The ontology **OntoComedySources**

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As illustrated in Fig. 1, the structure of the *Commedia* is modeled by the classes *Verse*, *Canto*, and *Cantica*. These are subclasses of *doco:Line*, *doco:Chapter*, and *fabio:Book*, respectively. Naturally enough, a verse is contained in a canto and, in its turn, a canto is a part of a cantica. This is expressed by the object properties *isVerseOf*, *isCantoOf*, and *inCanticum*, along with their inverses shown in Fig. 1. The properties just mentioned are all subproperties of the two FRBR properties *frbr:hasPart* and *frbr:isPartOf*.

In the following diagrams, classes are represented with oval-shaped borders, while primitive data-types are delimited by rectangular boxes. Object properties and data properties are denoted with solid lines, whereas dotted lines designate subclass relationships.

The name of a class or property drawn from an existing foundational ontology is written in the form $\langle prefix \rangle : \langle name \rangle$, where the prefix stands for the namespace of the ontology, and is omitted when referring to new entities.

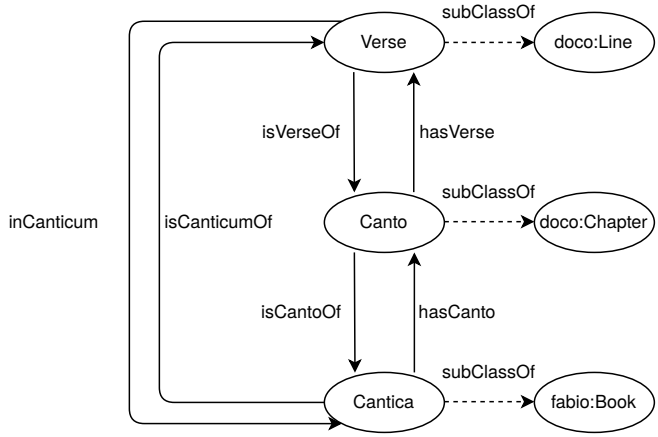

Fig. 1. Structure of *La Divina Commedia*.

The class *Fragment*, subclass of *efrbroo:ExpressionFragment*, occupies a central role in the ontology, as each of its instances refers to a specific textual fragment of *La Divina Commedia*. Its content is expressed by the data property *bodyChars*.

Based on the class *oa:Selector* from the Open Annotation Core Data Model, we are able to make explicit the exact position of the corresponding fragment in the text (see Fig. 2). Specifically, if a certain fragment is located in the interval from the i-th to the j-th character, we can use the properties *oa:start* and *oa:end* to model it. Since the specific type of selector depends on the format of the information which one is working with, we used the subclass *oa:TextPositionSelector*.

Every fragment has a starting verse and an ending verse; furthermore, in principle, a fragment could refer to smaller fragments within it. Such knowledge is represented by means of the properties *startVerse*, *endVerse*, and *composedOf*. Notice that both the first two properties are subproperties of *oa:hasSource*.

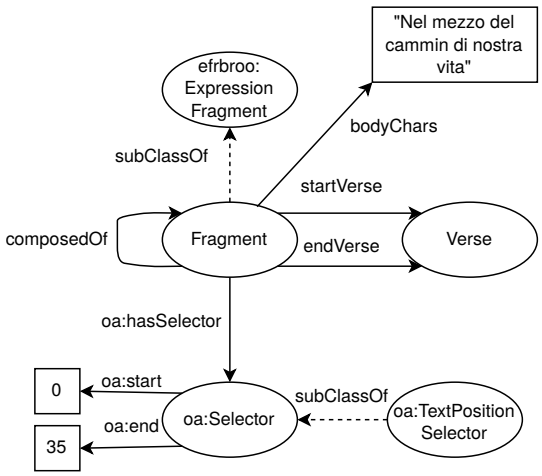

Fig. 2. Representation of text fragments.

To explain the connection between a text fragment and the literary or iconographic source it refers to, we used the class *oa:Annotation*. As shown in Fig. 3, every instance of the class *oa:Annotation* is paired with an instance of the class *oa:TextualBody* via the property *oa:hasBody*. A textual body has a date and a textual content. Every annotation is written by a specialized scholar and in our ontology we specify this fact with the property *dc:contributor*, whose range is the class *Scholar*, subclass of *foaf:Person*. The classes *oa:Annotation* and *oa:TextualBody* are related to the class *Fragment* via the properties *oa:hasTarget* and *hasCitingFragment*, respectively.

The association between a fragment and the work cited in it is modeled by the property *c4o:cites*, belonging to the *Citation Counting and Context Characterisation Ontology* (C4O). The range of the property *c4o:cites* is the class *efrbroo:Work*. In its turn, such a class is paired with the class *Author* through the property *dc:creator* and with the class *skos:Concept* via the property *dc:subject*. The instances of the class *efrbroo:Work* are the literary and iconographic sources

we are interested in, while the class *skos:Concept* is used to specify the thematic area of the related work (e.g., Patristics). The meaning of the other classes is self-evident.

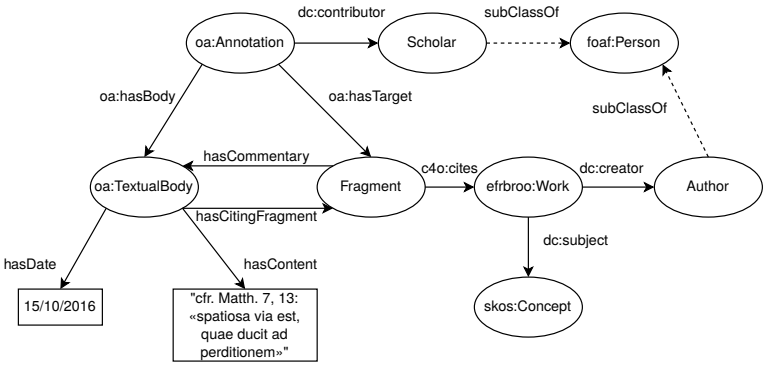

Fig. 3. How fragments, annotations, and cited sources are linked with each other.

As depicted in Fig. 4, the class *efrbroo:Work* is a superclass of both classes *LiteraryWork* and *IconographicWork*. Besides, *LiteraryWork* contains the class *Manuscript*, while *IconographicWork* is a superclass of the four classes *Fresco*, *Mosaic*, *Miniature*, and *PanelPainting*. The properties *citeAsLiterarySource* and *citeAsIconographicSource* are both subproperties of *c4o:cites*. The former has *LiteraryWork* as range, whereas the range of the latter is *IconographicWork*.

To specify the spatial dimensions of an iconographic work, we make use of the class *Length*, subclass of *cidoc:Dimension*, along with the properties *hasDimX* and *hasDimY*. Each instance of *Length* is associated with an instance of the class *cidoc:MeasurementUnit* via the property *cidoc:hasUnit*.

To model the datation of an iconographic work, we utilized the CIDOC class *cidoc:TimeSpan* and the CIDOC property *cidoc:hasTimeSpan*, as well as the properties *startDate* and *endDate*, both subproperties of *cidoc:ongoingThroughout*. To register where the works are currently preserved, we employed the classes *Site* and *Region*, subclasses of *cidoc:Place*. The properties *inSite* and *inRegion*, whose meaning is obvious, are subproperties of *cidoc:hasCurrentPermanentLocation*.

A miniature is a small illustration contained in an ancient manuscript. In OntoComedySources, this is modeled by the property *isContainedIn*. Since we often have no knowledge concerning the author of a manuscript, we included the class *Antiquary* and the property *acquiredBy* to designate the antiquarian responsible for the discovery and/or the preservation of a given manuscript.

As illustrated in Fig. 5, the ontology provides us with the entities to describe the materials employed in the execution of the mosaics and paintings, along with the used techniques. The properties *typeOfTesserae*, *typeOfSubstrateMosaic* and *typeOfSubstratePainting* connect the classes *Mosaic* and *PanelPainting*

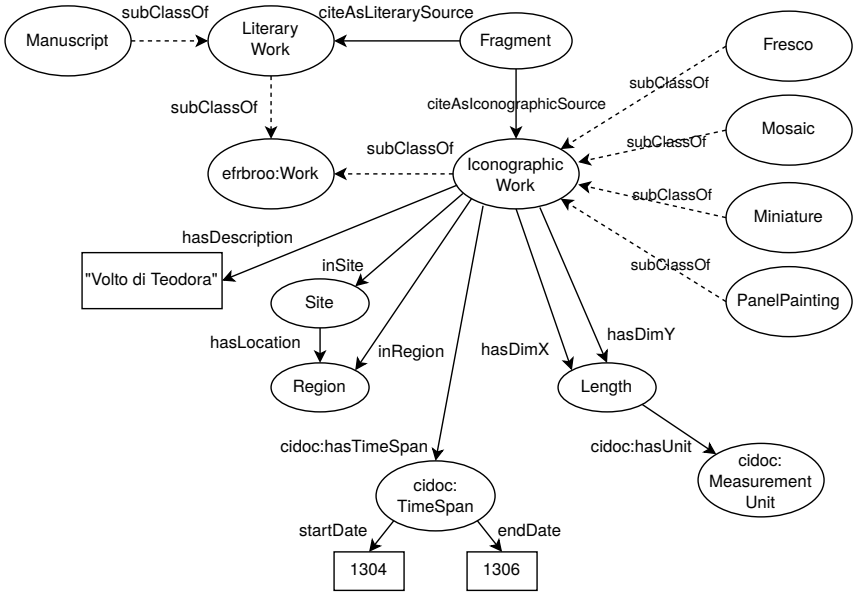

Fig. 4. Focus on the subclass *IconographicWork*.

with the class *Material*. All of the three properties have *cidoc:consistOf* as a superproperty.

In our ontology, the class *cidoc:DesignOrProcedure* is a superclass of the class *Technique* which, in its turn, has as subclasses the classes *PaintingTechnique* and *MosaicTechnique*; these are linked with the classes *PanelPainting* and *Mosaic* by the properties *usedTechniquePainting* and *usedTechiqueMosaic*, respectively.

In order to differentiate among the different types of mosaics, we exploit the class *MosaicType*, subclass of *cidoc:Type*, and the property *typeOfMosaic*, subproperty of *cidoc:hasType*.

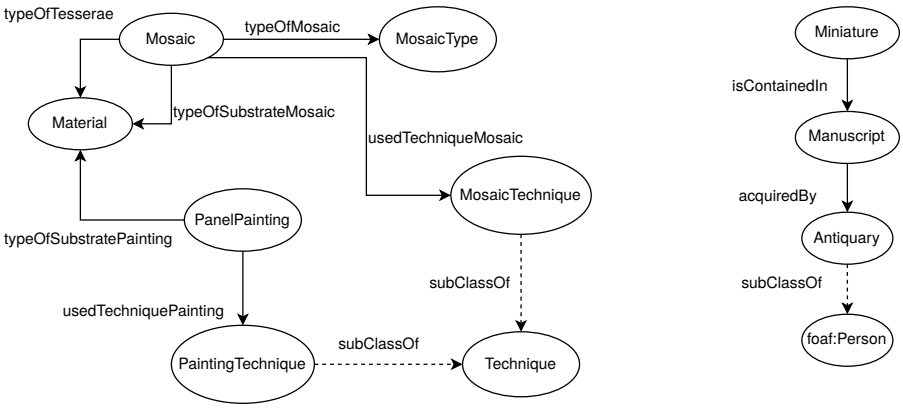

Fig. 5. Properties of *IconographicWork*'s subclasses.