



Exploring the Landscapes of Literary Works: Stories, Data Models and Maps

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Abstract.

This paper presents case studies and a data model developed for mapping the geographies of literature. Different literary texts convey a wide range of spatial conceptualizations. Years after our initial attempts to create a universally applicable data model for literary geography, we have concluded that achieving this goal is nearly impossible. Nevertheless, certain concepts—such as locations, routes, zones, events, and spatio-temporal links—help analyze the spaces depicted in various works of fiction, including poetry. A highly complex model with multiple associations would be challenging to use in practice. Therefore, literary scholars prefer to work with more straightforward, flat data structures when inputting data into a web application. In our research project for 2023–2025, we aim to uncover the unique characteristics of spaces in women's literature. This study presents cartographic challenges of two novels and a collection of fantastic short stories, all of which can be linked to the actual geography of Vilnius City. Throughout the mapping process, we tested various data models. We will discuss each case's methodological issues, challenges, and cartographic solutions.

Submission Type. Model

BoK Concepts. [DM4] Vector data model, Feature based modelling, Applications; [CV5] Map production.

Keywords. map, literature, literary space, data model, cartography

1 Introduction

The study of literary geographical space is an intriguing and significant area of academic research. In the twenty-first century, the rise of literary cartography has been

influenced by the broader spatial turn in the humanities, along with the emergence of fields such as geocriticism and cultural geography. The initiator of literary mapping was Franco Moretti, whose maps drawn in the book *Atlas of the European Novel* showed that there is a connection between literature and geography, between a story and real space. Furthermore, the development of modern GIS and mapping technologies has also played a key role in increasing popularity of literary cartography. The next step was the development of digital literary map, such as the Lancaster University project “[Mapping the Lakes: A Literary GIS](#)” and the project entitled “[A Literary Atlas of Europe](#)”. The power of maps in drawing unique insights into literary space from spatial data has been widely discussed and proved (Moretti 1998, Mitchell 2017, Lanigan 2023). There is a growing trend in contemporary literature to provide more and more references related to geographic space. This can be seen as a consequence of the mass availability of maps on the Internet and the increase in general geographic literacy of the society. The spatial references mentioned in the text not only link the text of the literary work to an actual or quasi-real territory but also contain implicit information about the various connections within that territory. Maps reveal latent spatial information. Such information is sometimes unexpected, not only for the reader but also for the author himself.

Vilnius' literature mapping project is being developed by several Vilnius University literature scholars and cartographers. It was based on texts containing as much geographical data as possible – such as Lithuanian novels of recent decades. We first proposed an enhanced model for spatial references to literature in an article published in 2019. This model was used to collect spatial references and map the spaces of the literary works that reflect Vilnius City. The literature of Vilnius is extremely

diffused, both linguistically and spatially, which creates a fractured and fragmented sense of the place. This narrative segmentation echoes the geo-cultural dispersal and national divisions of the city, making reading (and writing) Vilnius a perpetual act of translation. Putting Vilnius literature on the map is another form of translation; but while linguistic translations require breaking cultural codes and crossing boundaries, mapping, potentially, makes entering into separate and unique narrative worlds an experiment in building a cohesive yet kaleidoscopic picture of the place. The maps already compiled can be viewed on the website of “[Vilnius Literature](#)”.

The end goal of the project is to map all literature that includes Vilnius. We divide it according to genres – fiction and poetry, travelogues (as well as tourist guides which also include a kind of narration). Similar to travelogues are memoirs, which disclose personal experiences of Vilnius. Sometimes it seems reasonable to map geo-biographies which could be reconstructed from various sources.

In this article, we present three unpublished maps that depict the spaces of literary works written by women. Each of them required a different approach to the structure of spatial references. In the following sections, we outline the methodological aspects of the research and illustrate how each examined work contributes to the data model of literary geography.

2 Methods

The main method used in the study was the collection of spatial data of references in literary works according to a generic model of this type of reference (Becony   et al., 2019). Information in the texts that did not fit this model was discussed in an intensive reflective process. As a result, additional attributes were proposed.

2.1 Locations and Spatial References

Our conceptual model assumes that the relationship between a location and a character is unique and can be defined over a specific period. Locations in literary mapping can serve various functions: places of action, subjects of observation, or imagined entities. They can be categorized based on their significance, from low to medium to high. The geographical type of an object, such as a river, park, church, apartment, store, or neighborhood, is specified. These objects fall into broader categories, including nature (like rivers and hills), culture (such as churches and monuments), infrastructure (including streets and caf  s), and private spaces (such as characters' apartments). Additionally, there is a distinct

classification into groups of objects based on their purpose: routes, panoramas, and observation points.

The location data in our study were obtained through a thorough and iterative process: (a) reading the literary works, (b) examining and discussing all geographic references found, (c) describing the references according to the generic data model, and (d) proposing extensions to the model in cases where important information was difficult or impossible to capture using the existing framework.

The accuracy of recording references was assessed, which is often a challenging task, particularly with precise but generalized locations (e.g., "yard") or indirectly referenced places in a piece of work. Whenever possible, we included time and duration attributes for geographical references, as well as the frequency of events. We also explored the interrelationships between events that shape routes in both space and time.

Locations can be represented as objects of various geometric types: point, line, or polygon, depending on the reference scale (Fig. 1). *Location* instances correspond to real-world objects and possess the following thematic attributes:

- a) *name* – official, alternative, informal or historical;
- b) *spatialType* – a geographic type of the object, such as a building, a forest, a country;
- c) *geometry*;
- d) *3D* – describes a vertical dimension or position relevant to ground level (surface, underground or above-ground)
- e) *spatialUncertainty* – shows whether the location can be unambiguously determined or is fuzzy;
- f) *status* – existence status of an object, indicating whether it still exists or no longer does.

Each physical location may be represented by several instances of differing scale. *SpatialReference* does not have geometry but is linked to a single *Location*. *SpatialReference* has a set of thematic attributes that describe a location's qualities, functions, and transformations as represented in a literary work, the links between the place and the character in the work, and the temporal parameters.

2.2 Types of Place: Location and Territory

References to literary texts can be viewed as geographical objects that vary in their type (points, lines, or polygons) and in accuracy of representation. Each such object can be evaluated based on the characteristics associated with the reference, and the connections (such as directions and networks) between these objects can be analyzed. In literary cartography, compiling references to a specific *territory* (a geographical area) is also possible, thereby

creating a literary representation of that territory (see Table 1).

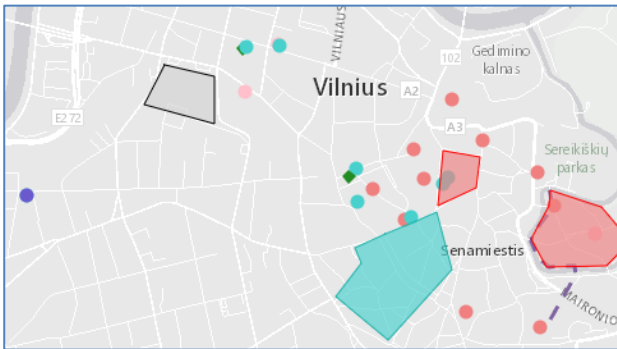


Figure 1. Original GIS data of literary Vilnius of Joseph Brodsky (<http://www.vilniusliterature.flf.vu.lt/en/>)

It is the territory, in our case, Vilnius City, that becomes most interesting when mapping literary works. Representing it properly and convincingly requires spatial analysis techniques, such as density mapping, and creative cartographic solutions (Fig. 2).

Table 1. Comparison of mapping of a location and a territory.

Location	Territory
Referenced in the text – real (existing or no longer existing) or imaginary.	Exists in reality or historical.
Single object with its characteristics.	The entirety of its references, their links and derived characteristics (e.g., intensity).
Identifies where an episode in a literary work is set.	Characterised by an overall 'literariness' or by the aggregate meanings of the objective or subjective qualities of the places it contains

As more works were analyzed, various location-specific elements were observed, enriching the understanding of the geographical area.

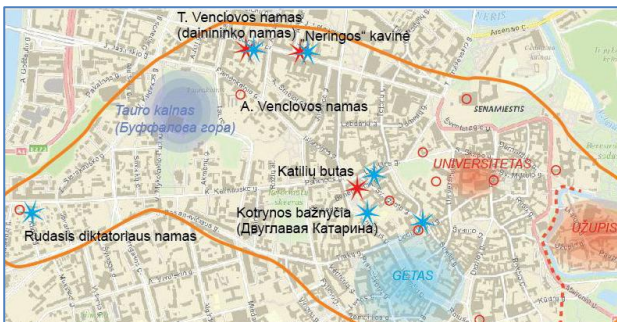


Figure 2. A fragment of literary Vilnius of Joseph Brodsky (<http://www.vilniusliterature.flf.vu.lt/en/>)

2.3 Mapping Subjective Impressions

In the case of fiction, the emotional charge associated with places has an additional value. Based on these data, it is possible to construct emotional surfaces of territories.

To convey the diffusion of the novel's emotions in space, two *SpatialReference* attributes have been added to the generic data model:

- a) *emotion* – positive, negative, neutral, undetermined, not applicable; and
- b) *connotation* – mythical, mystical, allegorical (cf. Reuschel et al., 2014) or other.

The emotions, personal experiences, and fantasies of the authors, tied to a specific geographical area, are particularly interesting to readers. Semantically correct sign systems alone cannot convey these points; maps must also be persuasive and expressive (Fig. 3).



Figure 3. Signs showing the protagonist's social connections in the locations of the action, and a surface conveying a range of emotions, based on the novel by Kulvinskaitė (2019).

3. Vilnius in Literature by Women

The authors of the literary works studied in 2025 are young women. What they have in common is not only that the spatial references are numerous and the system developed, but also that the content associated with the places is much broader than the initial model allows to describe.

3.1 Biographical Fiction: Vilnius of a Young Female novel

The novel by Lithuanian author Kulvinskaitė (2019) is the only published work that offers a female perspective on Vilnius during the 1980s and 1990s, a period marked by Lithuania's renewed independence and the collapse of the Soviet Union. The story follows a teenage girl, who later becomes a young woman, from a non-privileged district as she explores the city and embarks on a journey of self-discovery. The locations described in the novel are often overlooked by tourists and are not commonly referenced in other literary works. Many of these sites have since disappeared due to changes in Vilnius's urban landscape. As a result, the narrative captures a unique space from the

past and preserves it within the cultural memory of the city (Fig. 4)..

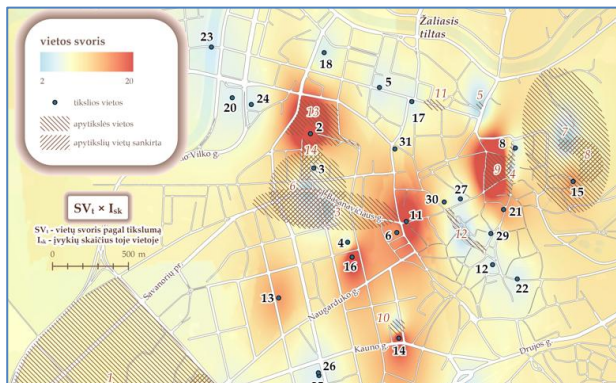


Figure 4. The literary intensity of Vilnius City, based on the novel by Kulvinskaitė (2019).

We aimed to systematically understand the geography of this space and translate it into maps that are easily understandable for everyone. The data model has been enhanced to capture as much literary geographical information as possible. This includes not only the locations where events occur but also places and territories that are mentioned, observed, or remembered.

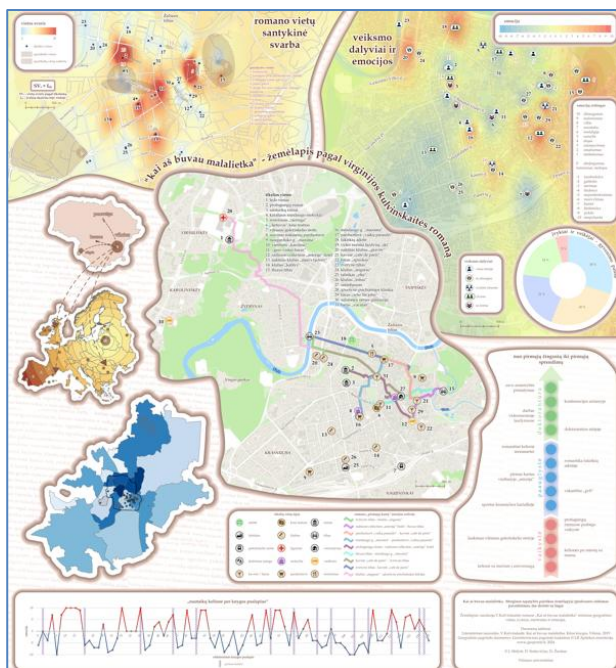


Figure 5. Map poster of the biographical fiction novel by V. Kulvinskaitė.

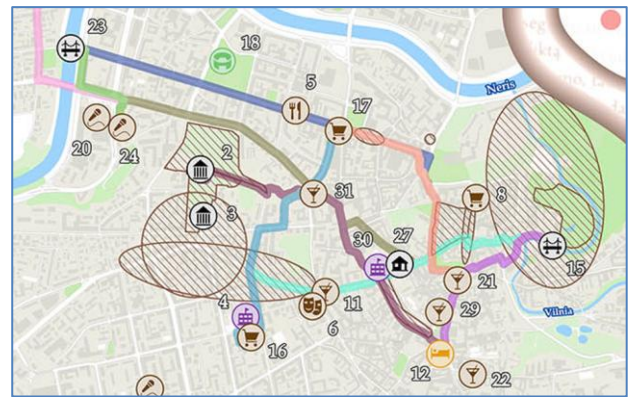


Figure 6. Central fragment of the map of the biographical fiction novel by V. Kulvinskaitė.

SpatialReference has been extended for the mapping of this work:

- *emotion intensity* attribute has been added and the emotion classifier has been extended;
- *action type* classifier has been expanded and attributes for the context related to the action (type of activity, persons or groups involved) have been added;
- attributes have been added to specify the event, its characteristics (e.g., first experience), the duration of the event, and its relation to the age of the protagonist.

The work was presented as a map poster, showing the geographical areas of Vilnius City, Lithuania, and Europe, along with density and emotional surfaces. (Fig. 5)

3.2 Social Fiction in 3D Space

A collection of interconnected fantasy stories (Šcerelytė, 2014) about life on our planet in the face of an apocalypse is also linked to Vilnius. Analysis of this work is still in progress, but interesting features of its spatial references emerged:

- Without a map, readers of this work might not perceive a coherent area in the city. However, such area is inferable and quite concrete (Fig. 7). Its boundaries can with some difficulty be established by connecting the spatial references found within the individual short stories.
- The trajectories of the characters, which the map helps to visualise, are crucial to the text, but also intricately encoded through several short stories each;
- The relationship "above and below" and the form of the terrain are important;
- Landmarks are important, but small objects, such as rubbish containers, are also significant.

For this work, the basic data model has been supplemented by a model that allows multiple texts to be linked together.

3.3 A Magical Space in an Impossible Time

Kotryna Zylė's novel "Beloved Bones" (Zylė, 2024) tells the life story of a woman who keeps the bones of her three lovers in a cabinet in her home. The narrative weaves together elements of magical realism, merging the everyday life of a suburban neighborhood with rural folklore. The concept of time in the novel is fluid and illusory. Life is celebrated and marked in the communal bathhouse of the apartment building, while shepherds travel to the pastures via trolleybus. Animals are kept in apartments, bread is baked in the stairwell near the mailboxes, and rituals are performed within the home. Throughout the story, miracles occur, further enriching the surreal atmosphere.

The problem with this work is that its geographical references are ambiguous – the named objects may exist in various districts of Vilnius, but they are predominantly situated in the suburbs of Soviet-era Vilnius. For cartographers, an intriguing task would be to map all the potential areas where actions could take place. Analysis of this work is still in progress.

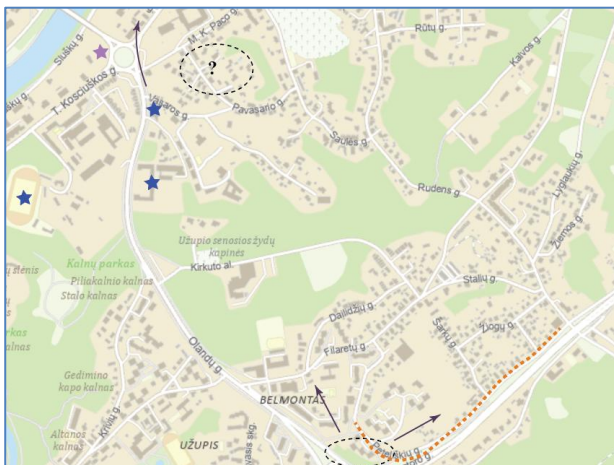


Figure 7. Primary references in the space of the social fiction novel by R. Šerelytė.

Conclusion

The study of geographical spaces in literary works, known as literary cartography, is a fascinating field. It offers not only rich content but also unique spatial references. Modeling these references serves as a valuable exercise, prompting creative solutions that can be applied to the modeling of indirect, approximate, uncertain, multi-layered, and multi-dimensional geographic data in other areas.

This study enhances the representation of women's literature in analytical discussions. In all of the women's works examined, spatial references are of great significance and are interwoven with information that is

difficult to decipher from the text, but which adds to the narrative content. These spatial elements often carry a strong emotional weight, which is as crucial as the geographical context itself.

From the perspective of literary scholars, the cartographic method has its drawbacks. A map cannot encapsulate the full complexity of spatial meanings in a literary work and may risk being 'spatially deterministic.' Cartographers face challenges in how to represent spatial uncertainties, transformations of space, and plot development.

Nonetheless, gathering a substantial number of spatial references from works of fiction can create a distinct depiction of a geographical location. This information is valuable not only to researchers but also to local residents, tourists, and cultural scholars.

The study has expanded our understanding of spatial references in GIS science, particularly regarding the uncertainty, multidimensionality, and temporal variability of human-made geographic references. We have come to realize that it's not just the locations of objects that matter; their semantic relationships are also crucial and can create the essential framework for the presented narrative.

We were surprised by how maps alter the perception of a work and the added value they bring. From a literary perspective, interpreting maps can be controversial—do we have the right to depict elements that the author did not explicitly convey? However, from the reader's viewpoint, maps serve as an engaging and memorable enhancement to the text.

Data and Software Availability

This paper does not contain directly associated data or software. The research data are not yet at a level of completeness that would make them suitable for public release. Maps were compiled using *ArcGIS Pro* software.

Declaration of Generative AI in writing

The authors declare that they have used Generative AI tools in the preparation of this manuscript. Specifically, the AI tools were utilized for language editing but not for generating any content, research data, or conclusions. All intellectual and creative work, including the analysis and interpretation of data, is original and has been conducted by the authors without AI assistance.

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