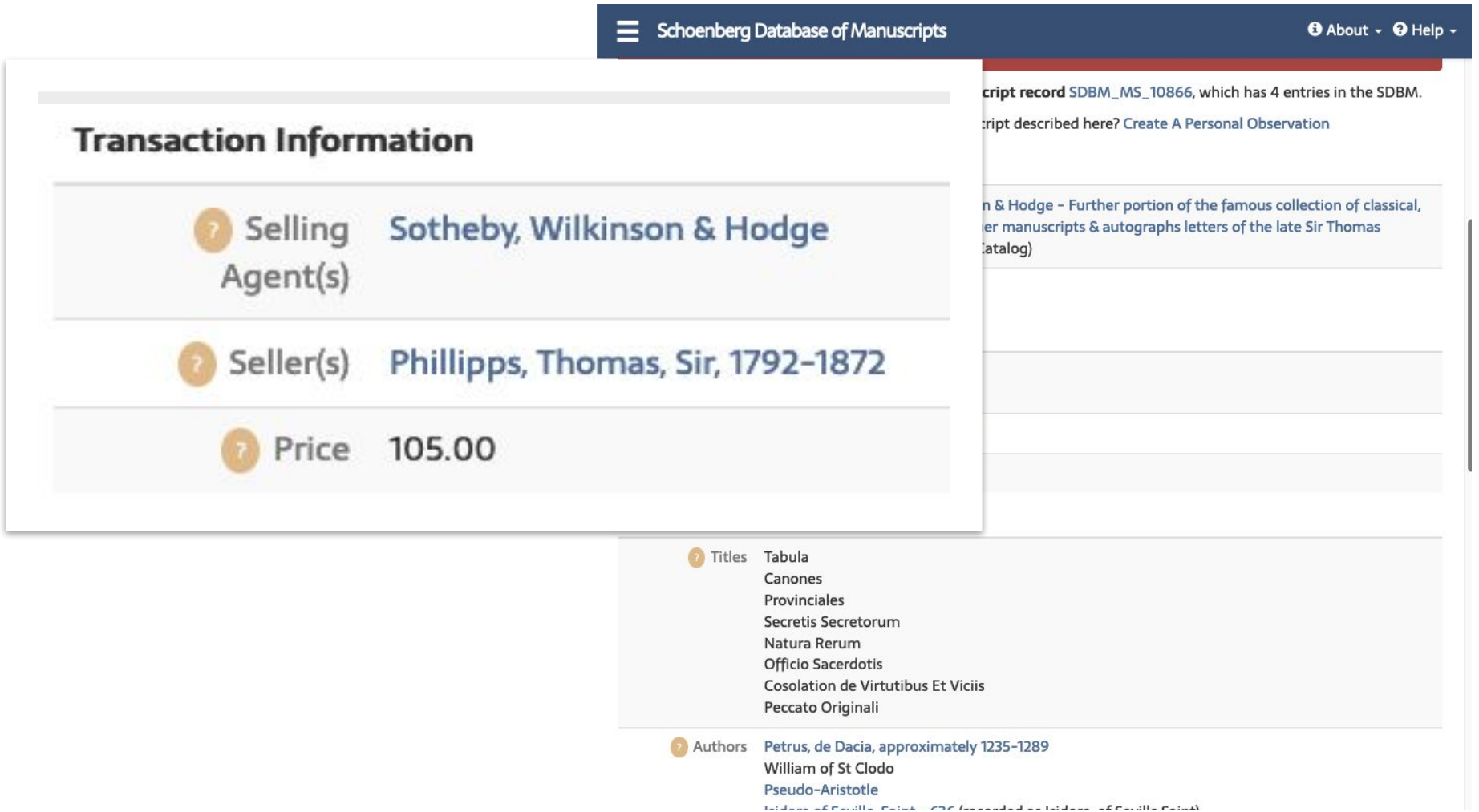
# Schoenberg Database of Manuscripts



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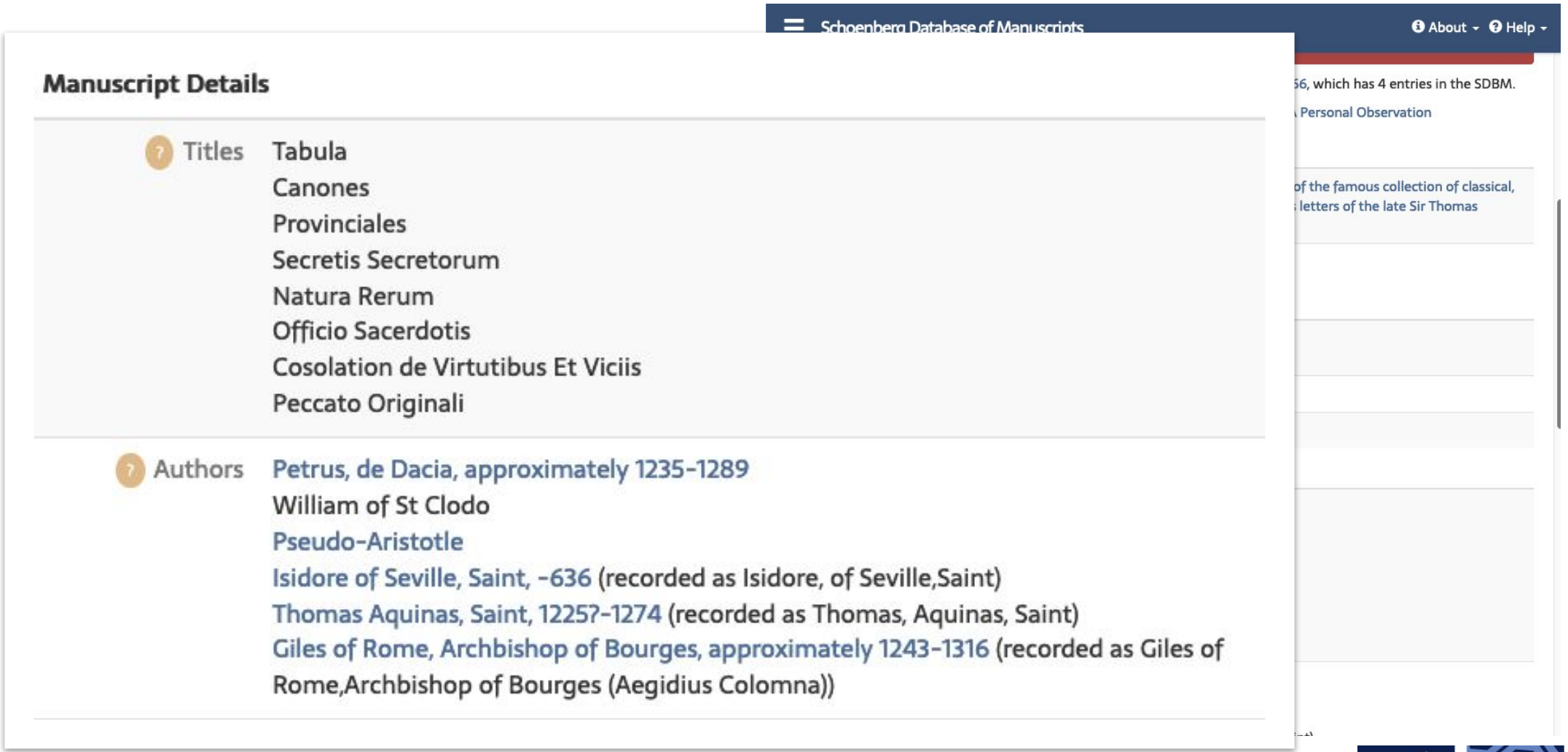
# Schoenberg Database of Manuscripts



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# Schoenberg Database of Manuscripts (SDBM)

Simpler data.
Structure enforced by database



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# Bibale

# Bibale

| ID | TYPE | NAME / VALUE |
|---|---|---|
| ...239 | Person | Guillaume Aguenin |
| ...239 | Death Date | 1508 |
| ...239 | Sex | Male |



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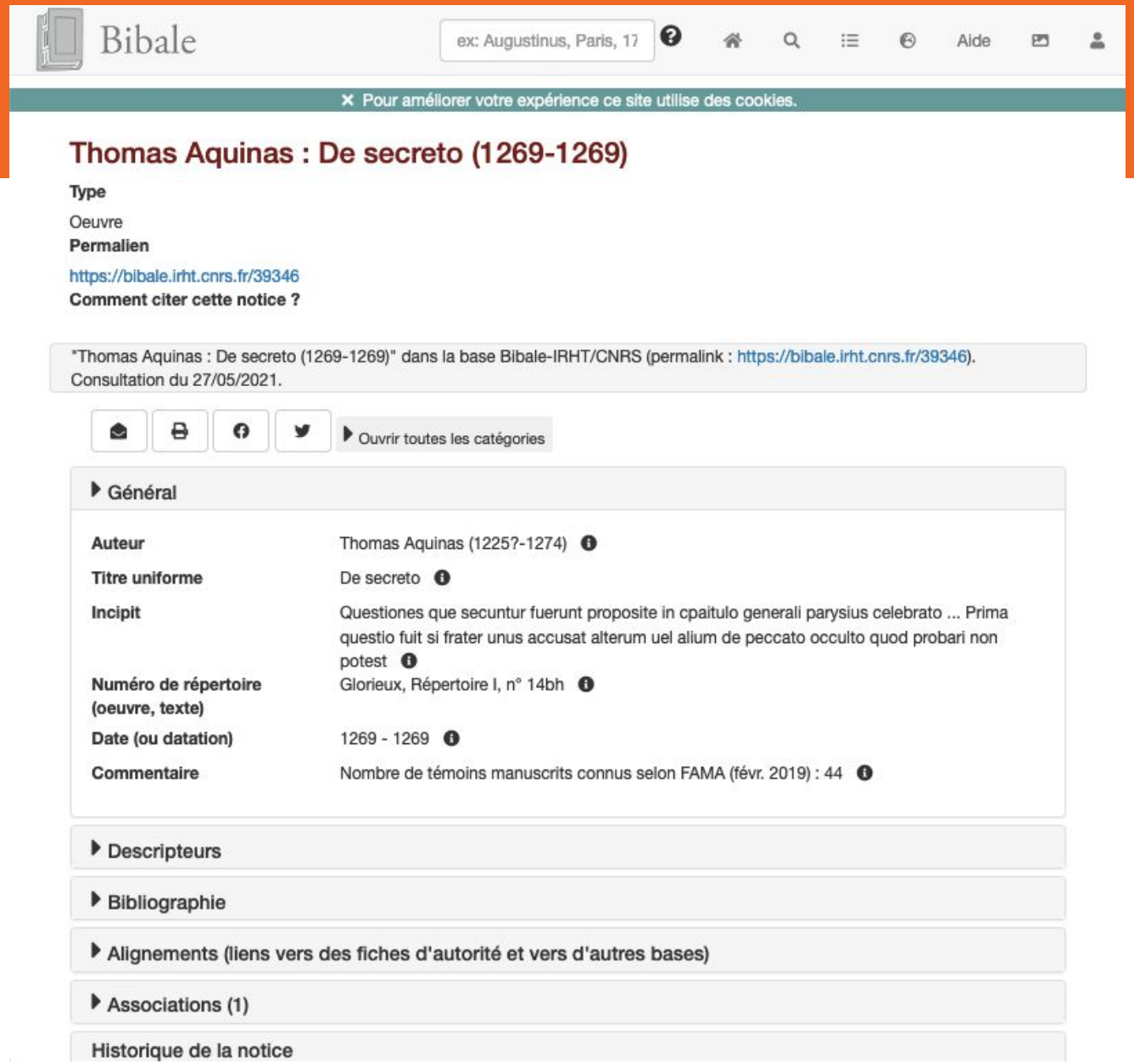
# Bibale


Bibale
ex: Augustinus, Paris, 17
Aide
Pour améliorer votre expérience ce site utilise des cookies.
Thomas Aquinas : De secreto (1269-1269)
Type
Oeuvre
Permalien
https://bibale.irht.cnrs.fr/39346
Comment citer cette notice ?
"Thomas Aquinas : De secreto (1269-1269)" dans la base Bibale-IRHT/CNRS (permalink : https://bibale.irht.cnrs.fr/39346). Consultation du 27/05/2021.
Ouvrir toutes les catégories
Général
Auteur
Thomas Aquinas (1225?-1274)
Titre uniforme
De secreto
Incipit
Questiones que secuntur fuerunt proposite in cpaitulo generali parysius celebrato ... Prima questio fuit si frater unus accusat alterum uel alium de peccato occulto quod probari non potest
Numéro de répertoire (oeuvre, texte)
Glorieux, Répertoire I, n° 14bh
Date (ou datation)
1269 - 1269
Commentaire
Nombre de témoins manuscrits connus selon FAMA (févr. 2019) : 44
Descripteurs
Bibliographie
Alignements (liens vers des fiches d'autorité et vers d'autres bases)
Associations (1)
Historique de la notice

# Bibale

Rich, complex data.
Some prescribed structure.



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# Linking the Data Sources

- Linked Open Data (RDF)
- Common Data Model
- Interpreting the sources in terms of the data model
  - (= many meetings)
- Entity Reconciliation



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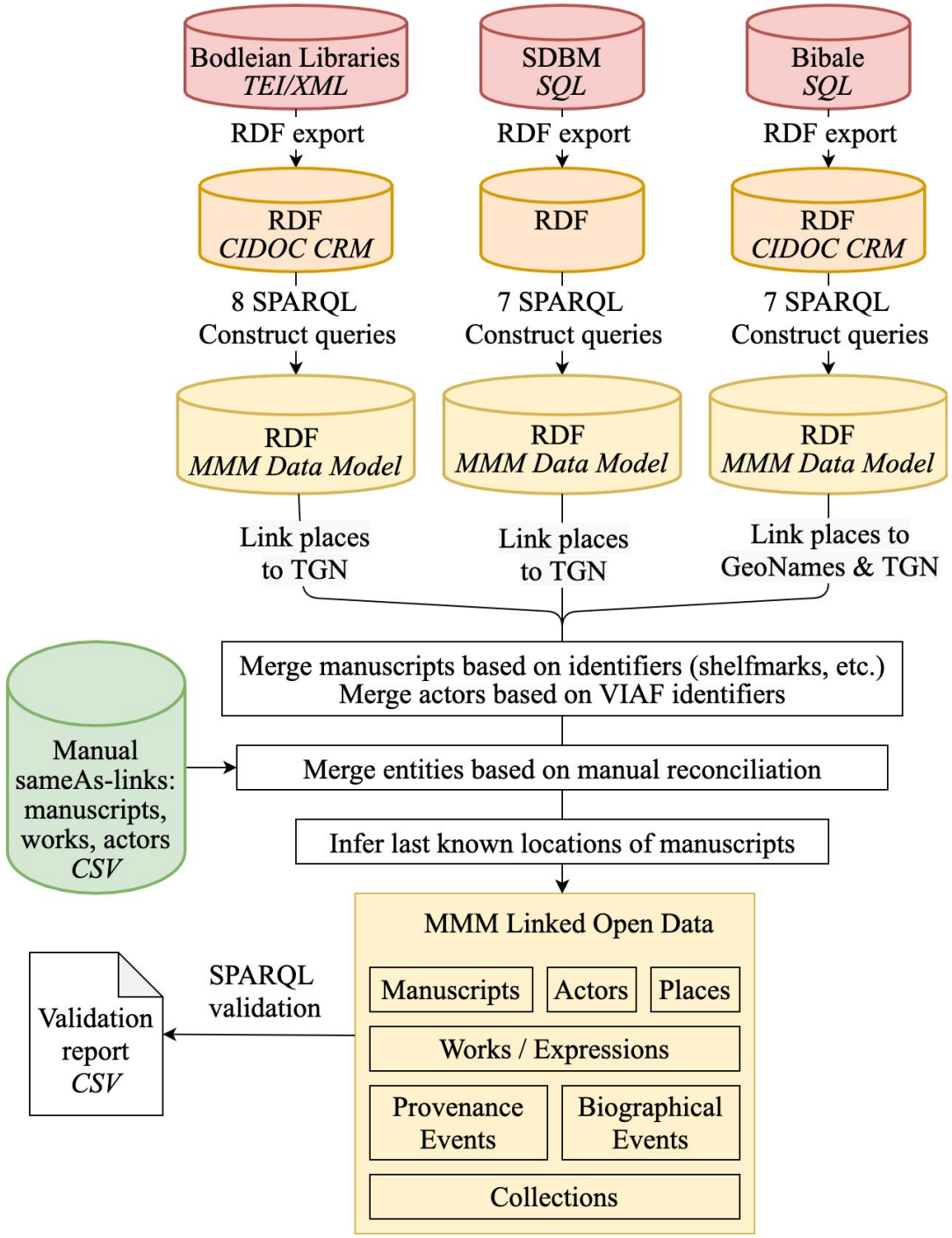
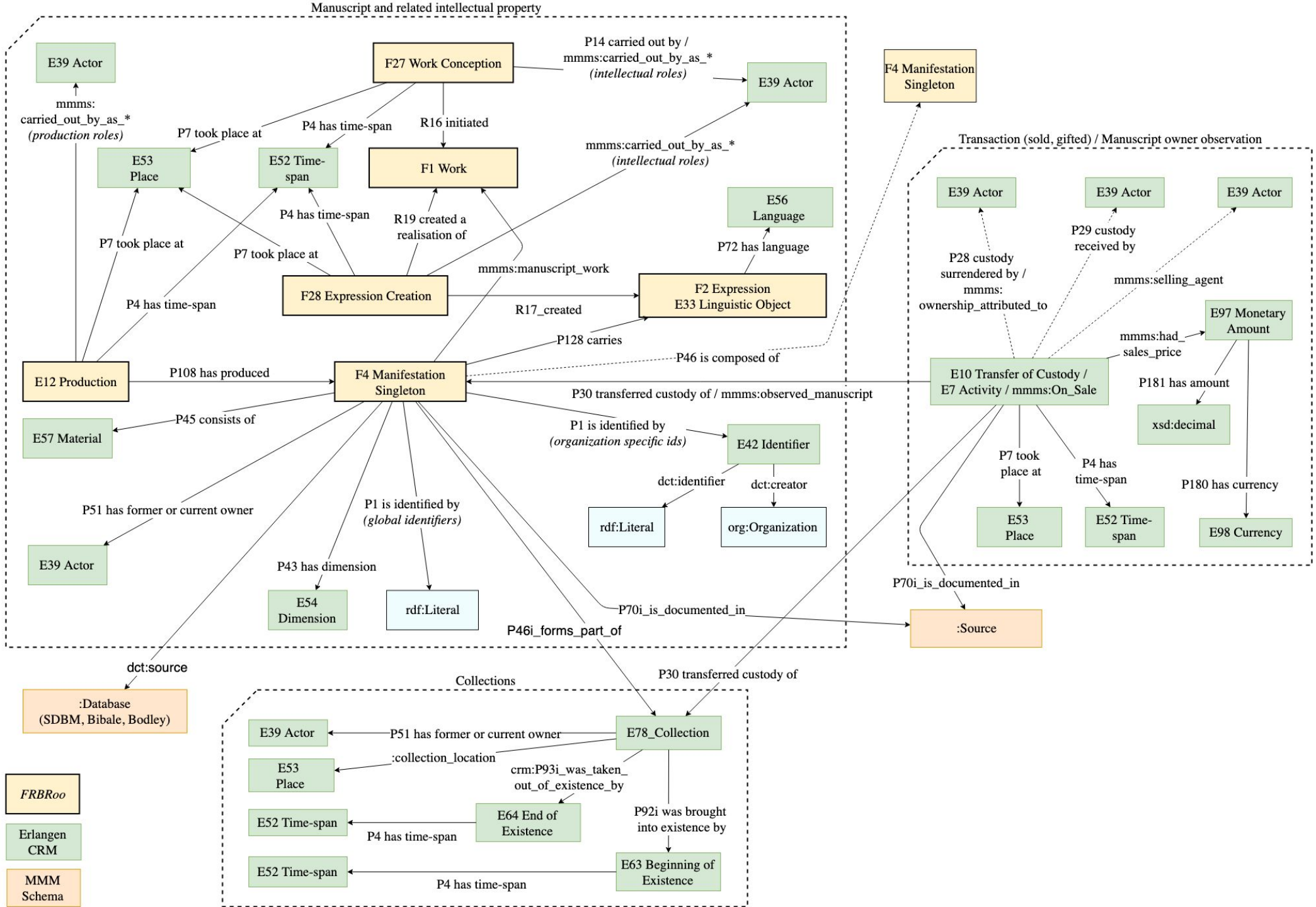

Bodleian Libraries
TEI/XML
SDBM
SQL
Bibale
SQL
RDF export
RDF export
RDF export
RDF
CIDOC CRM
RDF
RDF
CIDOC CRM
8 SPARQL
Construct queries
7 SPARQL
Construct queries
7 SPARQL
Construct queries
RDF
MMM Data Model
RDF
MMM Data Model
RDF
MMM Data Model
Link places
to TGN
Link places
to TGN
Link places to
GeoNames & TGN
Merge manuscripts based on identifiers (shelfmarks, etc.)
Merge actors based on VIAF identifiers
Manual
sameAs-links:
manuscripts,
works, actors
CSV
Merge entities based on manual reconciliation
Infer last known locations of manuscripts
MMM Linked Open Data
Manuscripts
Actors
Places
Works / Expressions
Provenance
Events
Biographical
Events
Collections
SPARQL
validation
Validation
report
CSV


Manuscript and related intellectual property
E39 Actor
mmms:
carried_out_by_as_*
(production roles)
F27 Work Conception
P14 carried out by /
mmms:carried_out_by_as_*
(intellectual roles)
E39 Actor
P7 took place at
P4 has time-span
R16 initiated
E53
Place
E52 Time-
span
F1 Work
mmms:carried_out_by_as_*
(intellectual roles)
F4 Manifestation
Singleton
P4 has time-span
R19 created a
realisation of
E56
Language
P72 has language
P7 took place at
P7 took place at
mmms:manuscript_work
P4 has time-span
F28 Expression Creation
R17_created
F2 Expression
E33 Linguistic Object
P128 carries
P46 is composed of
E12 Production
P108 has produced
F4 Manifestation
Singleton
P30 transferred custody of / mmms:observed_manuscript
P45 consists of
E57 Material
P1 is identified by
(organization specific ids)
E42 Identifier
dct:identifier
dct:creator
rdf:Literal
org:Organization
P51 has former or current owner
P1 is identified by
(global identifiers)
E39 Actor
P43 has dimension
E54
Dimension
rdf:Literal
P70i_is_documented_in
P46i_forms_part_of
:Source
dct:source
:Database
(SDBM, Bibale, Bodley)
Transaction (sold, gifted) / Manuscript owner observation
E39 Actor
E39 Actor
E39 Actor
P28 custody
surrendered by /
mmms:
ownership_attributed_to
P29 custody
received by
mmms:selling_agent
E97 Monetary
Amount
mmms:had_
sales_price
E10 Transfer of Custody /
E7 Activity / mmms:On_Sale
P181 has amount
xsd:decimal
P7 took
place at
P4 has
time-span
P180 has currency
E53
Place
E52 Time-
span
E98 Currency
P70i_is_documented_in
P30 transferred custody of
Collections
E39 Actor
P51 has former or current owner
E78_Collection
:collection_location
E53
Place
crm:P93i_was_taken_
out_of_existence_by
E52 Time-span
P4 has time-span
E64 End of
Existence
P92i was brought
into existence by
E52 Time-span
P4 has time-span
E63 Beginning of
Existence
FRBRoo
Erlangen
CRM
MMM
Schema

# Reconciliation: Vocabularies

| | SDBM | Bibale | Oxford |
|---|---|---|---|
| **Places** | TGN, GeoNames VIAF | GeoNames → map to TGN | TGN GeoNames VIAF, Pleiades |
| **Persons** | VIAF | VIAF, BnF, Wikidata | VIAF, Wikidata, SUDOC, LoC |
| **Organizations** | VIAF | BnF, VIAF, Wikidata | VIAF, BnF, Wikidata, SUDOC, LoC |
| **Works** | | | Pinakes, Mirabile |
| **Manuscripts** | | Pinakes, Jonas, Initiale, Medium | Pinakes, Jonas |

# 3. Linked Data tools for scholarship

- How is the data going to be used?
- (Good) visualisation conveys results?
- How do we support active scholarship?



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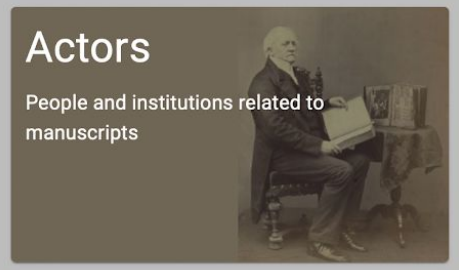
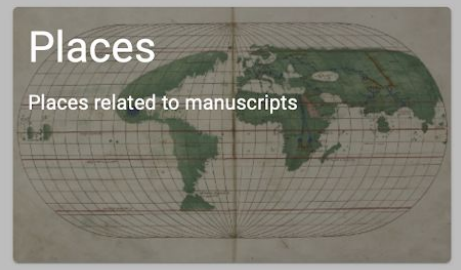
# Mapping Manuscript Migrations

## Navigating the network of connections between people, institutions, and places within European medieval and Renaissance manuscripts

Mapping Manuscript Migrations (MMM) is a semantic portal for finding and studying pre-modern manuscripts and their movements, based on linked collections of the Schoenberg Institute for Manuscript Studies, the Bodleian Libraries, and the Institut de recherche et d'histoire des textes.

Select a perspective to search and browse the MMM data:




Images used under licenses from Shutterstock.com, Wikimedia, and OPenn.

# Manuscripts

Use this perspective to access data related to physical manuscript objects. If two or more source datasets include the same manuscript and this has been verified, the information from the source datasets has been merged into one manuscript. See instructions for using the filters. The result view can be selected using the tabs:

- **TABLE** view includes all manuscripts in the MMM data. One table row is equivalent to one manuscript.
- **PRODUCTION PLACES** view visualizes the connection between manuscripts and the places where they were produced.
- **MIGRATIONS** view visualizes the migration of a manuscript from place of production to its most recently observed location.
- **EXPORT** the SPARQL query used to generate the result table view into YASGUI query editor.

**Results: 222602 manuscripts**

**Narrow down by:**

Label

Search

Author

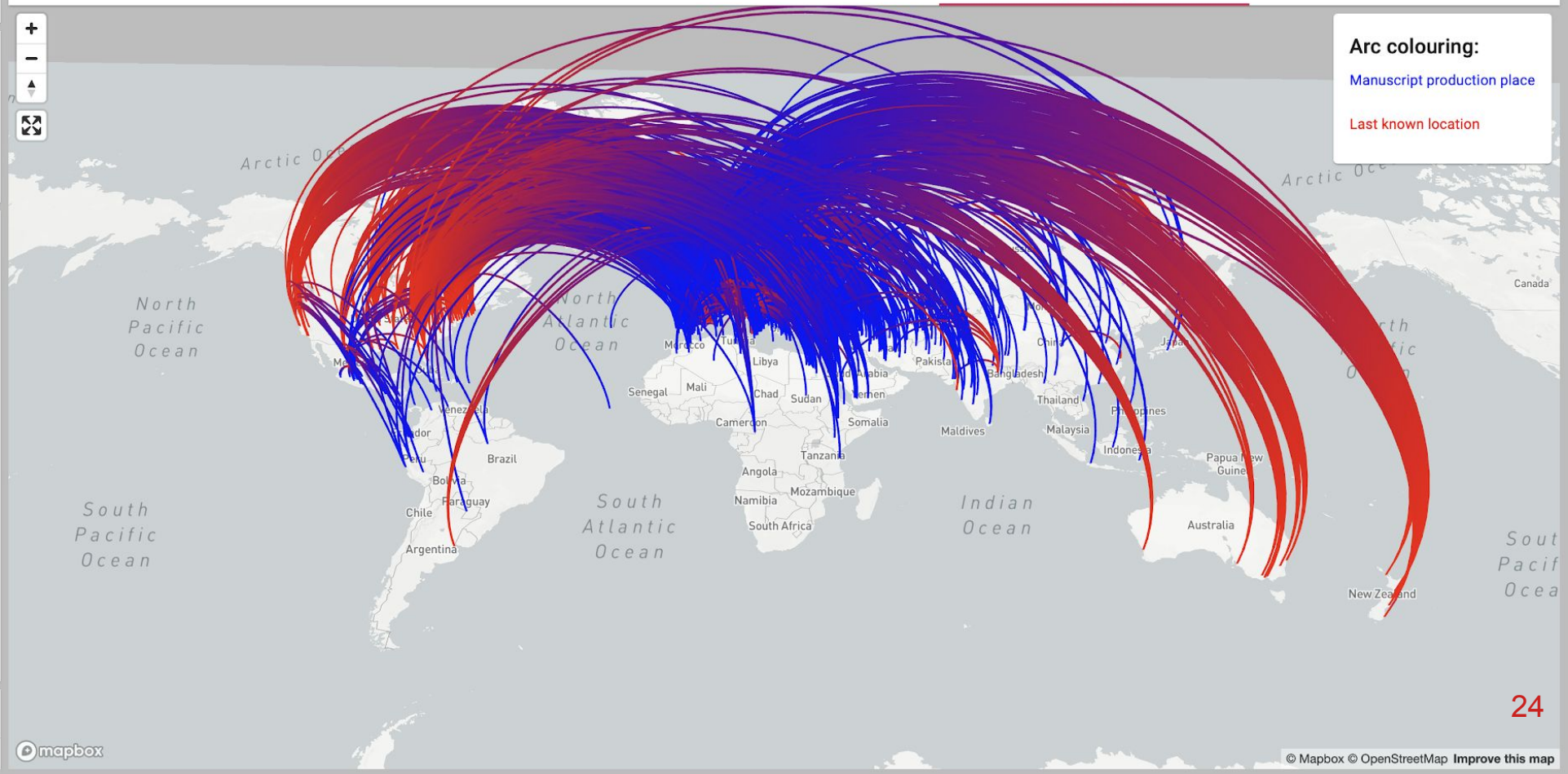
Search...

- [ ] Unknown [136012]
- [ ] Augustine, Saint, Bishop of Hippo [4661]
- [ ] Jerome, Saint, -419 or 420 [3245]
- [ ] Cicero, Marcus Tullius [2575]
- [ ] Anonymous [2327]
- [ ] Aristotle [2029]
- [ ] Gregory, I, Pope, approximately 540-604 [1980]
- [ ] Bernard, of Clairvaux, Saint, 1090 or 1091-1153 [1864]
- [ ] John Chrysostom, Saint, -407 [1748]
- [ ] Aquinas, Thomas, Saint, 1225-1274 [1477]

Work

Production place

TABLE | PRODUCTION PLACES | LAST KNOWN LOCATIONS | MIGRATIONS | EXPORT



# Events

Use this perspective to access data related to events associated with the histories of manuscripts and manuscript collections over the centuries. See instructions for using the filters. The result view can be selected using the tabs:

- **TABLE** view includes all events in the MMM data.
- **MAP** view visualizes the events that have location information on a map.
- **EXPORT** the SPARQL query used to generate the result table view into YASGUI query editor.

**Results: 937158 events**

**Narrow down by:**

Type

- E10 Transfer of Custody [40074]
- E12 Production [226402]
- Manuscript related activity [670682]

Manuscript / Collection

Date

Place

Source

TABLE MAP EXPORT

# Research Questions

| | Bibale | Oxford | SDBM | MMM portal |
|---|---|---|---|---|
| Impossible to answer | 8 | 8 | 6 | 0 |
| Partly answered | 16 | 12 | 12 | 8 |
| Fully answered | 1 | 5 | 7 | 17 |



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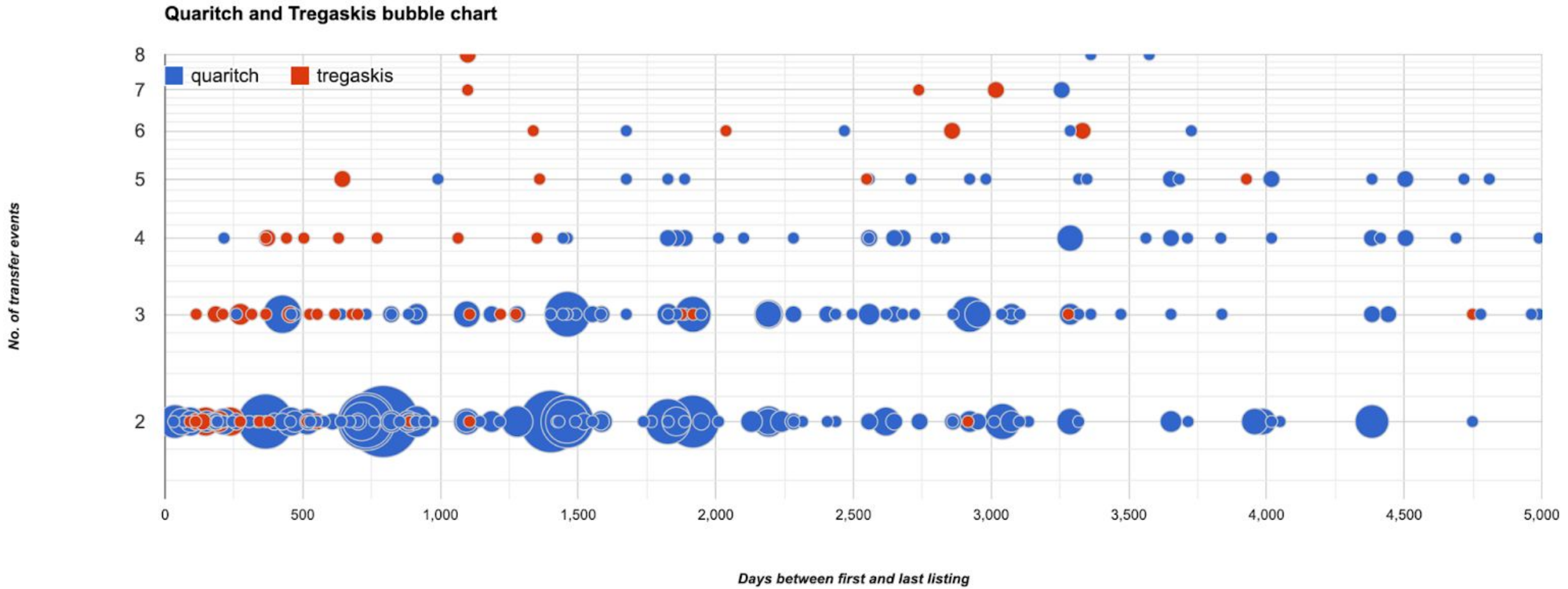
```
SELECT ("" AS ?manuscript_name_sample) ?duration ?transfer_count ?seller (COUNT(?manuscript_name) AS ?manuscript_count)
  WHERE {
  {
SELECT ?manuscript_name (DAY(MAX(?timespan_datetime) - MIN(?timespan_datetime)) AS ?duration)  (COUNT(*) AS ?transfer_count) ?
seller
  WHERE {
 { ?transfer
   ecrm:P28_custody_surrendered_by | mmms:carried_out_by_as_selling_agent <http://ldf.fi/mmm/actor/bibale_43130> ; #tregaskis
   ecrm:P30_transferred_custody_of | mmms:observed_manuscript ?manuscript .
    BIND ("tregaskis" AS ?seller)
  }
  UNION
  { ?transfer
    ecrm:P28_custody_surrendered_by | mmms:carried_out_by_as_selling_agent <http://ldf.fi/mmm/actor/bibale_30748> ; #quaritch
    ecrm:P30_transferred_custody_of | mmms:observed_manuscript ?manuscript .
    BIND ("quaritch" AS ?seller)
  }

    ?manuscript a efrbroo:F4_Manifestation_Singleton ;
    skos:prefLabel ?manuscript_name .

   ?transfer ecrm:P4_has_time-span ?transfer_timespan.
     ?transfer_timespan  skos:prefLabel ?timespan_label ;
                         ecrm:P82a_begin_of_the_begin ?timespan_datetime .

} GROUP BY ?seller ?manuscript_name
HAVING (?transfer_count > 1) (?duration > 0)
    }
} GROUP BY ?seller ?duration ?transfer_count
```



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# The MMM project team

**University of Oxford**: Toby Burrows (PI)

Graham Klyne, David Lewis, Andrew Morrison, Kevin Page (Co-I), Thanasis Velios, Pip Willcox (Co-I)

**Aalto University:** Eero Hyvönen (PI)

Esko Ikkala, Mikko Koho, Jouni Tuominen

**Institut de Recherche et d'Histoire des Textes**: Hanno Wijsman (PI)

Antoine Brix, Synnøve Myking, Guillaume Porte, Pierre-Louis Pinault, Mahaut Cazals, Alexandre Gaudin, Nicole Bergk Pinto

**University of Pennsylvania**: Lynn Ransom (PI)

Doug Emery, Mitch Fraas, Benny Heller, Emma Thomson

# Mapping Manuscript Migrations

MMM Portal: https://mappingmanuscriptmigrations.org/

Dataset: https://zenodo.org/record/4440464

GitHub: https://github.com/mapping-manuscript-migrations

SPARQL: http://ldf.fi/mmm/sparql

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Bodleian Libraries University of Oxford
The Schoenberg Institute for Manuscript Studies University of Pennsylvania Libraries
cnrs IRHT Institut de recherche et d'histoire des textes
Aalto University School of Science
Trans-Atlantic Platform Social Sciences and Humanities
Digging into Data Challenge
UKRI Economic and Social Research Council
Institute of Museum and Library Services
Agence Nationale de la Recherche ANR
Academy of Finland