

The IMAGO Project

Towards a Knowledge Base of Medieval and Renaissance Geographical Works

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Outline

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Introduction

- The image of the world created by the Medieval and Renaissance culture was crucial to the development of Western thought in European history
- Medieval and Renaissance geographical works have not been studied yet using digital methods;
- IMAGO - Index Medii Aevi Geographiae Operum - aims at providing a systematic overview of this literature using the Semantic Web technologies to make available this knowledge as Linked Open Data (LOD) and to develop automatic search and visualisation services on the collected data



Index Medii Aevi Geographiae Operum (IMAGO) Project

- Three years (2020-2023) Italian National Research Project
- ISTI-CNR, University of Pisa and University of Salento
- a complete survey of Medieval and Renaissance geographical works, providing:
 - (i) a classification of works, authors and genres;
 - (ii) a list of the manuscript tradition and printed editions for each work;
 - (iii) a list of critical editions of some more representative works;
 - (iv) a Medieval Latin toponymy index.
- currently this information is dispersed on paper books, this makes a systematic overview of the geographic literature impossible
- IMAGO aims at making this information available in digital form to facilitate its retrieval and access for both scholars and general users.



IMAGO Ontology

- ontology that formally represents knowledge about Medieval and Renaissance geographical works
- methodology to develop the ontology is well known, usually adopted in the Semantic Web field
- novelty is the use of Semantic Web technologies to formally represent a new scientific domain



Ontology Development

- conceptualisation of the domain of knowledge
- formalised this conceptualisation using classes and properties from two reference vocabularies: CIDOC CRM and FRBRoo (LRMoo).
- using standard vocabularies allows maximizing the interoperability of our representation
- our classes and properties to represent the terms that we did not find in the reference vocabularies
- resulting ontology is expressed in OWL 2 DL language.



Conceptual Idea

- Main categories
 - author of a work;
 - title of a work.
- Other categories
 - literary genre;
 - toponym;
 - manuscript;
 - print edition.



Conceptual Idea 2

Manuscript

- name of the author and title;
- library the location of the library;
- signature and folios;
- incipit and explicit dedication/proem and text;
- date creation;
- secondary sources.

Print edition

- author, title, curator's name;
- place and date of publication;
- publisher, format, number of pages, information about images;
- general notes;
- introduction and dedications;
- first edition or reprint;
- primary and secondary sources;
- ecdotic typology.



Formalization: Classes

Concept	Class
Author	subclass of E39 Actor
Work	equivalent to F2 Expression
Work creation	equivalent to F28 Expression Creation
Genre	subclass of E55 Type
Toponym	subclass of E41 Appellation
Manuscript	subclass of F5 Item
Printed Edition	subclass of F3 Manifestation
Library	subclass of F11 Corporate Body
Place	equivalent to E53 Place
Geographical Coordinate	equivalent to E94 Space Primitive
Signature	equivalent to E42 Identifier
Folios	subclass to E19 Physical Object
Date	equivalent to E52 Time-Span
Curator/Publisher	subclass of E39 Actor

Table 1: Classes used to represent our main concepts

Formalization: Properties

Relation (R) between concepts	Property
R(Work creation event,Author)	equivalent to P14 is carried out by
R(Work creation event,Work)	equivalent to R17 created
R(Manuscript,Title)	equivalent to P102 has title
R(Printed Edition,Title)	equivalent to P102 has title
R(Manuscript,Library)	equivalent to P50 has current keeper
R(Place,Geographical coordinates)	equivalent to P168 place is defined by
R(Manuscript,Signature)	equivalent to P1 is identified by
R(Manuscript,Folios)	equivalent to P46 is composed of
R(Manuscript,Date)	equivalent to P4 has time span
R(Printed edition,Date)	equivalent to P4 has time span
R(Printed edition,Curator)	subproperty of P14 carried out by
R(Printed edition,Publisher)	subproperty of P14 carried out by
R(Printed edition,Format)	equivalent to R69 specifies physical form
R(Printed edition,Page)	equivalent to P106 is composed of

Table 2: Properties used to represent relation among the main concepts

Ontology population

- development of a tool that allows scholars to insert data in a semiautomatic way in our KB

Author	Christophorus Bondeimontius
Work	Descriptio insulae Cretae
Place	Crete EDIT PLACE
Genre	Odeporico EDIT GENRE

Manuscript 1	
Author	Christofori Bondeimontis
Work	Descriptio insulae Cretae
Place	Città del Vaticano
Library	Biblioteca Apostolica Vaticana
Signature	ROSSANO 703
Folios	ff. 1r-50v
Incipit of dedication/proem	
Explicit of dedication/proem	
Incipit of the text	
Explicit of the text	
Date	1417/1422
Manuscript link	
Secondary sources	Potthast, p. 1967, p. 606; DBI, XV, p. 199
Indexer	Niccolò Pratelli
Last change	14/05/2021
DELETE	EDIT

Manuscript 2	+
Print edition 1	+

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Adding knowledge to IMAGO KB

- Mapping Manuscript Migrations (MMM) project: Linked Open Data principles and Web Semantic technologies
- MMM uses data from the Schoenberg Database of Manuscripts, the Bibale database, the Medieval Manuscripts Catalogue
- high interoperability with IMAGO (Erlangen CIDOC-CRM, FRBRoo, Getty Thesaurus of Geographic Names)
- interesting for enriching the knowledge collected in the IMAGO project
- preliminary study: 20% of the works collected in the IMAGO KB is also present in the MMM KB.
- the aim: integration of the knowledge related to these shared manuscripts



Conclusion

- development of an ontology to formally represent this knowledge as an extension of the standard vocabularies CIDOC CRM and FRBRoo (LRMoo)
- development of a tool that allows scholars to insert data in a semiautomatic way in our KB
- enriching the IMAGO KB mapping the collected works with the manuscripts stored in the KB of MMM project.
- the aim is the creation of a complete KB of the Medieval and Renaissance geographical works using Linked Open Data paradigm and languages of the Semantic Web (OWL 2 DL).



Future Works

- a complete evaluation of the ontology: automatic evaluation and evaluation involving users;
- analysis of the evaluation results;
- if necessary, review and extend our ontology.
- develop a Web application to retrieve and consult data collected in the IMAGO KB in a user-friendly way (e.g. tables, maps, CSV files) for scholars, students and general users.

