ODI and BACODI: a study on *Destini incrociati* by Italo Calvino with Semantic Web Technologies
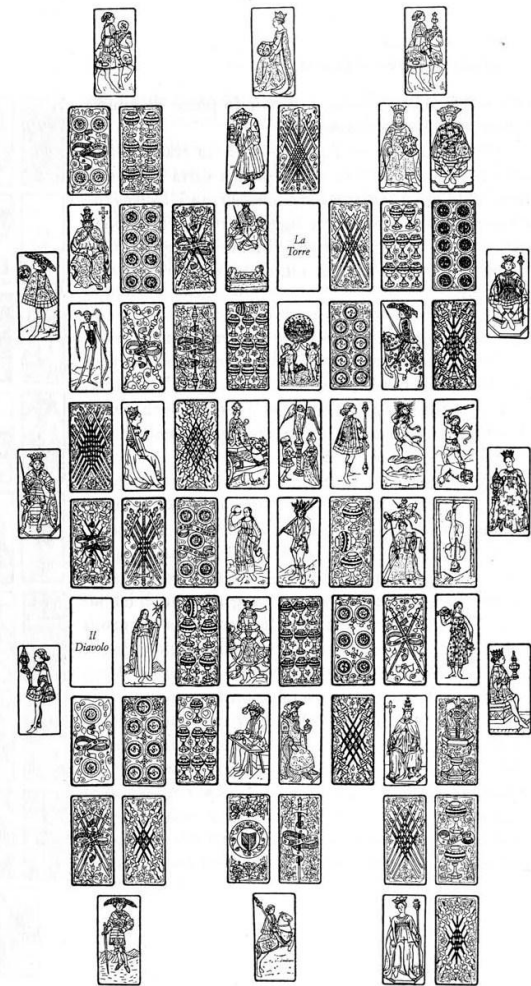
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Il castello dei destini incrociati

❖ Calvino's most rigorous work in combinatorial literature published, in final form, by Einaudi in 1973

❖ The *Pierpont-Morgan Bergamo* as a system of signs and a real language [2]
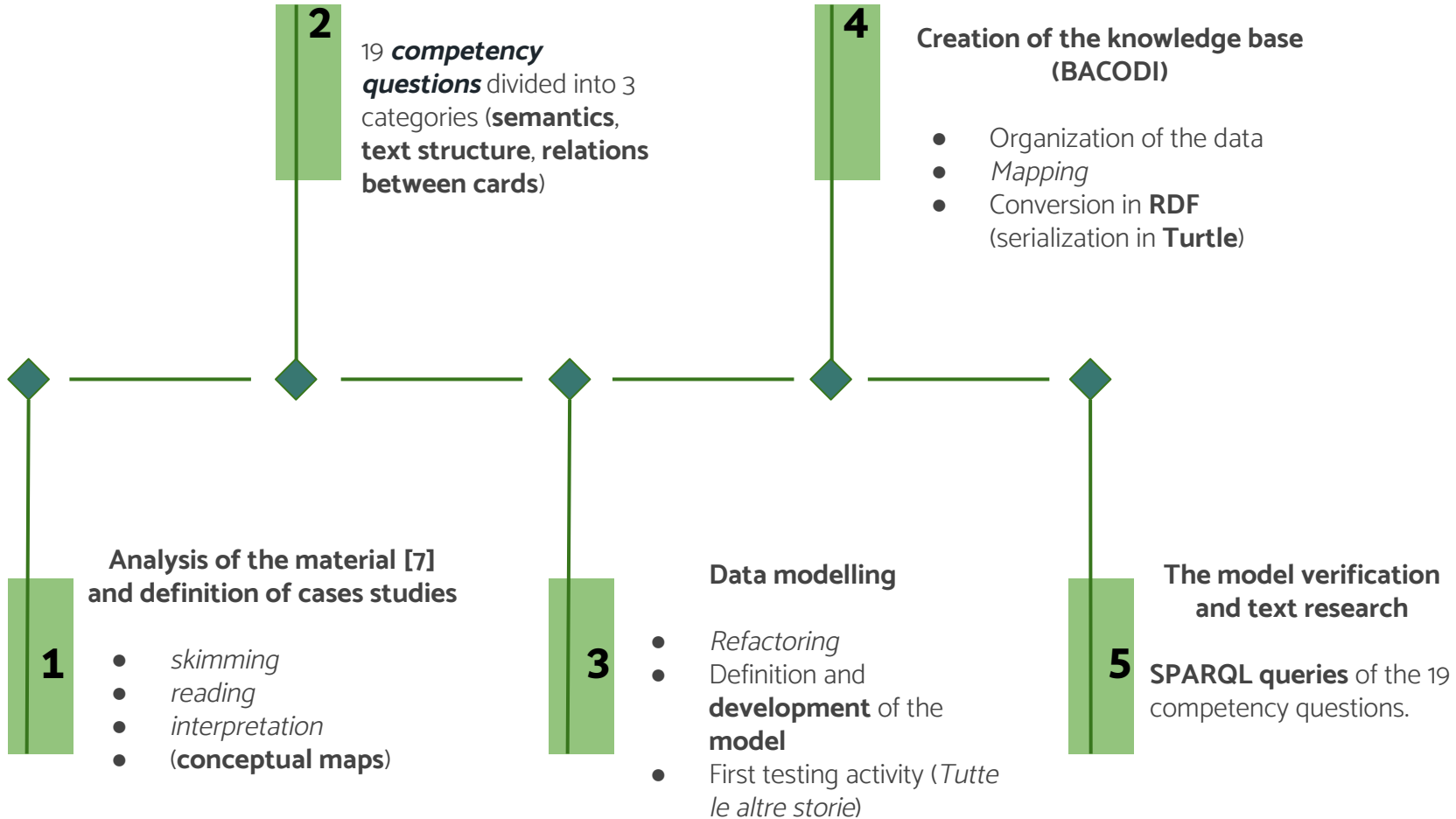
❖ Building the "quadrato magico"
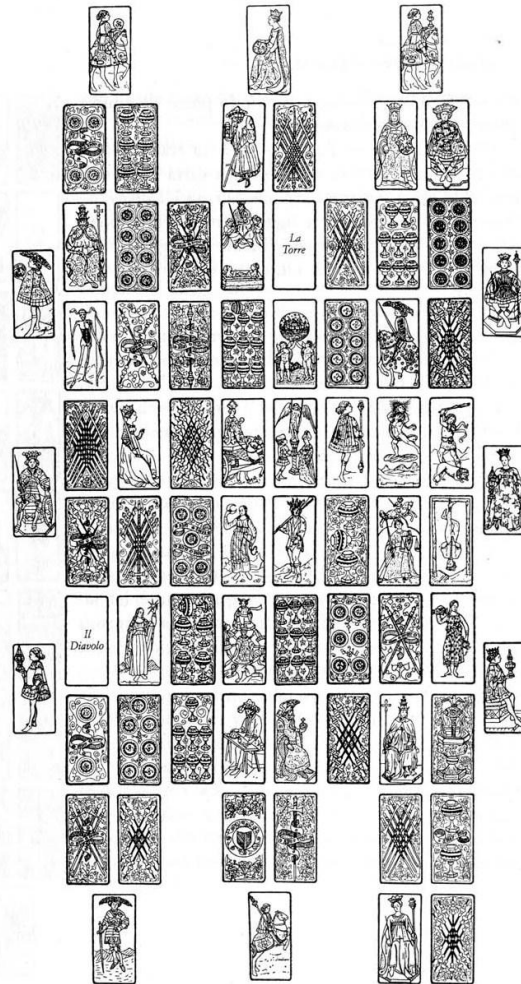
In the field of Digital Humanities, **attention** has recently been turned to the use of **ontological technologies** for the **representation of narrative structures** for both **literary** and **narratological research** purposes [3,4,5]

Calvino's production has received **little attention** in the field of Digital Humanities [6]

Several theoretical studies on *Il castello dei destini incrociati*, but an **absence** of analyses **for a closer understanding of** the **combinatorial** and **narrative relations between cards** in the text

The **mechanical**, **geometric** and **combinatorial nature** of the **work** lends itself to experience **computational study** both **critical** and **narratological** of the text

INTRODUCTION

METHODOLOGY

2

19 ***competency questions*** divided into 3 categories (**semantics**, **text structure**, **relations between cards**)

4

Creation of the knowledge base (BACODI)

- Organization of the data
- *Mapping*
- Conversion in **RDF** (serialization in **Turtle**)

1

Analysis of the material [7] and definition of cases studies

- *skimming*
- *reading*
- *interpretation*
- (**conceptual maps**)

3

Data modelling

- *Refactoring*
- Definition and **development** of the **model**
- First testing activity (*Tutte le altre storie*)

5

The model verification and text research

SPARQL queries of the 19 competency questions.

Edition	➔ Description of the edition (although not directly addressed by the project's representational requirements)

Tarot cards	➔ Cards as artefact in the tarot deck ➔ Cards as narrative instances in each story

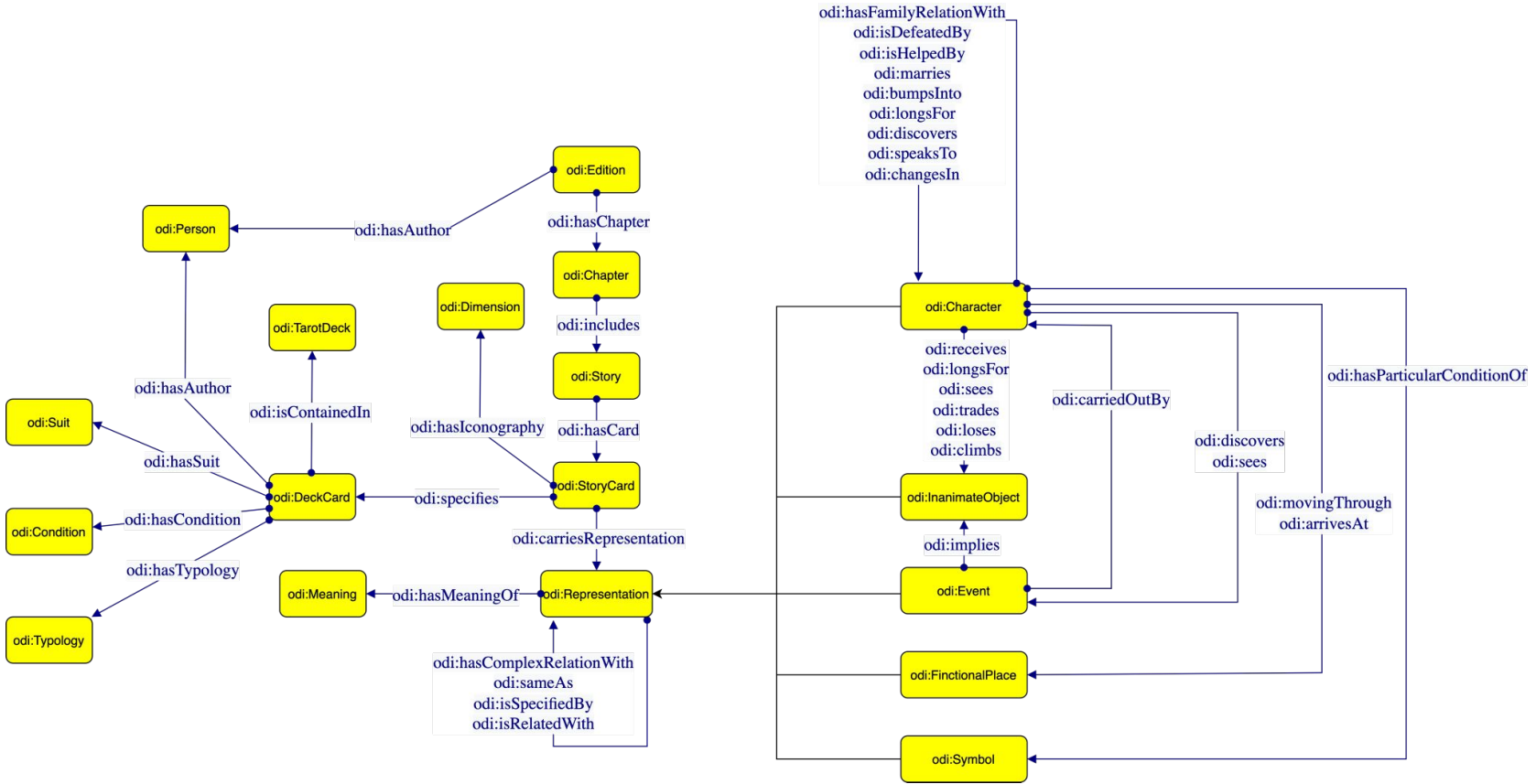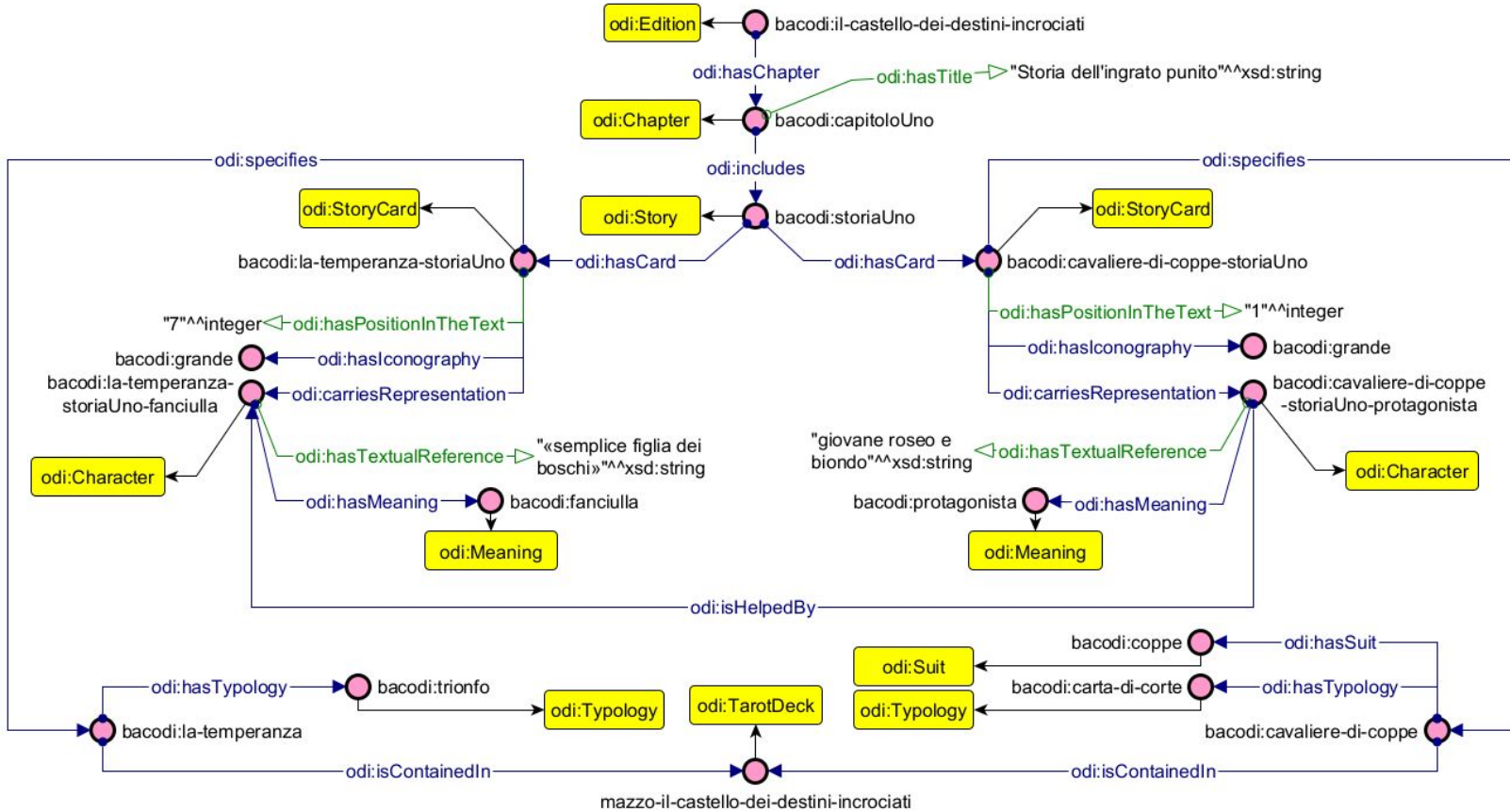| Semantic links and narrative relations between cards	➔ Semantic links: identity or evolution of the same representation ➔ Narrative relationships (protagonist-card)

Figure 1: Main classes and object properties in ODI

Figure 2: Representation in BACODI of the interaction (odi:isHelpedBy) between the cards *Cavaliere di Coppe (Knight of Cups)* and *La Temperanza (Temperance)* in the first story

Q2: What are the meanings of cards with the suit of Coins?

```
select ?cardDeck ?meaning
where {
    ?cardDeck a odi:DeckCard.
    ?cardDeck odi:hasSuit bacodi:denari.
    ?cardDeck odi:hasTypology bacodi:numerale.
    ?cardStory odi:specifies ?cardDeck.
    ?cardStory odi:carriesRepresentation ?representation.
    ?representation odi:hasMeaningOf ?meaning.
}
```

	cardDeck	meaning
1	bacodi:asso-di-denari	bacodi:elemosina
2	bacodi:asso-di-denari	bacodi:luna
3	bacodi:cinque-di-denari	bacodi:luce-del-mattino
4	bacodi:cinque-di-denari	bacodi:spreco
5	bacodi:dieci-di-denari	bacodi:età-dello-oro
7	bacodi:dieci-di-denari	bacodi:ricchezza
8	bacodi:dieci-di-denari	bacodi:eredità
19	bacodi:quattro-di-denari	bacodi:beatitudine

Q:13 What's the protagonist's iconographic dimension?

6 out of a total of 15

```
select distinct ?cardDeck ?story ?iconography
where {
 ?cardDeck a odi:DeckCard.
?cardStory odi:specifies ?cardDeck.
?story odi:hasCard ?cardStory.
?cardStory odi:hasIconography ?iconography.
?cardStory odi:carriesRepresentation ?representation.
?representation odi:hasMeaningOf bacodi:protagonista.
}
```

cardDeck	story	iconography	dimension
1	bacodi:re-di-coppe	bacodi:storiaDue	bacodi:grande
7	bacodi:la-temperanza	bacodi:TuttelealtrestorieSei	bacodi:piccola
8	bacodi:la-giustizia	bacodi:TuttelealtrestorieSei	bacodi:piccola
9	bacodi:fante-di-coppe	bacodi:TuttelealtrestorieCinque	bacodi:grande
10	bacodi:il-bagatto	bacodi:TuttelealtrestorieCinque	bacodi:piccola
11	bacodi:fante-di-denari	bacodi:storiaQuattro	bacodi:grande

The complete documentation of the work can be found at https://odi-documentation.github.io/materials/.

Q9: Which different cards have the same representation?

2 out of a total of 9

```
select distinct ?cardDeck1 ?story1 ?cardDeck2 ?story2
?meaning
where {
?cardStory1 odi:specifies ?cardDeck1.
?cardStory1 odi:carriesRepresentation ?representation1.
?story1 odi:hasCard ?cardStory1.
?representation1 odi:hasMeaningOf ?meaning.

?cardStory2 odi:specifies ?cardDeck2.
?cardStory2 odi:carriesRepresentation ?representation2.
?story2 odi:hasCard ?cardStory2.
?representation2 odi:hasMeaningOf ?meaning.
?representation1 odi:sameAs ?representation2
FILTER (?cardDeck1 != ?cardDeck2)

}
```

	cardDeck1	story1	cardDeck2	story2	meaning
1	bacodi:il-bagatto	bacodi:storiaDue	bacodi:il-diavolo	bacodi:storiaDue	bacodi:visitatore
2	bacodi:fante-di-coppe	bacodi:TuttelealtrestorieCinque	bacodi:il-bagatto	bacodi:TuttelealtrestorieCinque	bacodi:protagonista

The semantics

The semiotics of suits in numeral cards	**Numerals** show a more or less strict semantic value (**Wands**→**wooden** environment; **Coins**→wealth and earthly power and **materiality**/divine and the **immaterial**; **Swords**→**warfare**/more specifically, the **defence**; **Cups**→**banqueting**/refreshment/**well-being**/**love**
The narrative function of court cards and triumphs	Calvino prefers the **court card** to represent **characters** in stories (not always the protagonist); **triumphs** present **more** possibilities of **interpretation** due to the complex miniature
Use the same cards with the same meaning in different stories	Cards share the **same representation** in **different occurrences** in the text, despite having miniatures that cannot be unequivocally interpreted (e.g. ***Otto di Coppe***, in *Storia dell'ingrato punito* and in the last stories of *Tutte le altre storie*, is used to represent the **wedding banquet**)
Use different cards for the same representation in the same story	The author uses **different cards** for representing the **same entity** (almost always a character, e.g. *Il Diavolo* and *Il Bagatto* as "visitor" in *Storia dell'alchimista che vendette l'anima*) or an **evolution of it** (always a character, e.g. *La Temperanza* and *La Giustizia* in *Storia dell'ingrato punito*) in the same story.

The text structure

|	
Pattern of cards	***Il Diavolo*** and ***Due di Denari* (**three occurrences) and ***Il Diavolo, Due di Denari*** and ***Quattro di Spade* (**two occurrences). In each occurrence, *Il Diavolo* has a direct relation with the protagonist, whereas *Due di Denari* and *Quattro di Spade* appear in the direct speech between the devil and the protagonist
The iconographic dimension	**Protagonist's iconographic dimension** is almost always **big.** Only **three occurrences** (*Tutte le altre storie*) are an exception, which represent an identity or evolution of the protagonist **introduced yet**

Relationships between cards

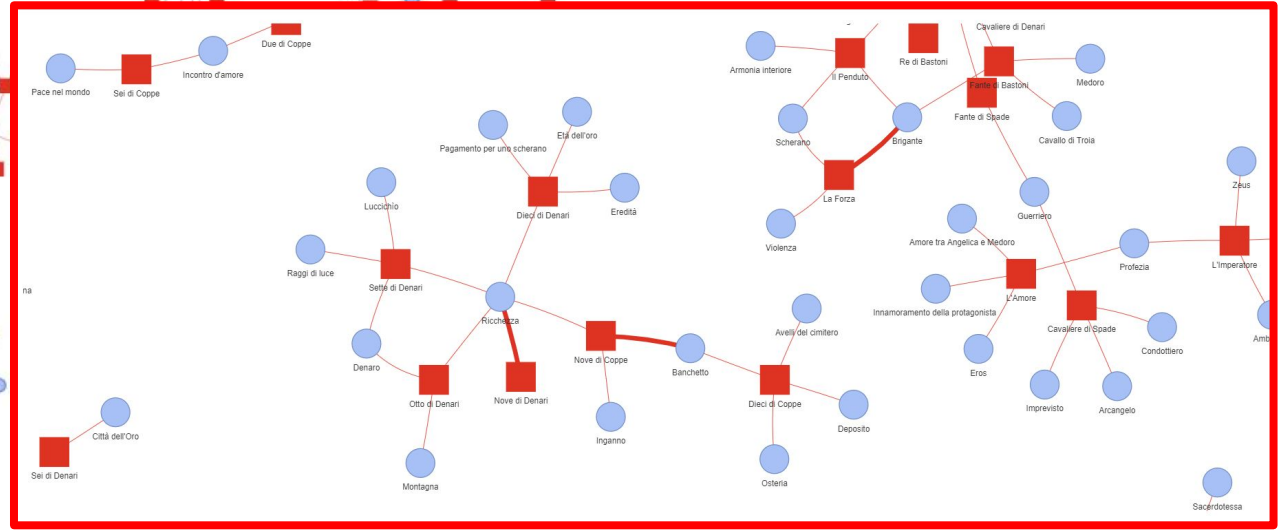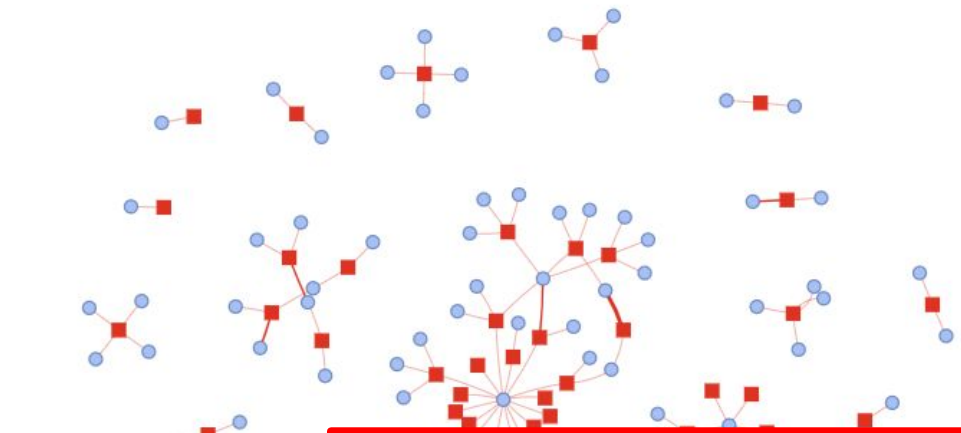|	
"simple relations" and "complex relations"	Calvino adopts a **constant narrative sequence**: a character (protagonist) bumps into (21 occurrences) another character at a place (wood/forest, 9 occurrences) and, once received something (9 occurrences), sets off to another place (6 occurrences) where the story will develop further

https://projects.dharc.unibo.it/odi
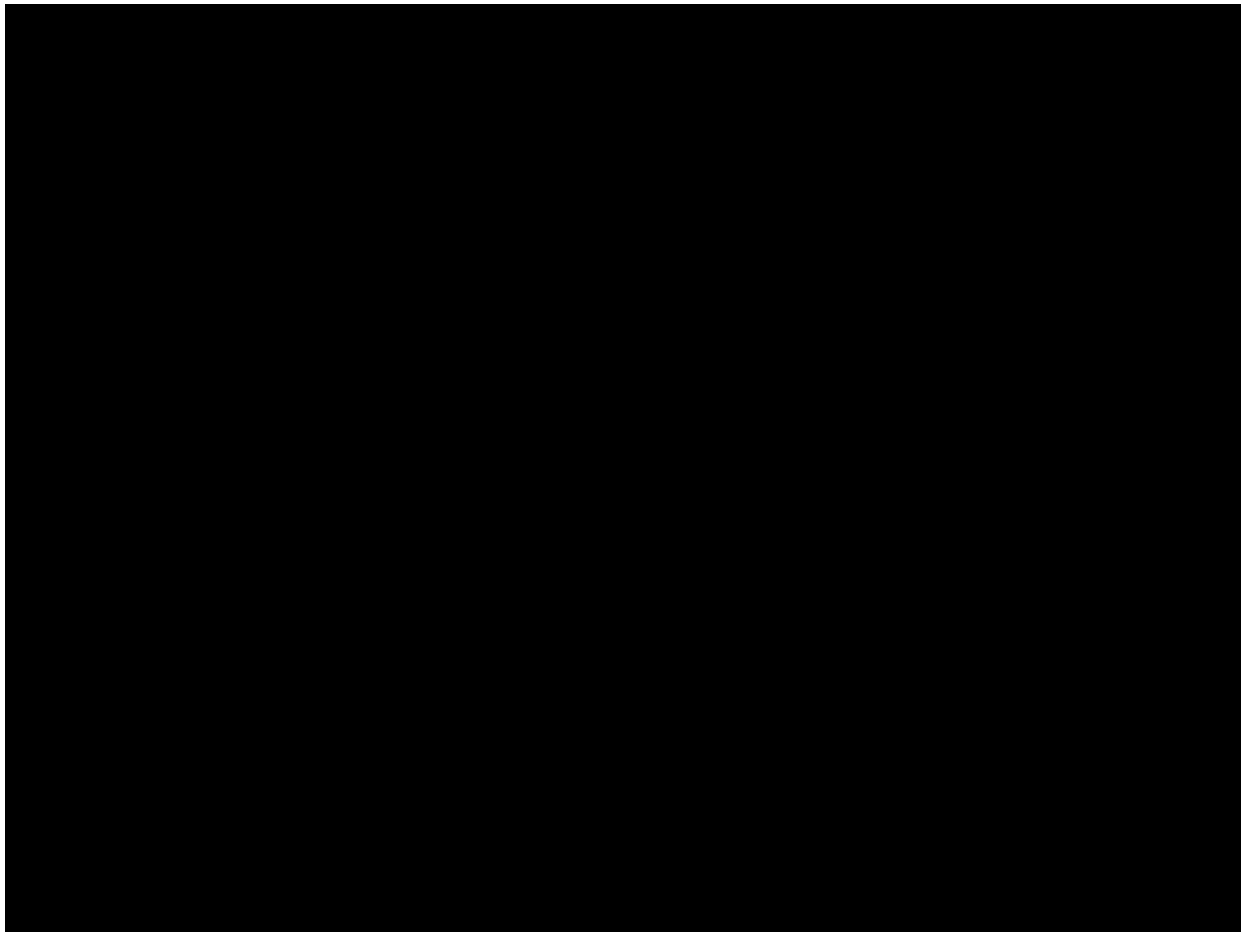
Going **beyond the canonical representation** of textual **entities** (places, people, events)

Integration of the text as an indispensable part of text analysis and criticism

The queries and results obtained are an interesting **starting point for** an **in-depth study of the work**

Protagonist as a **privileged point of observation** for analysing relationships

The **second collection** of the work (*La Taverna dei destini incrociati*) was **not considered** in the research

Copyright problem that does not allow free and full sharing of the text

Fulfilling **every narrative relation** between cards within all stories

Trying to apply the model to the **second collection** (*La Taverna dei destini incrociati*)

Attempt alignment with existing ontologies (e.g. **FRBRoo**)

Inclusion of **provenance** information for each **interpretation** (author, time, bibliographical references etc.)

CONCLUSIONS

[1] Calvino, Italo. *Il castello dei destini incrociati*. Milano: Mondadori, 2014.

[2] Albani, Paolo. "La letteratura come gioco combinatorio." *Griselda. Il portale di Letteratura*. 2018. https://site.unibo.it/griseldaonline/it/approfondimenti/paolo-albani-letteratura-gioco-combinatorio.

[3] Gigliozzi, Giuseppe. "Codice, testo e interpretazione." *Studi di codifica e trattamento automatico di testi*. Ed. G. Gigliozzi. Roma: Bulzoni (1987): 65-84.

[4] Gigliozzi, Giuseppe, and Sandra Giuliani. "Una parola che non dice nulla." Le Novelle per un anno (1993).

[5] Gigliozzi, Giuseppe, and Sandra Giuliani. "La rete delle formiche. Un'applicazione di SebNet." *Fine della storia e storie senza fine*. Ed. C. Cazalé. Nanterre: Université Paris X–Nanterre (1993): 137-157.

[6] Elli, Tommaso. "Research through Visualization in Literary Criticism. Adaptations of data visualization to scholars' interpretive work", PhD diss., (Politecnico di Milano, 2022). http://hdl.handle.net/10589/183038.

[7] Bowen, Glenn A. "Document analysis as a qualitative research method." *Qualitative research journal* 9.2 (2009): 27-40.

Thank you,

any questions?

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