Modeling Intermediality and Interpretations in Contemporary Combinatory Literature: Revealing *Il Giuoco dell'Oca* by Edoardo Sanguineti

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ABSTRACT (ENGLISH)

This paper investigates the application of Semantic Web technologies to the analysis of Edoardo Sanguineti's *Il Giuoco dell'Oca*, a significant example of combinatory literature. The study employs computational literary methods to model and analyze the intermedial relations within the novel.

The research introduces MIrO (**M**ultimedia **I**nter-**r**elation **O**ntology), a model that integrates established ontologies to represent intermedial relations, intratextual connections, and interpretative acts within the text. By making explicit and formalizing these relations, the study shows how computational strategies of text enrichment, resulting from a critical interpretation, can enhance the reading experience and understanding of literary texts.

Keywords: Semantic Web; Edoardo Sanguineti; Computational Literary Studies; Intermedial Relations.

ABSTRACT (ITALIANO)

Modellare l'Intermedialità e le Interpretazioni nella Letteratura Combinatoria Contemporanea: una Lettura de "Il Giuoco dell'Oca" di Edoardo Sanguineti

Il presente contributo indaga l'applicazione delle tecnologie del Web Semantico all'analisi de *Il Giuoco dell'Oca* di Edoardo Sanguineti, un esempio significativo di letteratura combinatoria. Lo studio impiega metodi letterari computazionali per modellare e analizzare le relazioni intermediali all'interno del romanzo.

La ricerca introduce MIrO (**M**ultimedia **I**nter-**r**elation **O**ntology), un modello che integra ontologie consolidate per rappresentare le relazioni intermediali, le connessioni intratestuali e gli atti interpretativi all'interno del testo. Esplicitando e formalizzando queste relazioni, lo studio mostra come strategie computazionali di arricchimento del testo, derivanti da un'interpretazione critica, possano migliorare l'esperienza di lettura e la comprensione dei testi letterari.

Parole chiave: Web Semantico; Edoardo Sanguineti; Letteratura Computazionale; Relazioni Intermediali.

1. INTRODUCTION

This paper explores the use of Semantic Web technologies in the Digital Humanities (DH) field to study and analyze contemporary literary texts. It particularly focuses on combinatory literature, which is well-suited for description and modeling through computational methods. These methods enable a deeper understanding of a text by focusing on information extraction, knowledge organization, and data reconciliation. Furthermore, using Linked Open Data (LOD) as a publishing approach offers new pathways to challenge copyright restrictions.

For our case study, we selected the novel *Il Giuoco dell'Oca* by Edoardo Sanguineti. Originally published in 1967 (Sanguineti, 1967), this work was born in the context of the neo-avantgarde linked to the *Gruppo '63* (Curi, 2006) and it is considered an example of combinatory literature (Portesine, 2021: 22-26) for its unique structure and content. The title itself suggests that the author draws inspiration from the traditional game of the goose, where each chapter is like a box of the board game, conveying a ludic dimension within the literary text typical of combinatorial and Oulipian[1] literature (Portesine, 2021: 22; Corosaniti, 2024: 3; Albani, 2018). This structure allows the reader to approach the novel sequentially, moving from the first chapter to the last, or to jump between chapters. In this way, the reader is invited to interpret and collaborate in constructing the narrative (Eco, 1967).

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[1] The OuLiPo (Ouvroir de Littérature Potentielle) was founded in 1960 by the engineer and mathematician François Le Lionnais and the writer Raymond Queneau. Its Italian counterpart, OpLePo (Opificio di Letteratura Potenziale), was established in 1990. Sanguineti joined OpLePo in 1998, becoming its president. In this context, *Il Giuoco dell'Oca* is considered an *Oplepian* text *ante litteram*, anticipating the group's principles before its actual foundation (Oplepo, 2005). For an overview of both groups, please refer to the following websites: https://oulipo.net/fr and https://www.oplepo.com/.

A key element of the novel is the use of the rhetorical strategy of the ekphrasis, as each chapter corresponds to a description of a cultural object. These objects primarily relate to the culture of the 1960s, the period in which Sanguineti lived and worked. The use of ekphrasis, however, challenges traditional forms of description by juxtaposing images and emphasizing specific aspects of a variety of items such as works of art, advertisements, films, and songs, collectively evoking the image of a "Biennale" or art gallery (Portesine, 2021). Scholars identified the majority of such items, enriching the comprehension of Sanguineti's literary and intellectual work (Portesine, 2021; Risso, 2023; Sotgiu, 2016).

Consequently, an important aspect of the text is the presence of different kinds of relations that can be articulated into a multi-relational model: (i) the relation connecting a chapter's ekphrasis and the cultural object described within; (ii) the intratextual relations between chapters sharing the description of the same cultural object; (iii) the connection between objects of different media types.

In this talk, we introduce MIrO (**M**ultimedia **I**nter-**r**elation **O**ntology), a formal model designed to integrate various ontologies used in the field of cultural heritage (i.e. LRMoo, RDA, CIDOC-CRM, SKOS, HiCO, and CiTO). MIrO aims to represent the domain of intermedial relations (Rajewsky, 2011) alongside the description of cultural objects related to the novel, including *Il Giuoco dell'Oca* itself, and the interpretation acts of various scholars who have identified and analyzed the different types of relations within Sanguineti's work.

2. STATE OF THE ART

The scholar (Risso, 2023) highlights that the distinctive structure of the novel fosters an immersive virtual environment. In this context, traditional linear reading is transformed into a set of narrative possibilities, creating a mosaic of potential combinations (Calvino, 2015: 212-217). This aspect of Sanguineti's work invites an examination of computational methods' role in literature and their significance in narrative construction. Nevertheless, to the authors' knowledge, *Il Giuoco dell'Oca* has received little attention in the field of Digital Humanities, except for the recent project *Inside the Black Box* (Corosaniti, 2024), a multimedia installation that exploits Artificial Intelligence for a ludic-immersive experience of the gamebook. However, analyzing the structure of the work can enhance our understanding of its combinatorial intratextual aspects and the nature of verbal description concerning the modern concept of ekphrasis (Cometa, 2012; Risso, 2023).

With the rise of Semantic Web technologies as a standard for organizing, representing, and sharing cultural heritage, two main approaches have emerged in literary studies. The first approach focuses on creating semantic editions that facilitate textual analysis and navigation, emphasizing inter- and intratextual connections within literary works. Some examples include the digital edition of Paolo Bufalini's Notebooks[2] (Daquino, 2019), the digital edition of Vespasiano da Bisticci's letters[3] (Tomasi, 2020a) and OntoPavese (D'Agata, 2024). The second approach seeks to move beyond traditional methods of digital scholarly editing by employing ontological models and linked data (Meghini, 2021). Applied to literary works, this approach allows for a deeper understanding of the unique characteristics of texts, facilitates the generation of new semantic data, and proposes semantic narratives helping to overcome copyright limitations in contemporary literature (Bruno, 2024). Regarding the formalization of intertextuality and intermediality within the cultural heritage, the OWL2 ontology INTRO represents a promising attempt to represent media features and their interconnections (Oberreither, 2024). However, while INTRO represents a valuable initial step, it remains at a general level of formalization of the possible interrelations and does not yet offer the granularity needed to capture the specific types of complex semantic relationships, such as those present within *Il Giuoco*.

3. METHODOLOGY

To develop our methodology, we follow the approach for knowledge organization and representation in DH projects (Tomasi, 2020b). We began by selecting a domain of interest (Edoardo Sanguineti's novel) and conducting a selection of cultural objects (step 1). We then created various models, from a conceptual map based on real data to a theoretical model (step 2). We retrieved metadata for the selected objects from the web, addressing the gaps in contemporary cultural heritage (step 3). Finally, we aligned proprietary schema metadata with international standards to enhance data descriptions and reusability (step 4). The final step involved creating a conceptual model based on the theoretical map. This model

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[2] https://projects.dharc.unibo.it/bufalini-notebook/.
[3] https://projects.dharc.unibo.it/vespasiano/.

integrates standard ontologies and extends it with new classes and properties. We managed the domain and all items using the WEMI[4] structure (Work, Expression, Manifestation, Item) from LRMoo (Library Reference Model[5]) to detail the lifecycle of objects.

We produced a dataset based on the conceptual model, which includes a selection of 14 cultural objects[6], including *Il Giuoco dell'Oca* and two other cultural objects related to the novel, even though they are not mentioned in the chapters. These include the board game *The Game of the Goose* and Gianfranco Baruchello's *Il Giuoco dell'Oca di Edoardo Sanguineti*, which reinterprets the traditional board game in the light of Sanguineti's work. Each cultural object is described alongside its metadata, and the dataset also includes claims made by scholars regarding the relations among the objects.

The dataset has been converted into an RDF graph. Then, a few competency questions were defined to test the ontology's representativeness and the data's correctness (see section 4).

3. FORMAL MODEL

The model formalizes the requirements mentioned in section 1: (i) the description of the cultural objects related to the novel, including *Il Giuoco dell'Oca*; (ii) the intermedial relations, both the ones concerning each item and the chapter where it is described (emphasizing the intratextual aspects related to the description of the same item across multiple chapters) and the inter-relations between different items related to the novel; (iii) the interpretation acts of various scholars. To achieve these requirements, various existing schemas, vocabularies, and ontologies were reused.

Concerning the first requirement, the WEMI structure of LRMoo and SKOS (Simple Knowledge Organization System[7]) was chosen to model *Il Giuoco dell'Oca* and all the selected items. Additionally, the RDA standard (Resource Description and Access[8]) was reused for the associated metadata[9].

Each item is described in its possible implemented entity in WEMI (`lrmoo:F1_Work`, `lrmoo:F2_Expression`, `lrmoo:F3_Manifestation`, `lrmoo:F5_Item`) to which the relative alignment with the RDA classes corresponds (`rdac:C10001`, `rdac:C10006`, `rdac:C10007`, `rdac:C10003`). Metadata were chosen based on the different WEMI levels, representing some of the categories identified during the scouting phase (see section 3).

Additionally, all the agents responsible for the creation of (`rdaw:P10065`, `rdam:P30329`) or contribution to (`rdae:P20328`) the cultural object were specified with the corresponding role through the possible sub-properties of the main RDA properties.

Concerning the modelization of the novel, we considered each chapter to be an instance of the class `lrmoo:F2_Expression` with a fixed text content type (`rdaco:1020` "text"). Considering the text content at the Expression level reflects how accurately the author describes cultural objects (Portesine, 2021: 19). This approach allows us to engage with the cultural objects on a higher level of abstraction.

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[4] WEMI is a conceptual structure originally introduced in FRBR (Functional Requirements for Bibliographic Records) to describe the relationships between different levels of bibliographic information. FRBR was later integrated into LRMoo, the object-oriented implementation of the IFLA Library Reference Model (LRM), which refined and extended the conceptual model. For the full documentation of FRBR see: https://repository.ifla.org/items/54925d49-b08d-4aeb-807c-1b509ec40b55.

[5] https://repository.ifla.org/items/94aedb49-2d6e-4a6d-9974-f33abb7e3c0e.

[6] A complete overview of the dataset is available at the following link: https://github.com/enricabruno/miro.

[7] https://www.w3.org/TR/skos-reference/.

[8] https://www.rdaregistry.info/.

[9] The formal model representing the subdivision of the domain into WEMI levels and its integration with LRMoo, RDA, and SKOS can be seen at the following link: https://github.com/enricabruno/miro/tree/main/images.
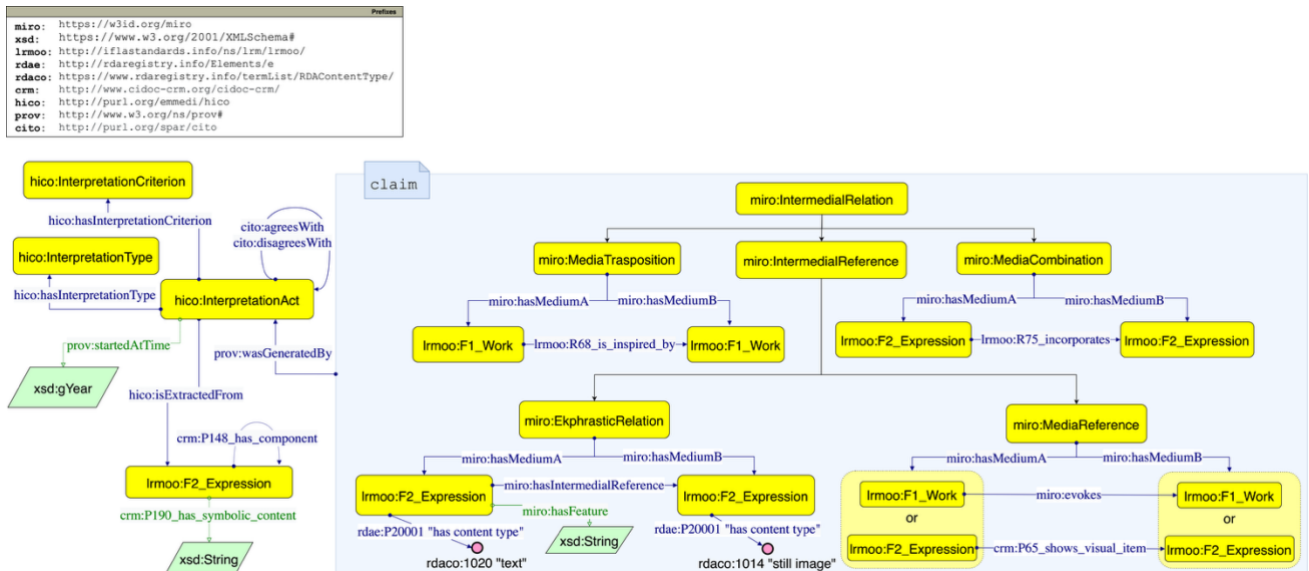
Figure 1. The formalization of the three kinds of relations.

Regarding the second requirement, all the relations were modeled based on the classification proposed by (Rajewsky, 2011), integrating LRMoo, CIDOC-CRM, and RDA to achieve greater detail, but also adding classes and properties created from scratch. This choice was driven by the study of the standards considered from which some limitations emerged, namely concerning the semantics of CIDOC-CRM and LRMoo. Both models offer properties to express relationships between entities and some of them are well-aligned with our domain of interest (e.g. `lrmoo:R75_incorporates`). In some cases, the availability of more general properties proved advantageous (e.g. `lrmoo:R68_is_inspired_by`), allowing for the expression of semantic nuances more closely aligned with the phenomena found in the texts. Nonetheless, more complex semantic relations remain insufficiently covered. For this purpose, the MIrO data model was created (see Fig. 1). The main class, i.e. `miro:IntermedialRelation`, expresses all those phenomena that occur between different media (Rajewsky, 2011: 46). These phenomena can be divided into three subcategories based on the type of intermediality (Rajewsky, 2011: 51): media transposition (`miro:MediaTransposition`), media combination (`miro:MediaCombination`) and media reference (`miro:IntermedialReference`). Each of these categories is composed of two media (`miro:hasMediumA`, `miro:hasMediumB`) that are linked to one another by a meaningful relation, expressed by an object property. In the first category, we opted to maintain a higher level of modeling by using the symmetric property `lrmoo:R68_is_inspired_by` instead of its asymmetric superproperty `lrmoo:R2_is_derivative_of`. While media transpositions involve the transformation of a cultural product from one medium to another, our case study does not involve real transformations but more an influence between different media. The two related media in this class are described at their `lrmoo:F1_Work` level, for which the mentioned property is already specified by the LRMoo standard. The second category concerns the process of combining at least two distinct media: we decided to reuse the property `lrmoo:R75_incorporates` to express the inclusion of an `lrmoo:F2_Expression` in another `lrmoo:F2_Expression`, both regarding the realization of different works. The third category encompasses two types of media references which depend on the nature of the reference and the specific content type of the cultural objects involved in the relationship. The first type of intermedial reference (`miro:MediaReference`) involves an evocation (`miro:evokes`) or depiction (`crm:P65_shows_visual_item`) of some kind of medium within another one of different nature. The second type of media reference refers instead to a more specific relation, the one between the chapters of Sanguineti's work and the items described. This relation is called ekphrastic relation (`miro:EkphrasticRelation`) and both entities involved must share a specific content type (`rdae:P20001 "has content type"`), namely a text and an image. In this context, the text serves as the referencing medium (Rajewsky, 2011: 53), and it is inherently connected to the object it refers to through a specific relation (`miro:hasIntermedialReference`). Moreover, from each ekphrasis, a set of features can be extracted (`miro:hasFeature`) to compare the same object described within different chapters, providing information about the intratextual relations.

The model also integrates the part concerning the scholar's hermeneutical analysis. The individuation of the kinds of intermedial relations is supported by a claim connected to a `hico:InterpretationAct` by the property `prov:wasGeneratedBy`. Besides HiCO (The Historical Context Ontology[10]) and PROV-O (Provenance Ontology[11]) ontologies, the part concerning the scholar's interpretations integrates CiTO (Citation Typing Ontology[12]), mainly to express if scholars agree or not with one another (`cito:agreesWith`, `cito:disagreesWith`).

Figure 2. Example of integrated modelization: WEMI levels, relations, and interpretation act.

In Figure 2, we briefly present an example of modelization based on the formal representation of chapter LXXXVIIII and two types of intermedial relations identified within. The first relation is the ekphrastic relation (`miro:hasIntermedialReference`), which connects the chapter to a specific cultural object (i.e. Richard Hamilton's collage *Just What Is It That Makes Today's Homes So Different, So Appealing?*). Particularly, the ekphrasis is described through specific features (`miro:hasFeature`). The second relation links the collage to another cultural object, the comic magazine *Young Romance*, which is incorporated within the collage (`lrmoo:R75_incorporates`). Each cultural object, including *Il Giuoco dell'Oca* of which the chapter is part (`lrmoo:R5_has_component`), is described alongside its metadata respecting the WEMI levels at which the specific intermedial relations occur. Furthermore, each relationship is associated with a specific interpretation act through the property `prov:wasGeneratedBy`.

Part of the scenario presented in Figure 2, concerning the ekphrasis of the cultural object *Just What Is It That Makes Today's Homes So Different, So Appealing?* and its metadata, is formalized in Turtle syntax as follows[13]:

```
<https://w3id.org/miro/work/just-what-w> a lrmoo:F1 ;
```

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[10] https://marilenadaquino.github.io/hico/.
[11] https://www.w3.org/TR/prov-o/.
[12] https://sparontologies.github.io/cito/current/cito.html.
[13] The complete RDF dataset in Turtle syntax is available at the following link:
https://github.com/enricabruno/miro/tree/main/data.

```
lrmoo:R3 <https://w3id.org/miro/expression/just-what-e> ;
rdaw:P10004 "https://vocab.getty.edu/aat/300033963"^^xsd:anyURI ;
rdaw:P10088 "Just what is it that makes today's homes so appealing?"^^xsd:string ;
rdaw:P10219 "1956"^^xsd:gYear ;
rdaw:P10451 <https://w3id.org/miro/agent/richard-hamilton> ;
owl:sameAs "https://www.wikidata.org/wiki/Q3190307"^^xsd:anyURI .


<https://w3id.org/miro/expression/chapter-LXXXVIII> a lrmoo:F2 ;
miro:hasIntermedialReference <https://w3id.org/miro/expression/just-what-e> .


<https://w3id.org/miro/ekphrasticRelation/ekph_rel_1> a miro:EkphrasticRelation ;
prov:wasGeneratedBy <https://w3id.org/miro/interpretationAct/interpretationAct_1_ek> ;
miro:hasFeature "artistic technique and artwork description"^^xsd:string,
    "typographic element"^^xsd:string ;
miro:hasMediumA <https://w3id.org/miro/expression/chapter-LXXXVIII> ;
miro:hasMediumB <https://w3id.org/miro/expression/just-what-e> .
```

4. RESULTS, CONCLUSION AND FUTURE WORK

This presentation suggests a method for analyzing contemporary texts using Semantic Web technologies to enhance reading and comprehension. The chosen case study, *Il Giuoco dell'Oca* by Edoardo Sanguineti, was examined to explore its unique structure and content. The focus was on intermedial relations, intratextual connections, and interpretative actions within the text.

From the SPARQL competency questions conducted on the dataset, initial observations reveal previously hidden aspects of how the author constructed the text. Building on these insights, the formalization of textual features through computational methodologies emerges as a promising approach for deepening textual interpretation. Such an approach could open up innovative research directions and encourage the development of new readings and scholarly perspectives. In particular, the initial insights into Sanguineti's use of ekphrasis across different chapters highlight the author's role in constructing a combinatorial textual structure. Specifically, some cultural objects are described in more than one chapter and, when it happens, the number of chapters sharing the same object is always three. Additionally, the perspective from which the first cultural object (i.e. *Cassa sistina* by Mario Ceroli) is described shifts throughout the novel, suggesting a cinematographic portrayal that begins with a view from inside the box and concludes with a broader environmental overview. Another important result concerns the interpretation acts, particularly the comparison of agreements and disagreements. Specifically, there is only one instance of disagreement, while there are nine instances of agreement, signaling a shared agreement between scholars' identification of the cultural objects connected to chapters[14].

In future works, MIrO ontology could be further extended by integrating the Scholarly Observations ontology in OWL (Sanfilippo, 2024), enhancing its capacity to represent scholars' interpretative acts on literary texts. As part of future developments, we also plan to implement an interactive semantic narrative that leverages the principles of Linked Open Data as a publishing method. In this way, an annotation on the digitized collage of Baruchello's *Il Giuoco dell'Oca di Edoardo Sanguineti*, linking each box to its corresponding chapter, could clarify the novel's structure as a gamebook and provide an alternative means of accessing the text. Additionally, we aim to integrate annotations for each chapter, within copyright limits, referencing both the described cultural objects and related items, as well as the corresponding interpretation acts. Finally, we will test the MIrO model on other case studies, focusing on general texts that exhibit a certain degree of relational classification.

ACKNOWLEDGMENTS

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[14] A complete overview of the competency questions tested through SPARQL is available at the following link: https://github.com/enricabruno/miro/tree/main/SPARQL_queries.

REFERENCES

Albani, P. (2018). La letteratura come gioco combinatorio. Griselda. Il portale di Letteratura. https://site.unibo.it/griseldaonline/it/approfondimenti/paolo-albani-letteratura-gioco-combinatorio.

Bruno, E., Pasqual, V., & Tomasi, F. (2024). Italo Calvino's 'destini incrociati'. An experiment of semantic narrative modelling and visualisation. Umanistica Digitale, (17), 47-69. https://doi.org/10.6092/issn.2532-8816/19013.

Calvino, I. (2015). Una pietra sopra. Edizioni Mondadori.

Cometa, M. (2012). La scrittura delle immagini: Letteratura e cultura visuale. Raffaello Cortina.

Corosaniti, V. (2024). Inside the Black Box: Il Giuoco dell'Oca di Edoardo Sanguineti. Sinestesieonline, 24.

Curi, F. (2006). Una poetica della 'contrainte'. Sanguineti, l'avanguardia, l' 'Oulipo'. Poetiche, 3, 369-436.

Eco, U. (1979). Lector in fabula: la cooperazione interpretativa nei testi narrativi. Bompiani.

D'Agata, C., Del Grosso, A. M., Nay, L., Palazzolo, G., Sichera, A., & Spampinato, D. (2024). PAVES-e: Per una Hyperedizione dell'opera di Cesare Pavese. In Di Silvestro, A., Spampinato, D. (Eds.), Me.Te. Digitali. Mediterraneo in rete tra testi e contesti. Proceedings of the XIII Convegno Annuale AIUCD2024 (pp. 191-196). https://doi.org/10.6092/unibo/amsacta/7927.

Daquino, M., Giovannetti, F., & Tomasi, F. (2019). Linked Data per le edizioni scientifiche digitali. Il workflow di pubblicazione dell'edizione semantica del quaderno di appunti di Paolo Bufalini. Umanistica Digitale, 7, 49-75. https://doi.org/10.6092/issn.2532-8816/9091.

Meghini, C., Bartalesi, V., & Metilli, D. (2021). Representing narratives in digital libraries: The narrative ontology. Semantic Web, 12(2), 241-264. https://doi.org/10.3233/SW-200421.

Oberreither, B. (2024, 19–20 November). Text and Image Are the Same, or Close Enough at Least. Reflections on Expanding an Ontology for Intertextual Relations Towards Intermediality. [Conference presentation]. Linked Open Data and Literary Studies, Berlin, Germany. https://www.temporal-communities.de/research/digital-communities/resources/lod-resources/Bernhard_Oberreither_Text_and_Image.pdf.

Oplepo (2005). La Biblioteca Oplepiana. Zanichelli, 21-28.

Portesine, C. (2021). «Una specie di Biennale allargata»: il giuoco dell'ecfrasi nel secondo romanzo di Edoardo Sanguineti. Fabrizio Serra Editore.

Rajewsky, I. O. (2011). Intermediality, Intertextuality, and Remediation: A Literary Perspective on Intermediality. Intermédialités, 6, 43–64. https://doi.org/10.7202/1005505ar.

Risso, E. (2023). La regola del giuoco. Universale Economica, 9-37.

Sanfilippo, E. M., Masolo, C., Mosca, A., & Tomazzoli, G. (2024). Operationalizing Scholarly Observations in OWL. In Bikakis, A., Ferrario, R., Jean, S., Markhoff, B., Mosca, A., Nicolosi Asmundo, M. (Eds.), SWODCH'24: International Workshop on Semantic Web and Ontology Design for Cultural Heritage. CEUR Workshop Proceedings. https://ceur-ws.org/Vol-3809/paper3.pdf.

Sanguineti, E. (1967). Il Giuoco dell'Oca. Feltrinelli.

Sotgiu, E. (2016). Il Giuoco dell'Oca nella trilogia di Edoardo Sanguineti. Italianistica: rivista di letteratura italiana, 45(2), 141-156. https://www.jstor.org/stable/43997194 .

Tomasi, F. (2020a). Vespasiano da Bisticci, Lettere. Knowledge Site 3.0. https://dx.doi.org/10.6092/unibo/amsacta/6852.

Tomasi, F. (2020b). Digital humanities e organizzazione della conoscenza: una pratica di insegnamento nel LODLAM. AIB Studi, 60(2). https://dx.doi.org/10.2426/aibstudi-12068.