Bistìris Ontology: Towards a Structured Representation of Sardinian Traditional Female Costumes*

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Abstract

In the field of cultural heritage, several ontologies have been proposed to model the vast and diverse artistic and historical heritage, facilitating the interconnection and deeper understanding of the complex relationships among the cultural assets that comprise it. In this paper, we propose Bistìris, an ontology designed for describing a specific category of cultural objects: Sardinian traditional female costumes. Bistìris contributes to this context by aiming to provide a schema for representing this particular kind of cultural heritage asset. We detail the methodology of the Bistìris ontology and outline its practical application. Inspired by the work of domain experts, Bistìris incorporates a range of parameters. Its main objective is to highlight the distinctions between different local traditions, including variations among costumes from the same town. Bistìris achieves this goal as it is tailored for the analytical description of garments and costumes.

Keywords

Digital Libraries and Archives, Ontologies, Cultural Heritage, Traditional Costumes

1. Introduction

Preserving cultural heritage is essential for maintaining the richness and diversity of human history. One significant category of cultural heritage objects is represented by traditional costumes, which are crucial for cultural study as they visually embody a community's values, beliefs, history, and norms. In territories like Sardinia – an Italian island located in the Mediterranean sea – where cultural identity and traditions are deeply rooted, these garments hold great significance and serve as powerful symbols of the island's rich heritage [1]. They are not considered as mere fabric pieces but tangible expressions of history, craftsmanship, and creativity, often featuring unique designs, colours, and materials specific to their culture, making them valuable cultural artefacts [2]. Therefore, given their significance, researchers often study traditional attire to gain insights into various cultural aspects, including social structure, economy, religion, and intercultural dynamics.

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However, there is a risk of these cultural objects becoming increasingly obsolete and disappearing due to various factors such as modernisation and changing societal norms. Hence, preserving this heritage has become a priority for many researchers, museums and local communities, who recognise the importance of safeguarding it for future generations.

Over the past decade, there has been a growing trend within the cultural heritage field to adopt knowledge representation methods and tools of the Semantic Web in order to provide a common base for structuring and managing cultural data [3, 4, 5]. Additionally, the emergence of historical semantic archives dedicated to cultural artefacts has further advanced the field, allowing for more nuanced and comprehensive representations of cultural heritage items [6, 7, 8]. Currently, different semantic digital libraries, such as Europeana[1] [9], collect several items related to traditional costumes, including some of those from Sardinia. For their representation, various ontologies are employed (e.g. CIDOC-CRM [10], RIC-O [11], ArCo [12]) which have been designed for cataloguing cultural heritage objects. While these ontologies provide means to represent relevant information such as dates, authors, materials, and measurable characteristics, as well as analytical descriptions of the assets through photographs and texts, they are not specifically tailored for traditional costumes. Therefore, many of their properties may not adequately capture the intricacies and nuances of traditional attire, underscoring the need for further development in this area.

In this paper, we present a new ontology, Bistìris[2], which is designed to capture the intricate variations of the Sardinian traditional female costume. Sardinia, with its rich mosaic of cultural traditions, preserves a wide range of traditional costumes. One of the main goals of Bistìris is to allow domain experts to conduct cross-referenced searches based on the physical characteristics of their objects of study, which are usually not described in detail by other ontologies. Bistìris serves as a structured framework for documenting and preserving the diverse variations of Sardinian traditional female costumes, particularly those worn during festive occasions and weddings, by providing a semantic representation that includes geographical and temporal properties. The main goal is to safeguard this cultural heritage for future generations while also facilitating research, education, and cultural exchange initiatives. To achieve this, we strive to provide a semantic representation capable of categorising each asset based on descriptive parameters. By leveraging an ontology, we can identify patterns in colour usage and fashion trends, as well as unexpected relationships between the characteristics of assets and their geographical and cultural origins. This allows researchers to explore the synchronous and diachronic diffusion of parameters of interest, compare data from various sources and analyse the evolution of costume over time and across geographical regions. To the best of our knowledge, Bistìris represents the first attempt to propose an ontology in this specific domain.

The rest of the paper is structured as follows: In Section 2, we report some related work pertinent to the domain under consideration. Following that, Section 3 describes the ontology design process and development, encompassing the methodology, requirement collection, conceptualisation, implementation, ontology reuse, and population. Subsequently, Section 4 explores the usage of Bistìris. Finally, in Section 5 we discuss conclusion and future work.

[1] https://www.europeana.eu/en

[2] The ontology's name derives from a Sardinian word that means *clothes* or *dresses* in English.

2. Related Work

In the domain of cultural heritage ontology development, there has been a growing interest in creating semantic representations of cultural heritage objects to preserve and promote cultural diversity. While there is a plethora of ontologies focusing on various aspects of cultural heritage, including music, artworks, and historical artefacts, the specific area of representing traditional costumes, especially Sardinian traditional female costumes, is relatively underexplored.

Beginning in 2018, the ArCo knowledge graph [12], consisting of a network of 13 vocabularies and 169 million triples, has enabled the online publication of about 820 thousand cultural entities from the Catalogue of Italian Cultural Heritage. ArCo is designed to provide answers to queries such as those reported in the following [13] :

- What are the cultural events related to the cultural property X?
- What is the conservation status of the cultural property X?
- When was the cultural property X realised? What is the source of the dating?
- What are the geographical coordinates of the cultural property X?

Among the ontologies constituting the ArCo network, those that provide valuable classes and properties for analytically delineating traditional costume assets include:

- **Denotative Description Ontology**, which encodes the measurable physical characteristics of a cultural object, such as length, material type, construction technique and state of preservation.
- **Clothing Description Ontology**, which allows the description of garments through the measurement and description of elements such as pockets, collar, cuffs and sleeves, as well as by reporting the presence or absence of decorations and embroidery. It also allows the reporting of relationships between different garments through properties such as `arco:hasClothingElement`, `arco:hasSeam`, `arco:hasThreadCut` and their inverse properties.

To provide an example of how ArCo describes a Sardinian traditional costume, we report a part of the metadata description pertaining to a costume from the small town of Fonni [3], housed at the Sardinian Museum of Anthropology and Ethnography in Monserrato (Cagliari, Italy), detailed in Table 1. ArCo provides a photograph showcasing the entire costume on a mannequin, identification codes, location, authorship, materials, usage, conservation status, legal information, bibliography, and the authors responsible for compiling the data. Additionally, a concise analytical text is included to provide further insight into the item.

Among the vocabulary used for representing traditional attire, *Costume Core* [14] emerges as a metadata schema with controlled descriptive fashion terminology for garments and accessories. It achieves this objective using photographs and textual descriptions as well as incorporating properties such as main colour, secondary colour, costume's components, skirt type and sleeve type. However, *Costume Core* was primarily developed for describing two-piece evening or

[3]The complete description can be found at: https://dati.beniculturali.it/lodview-arco/resource/DemoEthnoAnthropologicalHeritage/2000219383.html. Accessed: 2024-03-11

Metadata Property	Value
dc:title	dress
dc:description	Traditional women's dress consisting of: handkerchief, white cotton shirt with embroidery, bodice ending at the front with two points, red cloth jacket, 2 woollen skirts, apron.
dc:identifier	2000219383
foaf:depiction	https://www.sigecweb.beniculturali.it/images/fullsize/ICCD1023190/ICCD11925037_UCAMSAE00104.jpg
arco:catalogueNumber	00219383
arco:regionIdentifier	20
dc:coverage	Monserrato (CA)
dc:rights	State property
pico:materialAndTechnique	various

Table 1
An example of metadata description of a Sardinian traditional costume, as provided by ArCo. These descriptions were originally in Italian and have been translated into English.

day dresses, characterised by simpler compositions, varieties, and colour ranges compared to the majority of female's costumes within the Sardinian tradition. Consequently, a differently structured ontology is required to adequately capture the complexities of Sardinian costumes.

3. Ontology Design & Development

In this section, we present the design and development process of the ontology. Subsection 3.1 explains the methodology used, while subsection 3.2 presents the requirements and the lexical usage used to design the ontology. In subsection 3.3 we provide the description of a first conceptualisation, while in subsection 3.4 we describe the classes and properties implemented. Finally, subsection 3.5 provides details about the reuse of existing ontologies.

3.1. Methodology

The methodology used to develop Bistìris draws inspiration from established approaches for developing domain ontologies. Specifically, we adopt a combination of different approaches – such as Methontology [15] and Cyc [16] – to create Bistìris. This process involves four main steps:

1. **Determining the domain and scope of the ontology**. At the outset, we focus on defining the specific domain of interest, which in our case is the intricate variations of the Sardinian traditional female costume. We establish the scope of the ontology to ensure that it effectively captures all relevant aspects of the domain. This initial aim is to collect requirements and Competency Questions (CQs) from cultural stakeholders and domain experts.
2. **Conceptual model development**. Using the insights gained from the previous steps, we proceed to develop the conceptual model of Bistìris. This involves defining the key

concepts, relationships, and properties that characterise the variations of the Sardinian traditional female costume. We employ formal ontology modelling techniques to ensure clarity, coherence, and interoperability of the ontology.

3. **Ontology reuse**. We explore existing ontologies and relevant resources to identify potential reusable components that can inform the development of Bistìris. This step helps streamline the ontology development process and ensures compatibility with existing standards and practices.
4. **Ontology implementation**. We use *Protégé* [17] software to implement Bistìris. It provides robust support for ontology development, allowing us to communicate with other reasoning programs, integrate business rules for inference, and adhere to the latest RDF and OWL 2 [18].

By following this methodology, we aim to create Bistìris as a structured and comprehensive ontology that effectively captures the nuances and variations of the Sardinian traditional female costume, thereby contributing to the preservation and study of this cultural heritage.

3.2. Requirements Collection

The exploration of traditional Sardinian costumes poses unique challenges. Firstly, the significant diversity in styles exhibited by these garments, varying greatly based on their geographical and cultural origins. Secondly, since the first half of the twentieth century, these costumes have ceased to be in regular use, leading to a plethora of deviations from traditional norms evident in the specimens available today [19]. Bistìris aims at addressing the aforementioned challenges by integrating heterogeneous requirements. In our pursuit of domain expert consultations, we established connections with different cultural institutions, including the *Sanna Museum* of Sassari and the *Costume Museum* of Nuoro.

After conducting a thorough review of pertinent literature and consulting with domain experts, we developed the foundational requirements for Bistìris using the methodology outlined in [20]. While the initial exploration of available literature provides a generic description of each traditional garment, we had to resort to collecting detailed information about the costumes by examining photographs and illustrations sourced from books, manuals, and cultural institutional sites. Consequently, we focused on describing female's costumes in four main variants: wedding dress, gala dress, festive dress, and festive maiden dress. The ontological requirements collection mainly stems from the domain knowledge found in Franca Rosa Contu's essay, *Il sistema vestimentario* [21]. This comprehensive study focuses on the description of traditional Sardinian female's costumes, including analysis of local variants, historical tracing, and abundant photographic examples. Additionally, references such as [22] and [23] provided valuable insights necessary for making crucial comparisons regarding the composition of certain costumes. The terminology was primarily drawn from [21], while the ontological requirements are collected from literature review and domain experts' consultations, which are then translated as competency questions. A condensed version of the resulting requirements specification document is described in Table 2.

1. Purpose	
The purpose of the Bistìris ontology is to serve as a structured framework for documenting and preserving the diverse variations of the Sardinian traditional female costume.	
2. Scope	
The ontology focuses on capturing the intricate variations of the Sardinian traditional female costume, encompassing geographical and temporal dimensions. It aims to index each asset based on descriptive parameters to facilitate comparative analysis and exploration of the cultural heritage embodied in these costumes.	
3. Implementation Language	
OWL2 DL	
4. Intended End-Users	
User 1. Cultural institutions (such as museums and archives) that have a detailed bibliography about Sardinian costumes looking for a formal language to express it. User 2. Researchers and scholars with complex research questions or wanting to express the data they collected in a formal language.	
5. Intended Uses	
Use 1. Support the conduct of specific analysis to address research questions within the domain research field. Use 2. Publish structured data about Sardinian traditional costumes online and integrate them with existing datasets to enhance the query potential of end users.	
6. Ontology Requirements	
a. Non-Functional Requirements	
NFR1. Bistìris ontology should be developed in accordance with international standards and schema, with a preference for direct reuse, to allow reusability.	
b. Functional Requirements: General Competency Questions	
CQ1. How do costume characteristics vary across different geographical, cultural and historical areas of Sardinia? CQ2. How do costume characteristics vary according to historical period? CQ3. What are techniques and materials utilised in the creation of Sardinian garments?	CQ4. Which specimens of a given garment are constructed using transparent materials? CQ5. Which garments are typically worn over others? CQ6. What is the frequency with which two specific properties occur simultaneously among the garments?
7. Pre-Glossary of Terms (Term, Frequency in studied documents)	
Festive (178), Skirt (92), Bodice (76), Embroideries (74), Shirt (73), Colour (67), Apron (47), Jacket (45), Headwear (37)	

Table 2
Ontology Requirements Specification Document.

3.3. Conceptualisation

Initially, a *bottom-up* approach to designing the taxonomy of concepts, starting from individual garments and progressing to costumes, appeared promising. However, the extensive diversity of garment types uncovered in preliminary domain research, such as the division of the `Headwear` class into sub-classes, prompted a shift to the *middle-out* approach [24]. This approach centres the ontology design around the following seven core classes:

- `Headwear`
- `Overgarment`
- `Jacket`
- `Bodice`
- `Shirt`
- `Apron`
- `Skirt`

The super-class `Garment` contains these sub-classes, which further branch into 21 more specialised sub-classes, as depicted in Figure 1. When filling the ontology, the key decision lies in accurately determining the appropriate subclass for each garment being catalogued. Similarly, when establishing the ontology's parameters, the initial focus is on thoroughly examining the distinctions among different garment types.

Within the Bistìris garments categorised into the aforementioned classes are detailed using

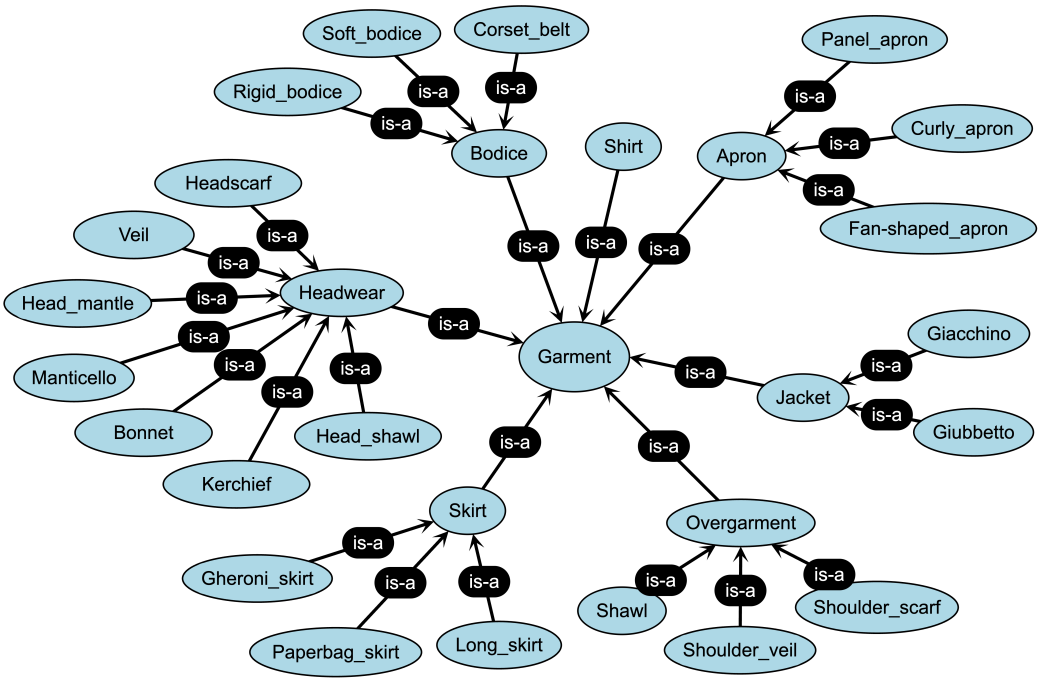

Figure 1: Graphical representation of the `Garment` class and its sub-classes. Note that we have chosen not to translate some terms into English since preserving these terms in their original language ensures accuracy and clarity within the context of our work. For example, *manticello* is a type of small head mantle, *giacchino* and *giubbetto* are two variations of jackets distinguished by the presence or absence of buttons, fabric stiffness, and other characteristics.

specific properties highlighting their colours, fashions, and the sequence in which they are worn when assembling the costume. Additionally, a significant class is the `:Costume` class, which serves as both an aggregator of constituent garments and a linking element among them, their places of origin, referenced bibliographic sources, and the temporal periods they represent, as we will illustrate in subsection 3.4.

3.4. Classes and Properties

Bistìris has been implemented using the OWL2 DL language with the *Protégé* editor. The ontology is composed of 38 classes, 10 object properties, 30 data properties and includes more than one thousand logical axioms. By examining the *Class hierarchy view* within *Protégé*, as depicted in Figure 2a, it is possible to observe the main implemented classes of the ontology, while in Figure 2b some restrictions on the class `:Costume` through OWL axioms are represented.

Concerning the object properties, we developed some relevant properties that delineate the relationships among the garments. These include: the transitive property `:covers`, along with their sub-properties `:covers_with_transparency`, as well as the symmetric property `:sewn_together`. These relationships facilitate the identification of garments that are fully

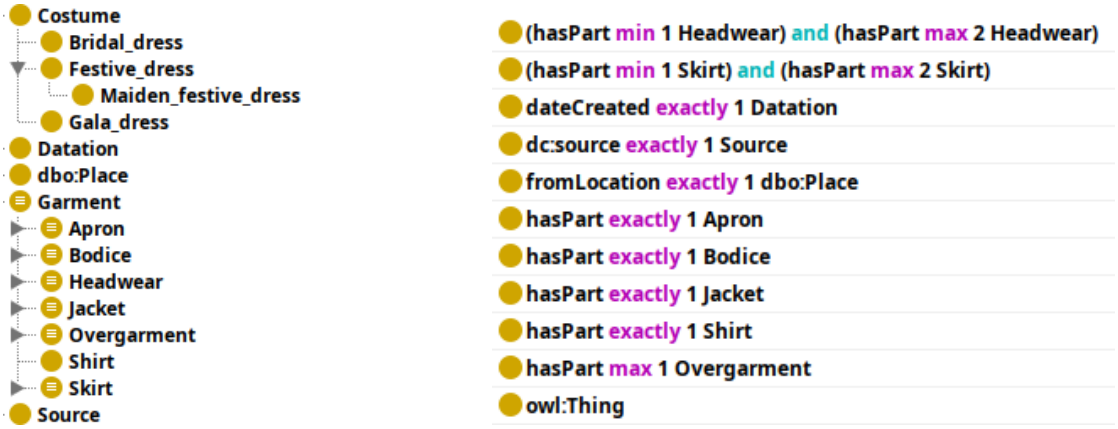

Figure 2: Class hierarchy view (a) and cardinality restrictions on the class `:Costume` (b).

visible when the costume is worn completely, those that are partially or nearly entirely covered. Additionally, they enable distinguishing scenarios where garments are overlaid with a fabric that permits transparency, such as when a garment is covered by a sheer veil. Moreover, the `:sewn_together` object property indicates instances where garments, like skirts and bodices, are stitched together.

Figure 3 illustrates how the main classes of the ontology relate to each other through the properties described above. The sub-classes of the `:Garment` class are related to each other through the BISTÌRIS object properties reported below within the black box.

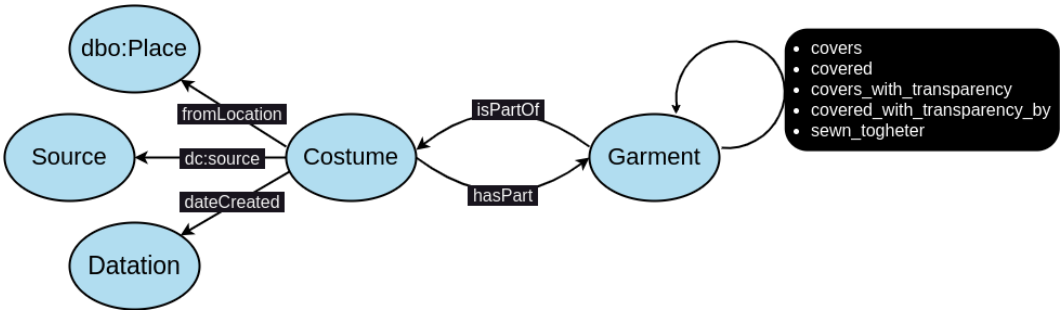

Figure 3: Main classes and their associated object properties within the ontology. Blue labelled ellipses represent classes, while object properties are illustrated as labelled edges.

Concerning data properties, individuals belonging to the `:Garment` class can be described using 28 data properties. The majority of them accept a datatype `xsd:boolean` as their range. The remaining properties, which describe the colours of garments and accessories, accept a datatype `rdfs:Literal` as their range. Most data properties represent characteristics of one or two sub-classes of the `:Garment` class, sometimes qualifying individuals. An illustrative example of certain restrictions on the `:Panel_aprons` class through OWL axioms is reported

below, formalised in Manchester Syntax notation [4]:

> `Panel_aprons` **and**
> ((*elongated_strip* **value** `true`) **or** (*tongue_shaped* **value** `true`) **or**
> (*triangle_shaped* **value** `true`)) **and** (*apron_panel* **value** `true`)

Meaning that each individual of the class `:Panel_aprons` must have a panel, and this panel can be either of the `:elongated_strip`, `:tongue_shaped` or `:triangle_shaped` type.

3.5. Ontology Reuse

To enhance ontology interoperability and reusability, we establish connections with various external ontologies through direct reusing strategies, guided by established principles outlined in the state of the art [25]. Bistìris followed these approaches by seamlessly integrating ontology terms from three prominent sources: DBpedia [5], Dublin Core [6], and Schema.org [7]. Table 3 shows the direct reuse of external classes and properties in Bistìris, including their specific usage.

Element	Type	Ontology	Usage
`source`	Property	Dublin Core	A related resource from which the costume is derived.
`isPartOf`	Property	Schema.org	A particular garment is part of or belongs to a costume.
`hasPart`	Property	Schema.org	A costume comprises or includes specific garments as its parts.
`fromLocation`	Property	Schema.org	The geographical origin or location associated with a particular garment or costume.
`dateCreated`	Property	Schema.org	The date or period when a particular garment or costume was created.
`Place`	Class	DBpedia	It denotes physical places, such as cities, countries, regions, landmarks, or geographical areas.

Table 3
Direct reuse of classes and properties in Bistìris.

The direct reuse has been achieved by incorporating selected ontology terms into Bistìris through the use of `rdfs:isDefinedBy` axioms. This approach delegates the semantics of reused terms to the external ontologies identified, with the aim of promoting virtuous reuse that facilitates integration between different schemas and enables access to the vast amount of data available in the Linked Open Data.

[4] https://www.w3.org/TR/owl2-manchester-syntax/
[5] https://www.dbpedia.org/
[6] https://www.dublincore.org/
[7] https://schema.org/

3.6. Population

The ontology was populated from three primary sources, each representing distinct resource types: a historical source, the online catalogue provide by ArCo, and the results of a project conducted by the Ethnographic Institute of Sardinia (ISRE) [8]. The historical source utilised was a 1989 illustrated book authored by Sardinian historian Enrico Costa [26]. Additionally, the online catalogue ArCo and ISRE's project facilitated access to photographs of costumes and individual garments. Entities imported from other knowledge graphs, such as ArCo, were linked to corresponding individuals within Bistìris using the `owl:sameAs` property.

Given the challenge in retrieving bibliographic material providing systematic and accurate descriptions of costumes at the individual garment level, populating Bistìris knowledge base requires efforts and meticulous observation of photographic material. Collaborations with local associations dedicated to cultural heritage preservation and engagement with museum institutions housing Sardinian costume collections were undertaken. These activities reinforced the significance of Bistìris in facilitating the valorisation and rigorous scientific study of Sardinia's popular cultural artefacts.

In Figure 4, we present a graphical representation of individuals belonging to the class `:Costume` and their relationships. Here, individuals are symbolised by labelled lilac ellipses, their membership classes are denoted by labelled light blue rounded rectangles, and the data properties values are encapsulated within green boxes. Furthermore, object properties linking individuals are illustrated as labelled edges, providing a comprehensive visualisation of the relational structure. In this example, we illustrate the network of relationships between individuals describing two skirt specimens from the traditional costume of the small town of Atzara, and how these individuals can be connected to external resources, such as those from DBpedia.org. The two individuals, *Atzara_Dvv_Skirt* and *Atzara_EC1_Skirt*, both belonging to the class `:Long_skirt`, are associated with the individuals *Atzara_Dvv_Costume* and *Atzara_EC1_Costume* through the inverse properties `:isPartOf` and `:hasPart`. Individuals representing costumes relate to each other through the `owl:differentFrom` property and, through appropriate object properties, to individuals of the class `:Datation` representing their dating, to individuals of the class `:Source` indicating their reference source, and to individuals of the class `dbo:Place` from DBpedia.org indicating their place of origin. Both *Atzara_Dvv_Costume* and *Atzara_EC1_Costume* belong to the class `:Costume`. However, while the source provided usage details (such as bridal dress and gala dress) for the former, enabling precise sub-classification, the latter lacked such specifications in the source. Consequently, we categorised it in a more general manner.

The example depicted serves to exemplify how costumes can showcase variations in coloration, embroidery, and pleating in their respective skirts. These variations, which are common among specimens of the same traditional costume, highlight the significance of analysing and comparing the unique features of each garment. However, it is important to note that such variations also complicate the maintenance of a reliable knowledge base.

[8] https://www.isresardegna.it/

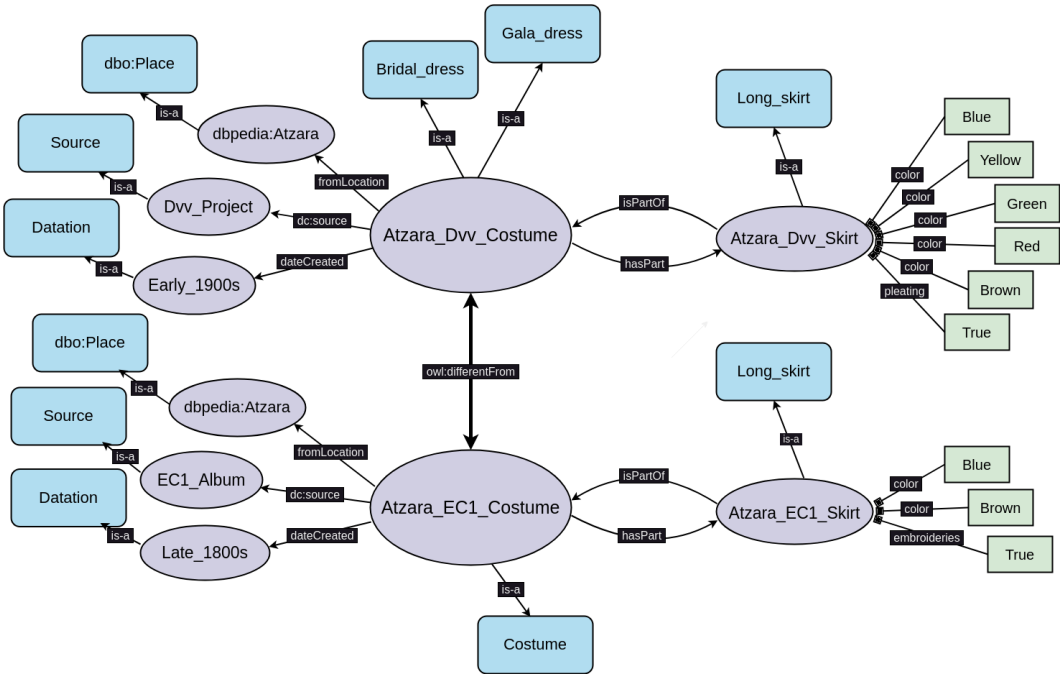

Figure 4: Example of individuals of the class `:Costume` and their relationships with other individuals and data values.

4. Using Bistìris

Bistìris presents a promising support for the comprehensive representation of traditional female costumes of Sardinia through its capability to construct a detailed schema. Figure 5 illustrates a costume from the small town of Fonni alongside the pertinent data sourced from the Bistìris knowledge base. Each garment, underlined and written in bold, is accompanied by a complete list of properties' values. It is worth noting that values written in blue are inferred by the reasoner. As we can see from this Figure, Bistìris can be a very valuable support to highlight recurrences with respect to the colours, fashions and dressing of the garments in the catalogue.

In the following, we illustrate how Bistìris can be useful to address specific Competency Questions (CQs), derived from the requirements phase (Table 2), by providing specific functionalities and capabilities to explore, analyse, and understand various aspects of Sardinian traditional costumes:

CQ1: Bistìris allows to represent the geographic origin of the costume, providing insights into regional variations.

CQ2: Bistìris can be used to describe costumes variations, facilitating understanding of the evolution over time of Sardinian tailoring traditions.

CQ4: Bistìris allows to represent costumes built with transparent materials, aiding investigations into material composition and construction techniques.

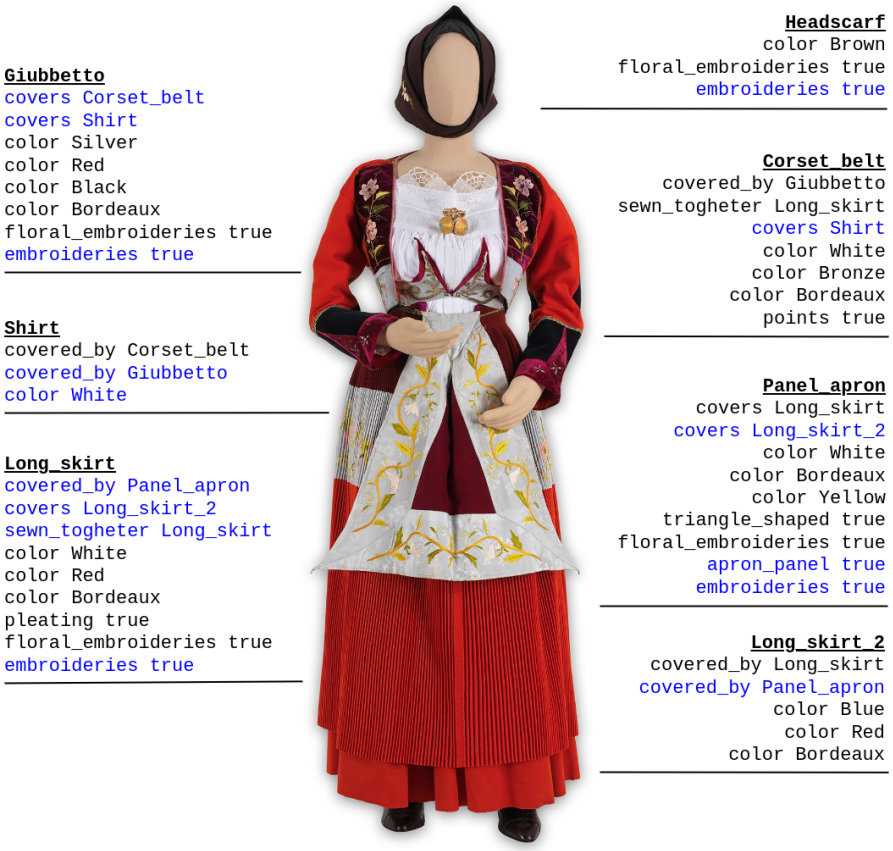

Figure 5: Traditional costume of Fonni accompanied by data extracted from the Bistìris knowledge base. Blue text denotes insights inferred by the Pellet reasoner [27]. Photograph sourced from ISRE's publication.

CQ5: Bistìris allows to describe costumes' layering practices.

CQ6: Bistìris can be used to represent frequency of specific properties that occur simultaneously among different costumes stored in the knowledge base, thus facilitating comparative analyses.

We are currently working on extending the ontology to address additional CQs. Regarding CQ3, the current version of Bistìris does not support the description of materials and techniques. However, we are collaborating with domain experts to develop specific properties to examine garments firsthand, aiming to better represent the materials and techniques used in their creation. Moreover, upon integrating Bistìris data with other Linked Data sources such as DBpedia and WikiData researchers will have the opportunity to conduct comprehensive searches by cross-referencing garment characteristics with geographical, historical, and cultural data available in the Semantic Web. This integration would significantly enhance the utility of Bistìris enabling investigations into potential correlations between environmental factors and traditional costume variations.

5. Conclusion and Future Work

In this paper we have proposed Bistìris, an ontology for modelling the diverse variations of the Sardinian traditional female costume. This work is conducted as part of the PNRR *e.INS: Ecosystem of Innovation for Next Generation Sardinia* project [9], Spoke 2, which aims to support Sardinia's tourism and cultural sector through collaboration among universities, research centres, museums, and society. The development of Bistìris aims to foster innovation and sustainability, particularly in supporting small museums and cultural associations within the tourism and cultural heritage sectors in marginal markets.

Furthermore, our work showcases the utility of custom-built ontologies to provide Semantic Web functionality within specialised domains. By analysing available texts, we have identified parameters for describing garments under study, allowing for future revisions and expansions to accommodate evolving research needs. Looking ahead, enriched by feedback from expert users, Bistìris will facilitate comparisons of Sardinian costumes across various institutions and private collections, enabling comprehensive research and analysis.

Bistìris represents an ongoing effort toward continual improvement and enhancement. As part of our current and future work, we are dedicated to integrating the ontology with ArCo and CIDOC-CRM to enhance its interoperability and alignment with international standards. Furthermore, we aim to align our approach to date representation within the ontology with other schemas used in the realm of Linked Data. This alignment would facilitate more robust and integrated research opportunities by leveraging temporal periods effectively. We have investigated various temporal ontologies, including the *Time Ontology* [28], which offers comprehensive frameworks for handling precise dates. However, applying this ontology to our specific context, characterised by broader temporal ranges and imprecise dating, necessitates further exploration. In fact, costumes often lack specific date attributions and are typically described in broader terms such as "Early 1900s" or "Late 1800s." To address this challenge, we plan to explore the WikiData schema, recognising its granularity in dividing centuries into years or decades. Furthermore, we plan to expand the ontology to encompass descriptions of traditional female daily clothing and male costumes, thereby enhancing its usefulness and breadth. Additionally, we aim to represent additional properties related to garment materials, tailoring techniques, and other potential technical characteristics, with domain specialists assisting in their organisation and structuring.

This work showcases the utility of custom-built ontologies to provide Semantic Web functionality within specialized domains. Drawing inspiration from recent advancements in automatic ontology-based information extraction from unstructured documents [29, 30], we are analysing available texts to identify parameters for describing garments under study, enabling future revisions and expansions to accommodate evolving research needs.

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[9] https://www.einssardinia.it/

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