

Identity, Sustainability, and Resilience: Paradigms for Territorial Tourism Development

Il Sileno
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Grazia Calabrò
Sonia Gambino
Olimpia State
(Eds.)

Grazia Calabrò, Sonia Gambino, and Olimpia State (Eds.)

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Grazia Calabrò, Sonia Gambino, and Olimpia State (Eds.)

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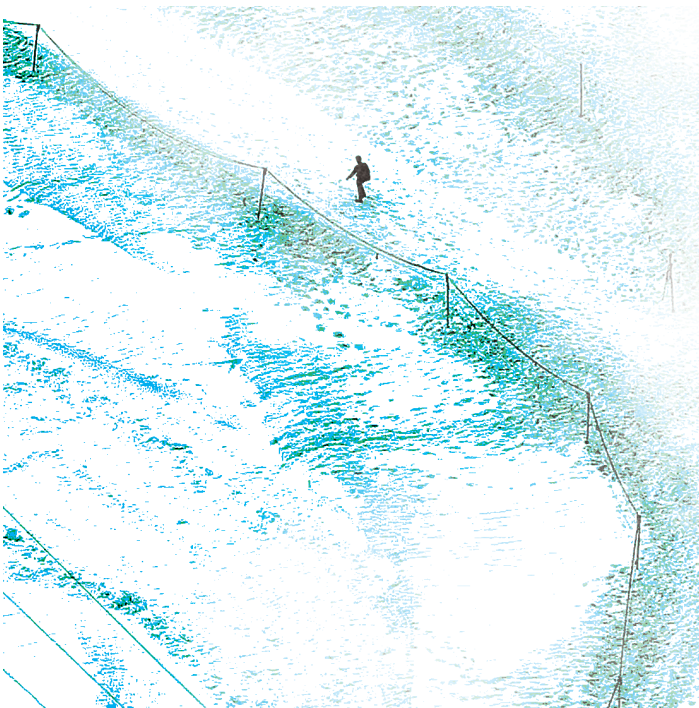
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SECTION 3



15. Digital Geo-Storytelling for an integrated socio-tourist valorisation of complex territories: the case of the Phlegraean Fields

Ivan Pistone^{1*}, Stefania Palmentieri²

Abstract

This paper explores the potential of digital geo-storytelling as an operational tool for the participatory enhancement of complex territories, through the experimental application of the experiential transect in the Phlegraean Fields. In a context marked by cultural stratification, environmental fragility, and infrastructural discontinuity, the proposed methodology combines physical landscape exploration with georeferenced storytelling, actively involving citizens and visitors in the co-creation of shared spatial knowledge. By integrating ArcGIS StoryMaps with co-mapping tools, three digital transects were developed in the municipality of Bacoli, merging geospatial data, perceptual observations, and multimedia content. As an extension of citizen science, this approach supports inclusive processes of learning, governance, and collaborative territorial planning, enhancing local awareness, fostering more sustainable tourism practices, and offering a replicable and adaptable framework for participatory spatial interpretation. In this perspective, the landscape is no longer seen as a static backdrop, but as a dynamic system of relations—collectively narrated, interpreted, and reimagined. The case study confirms the effectiveness of the digital transect as a critical interface between data, experience, and citizenship, providing a valuable tool to address the challenges of integrated valorisation in fragile landscapes.

Keywords: *Digital geo-storytelling; Experiential transect; Participatory mapping; Citizen science; Landscape enhancement*

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1. Contemporary landscape and tourism in transition: challenges of usability and valorisation

The contemporary landscape combines ordinary places – suburbs, villages, everyday spaces – with extraordinary assets, such as cultural or environmental sites that have become major tourist attractions. This duality leads to a clear polarisation: on the one hand, marginal places that remain invisible in public discourse and development policies; on the other, iconic sites affected by overtourism, with negative impacts on authenticity, sustainability and the quality of local life (Butler & Dodds, 2022).

In Europe, several cases exemplify these critical issues. Capri, traditionally perceived as a cultural landscape of great value, is now the scene of intense conflicts between ordinary use and intensive tourist use, with phenomena of touristification and alteration of its landscape and cultural identity (Russo Krauss, 2019). Similarly, cities such as Venice and Dubrovnik have suffered from tourist overload, which has deteriorated both their social and spatial fabric, resulting in the marginalisation of residents and putting their architectural and environmental heritage at risk (Seraphin *et al.*, 2018).

These places, defined in the literature as “contested landscapes” (Balestrieri, 2013), show how the economic logic of tourism can easily conflict with the needs of conservation, participation and identity protection. Integrated landscape enhancement proposes to resolve these conflicts through a dynamic balance between knowledge, protection and cultural transmission: knowing in order to preserve, preserving in order to transmit. This approach goes beyond the traditional dichotomies between expert and non-expert, citizen and tourist, favouring a more inclusive and shared reading of the landscape, capable of recognising and enhancing the multiple relationships that are established with the territory (Milano *et al.*, 2019).

In this perspective, the active involvement of local communities becomes essential. Participatory experiences allow for the integration of widespread knowledge and local perceptions with technical and spatial data, promoting inclusive and participatory governance of the territory.

Citizen science, in particular, is a methodology that directly involves citizens, not only as passive observers but as active co-producers of scientific knowledge, through data collection, environmental monitoring and participatory interpretation of information (Bonney *et al.*, 2009; Dickinson *et al.*, 2012). This practice promotes the inclusion of local knowledge, enriching the information heritage with data that would otherwise be difficult for researchers and policy

makers to access. Recent studies highlight how citizen science contributes significantly to inclusive and sustainable territorial governance, improving the understanding and management of local resources, as well as encouraging forms of democratic participation and collective empowerment (Conrad & Hilchey, 2011).

The wide range of practices related to this line of research also includes some participatory GIS-based approaches, such as Public Participatory GIS (PPGIS), whose strength lies in their communicating power, immediacy and ability to intuitively visualise spatial data (Brown & Kyttä, 2018). These tools are particularly effective in facilitating inclusive decision-making processes and making complex information accessible to non-experts. They also include participatory geo-storytelling experiences, which use georeferenced narratives to promote an active, engaging and collaborative reading of the landscape. Building on these practices, digital geo-storytelling represents a further step forward, offering an interactive narrative form that connects geographical information, multimedia content and subjective experiences, providing an immersive and plural representation of the landscape (Antoniou *et al.*, 2018; Kerski, 2015).

Recent studies show that participatory digital enjoyment of the landscape, through georeferenced narrative tools, activates territorial awareness and emotional involvement, while facilitating more conscious and sustainable enjoyment (Bulkens *et al.*, 2014). In this methodological framework, the use of hybrid exploratory routes, which integrate digital technologies and physical exploration of the landscape, represents an effective operational choice for providing a situated spatial understanding, capable of connecting data, experiences and narratives. These practices, which have their roots in the theoretical tradition of transects applied to territorial analysis, will be further explored in the following sections, where the structure and interpretative potential of the method will be illustrated, with particular reference to its digital application.

This contribution aims to propose a participatory geo-storytelling methodology based on active exploration of the territory through the operational application of digital transects, with the following specific objectives:

- territorial education, understood as the empowerment of the local community and visitors to discover the latent values of the landscape and cultural assets;

- the promotion of responsible use, aimed at countering overtourism and the trivialisation of heritage;
- social inclusion, i.e. the enhancement of non-expert local knowledge through structured approaches under the lens of citizen science.

In light of the above, and in line with the theoretical and methodological framework outlined so far, this research aims to explore the potential of digital geo-storytelling as an operational tool for promoting more inclusive and informed landscape enhancement. In particular, the following paragraph will focus on the definition of the experiential transect as an interpretative and practical device, exploring the implications for the definition of participatory, situated and narrative paths within complex territories.

2. From functional transects to digital narratives: a methodology for situated landscape exploration

In geographical and urban planning tradition, a transect is a territorial analysis tool organised along a linear route that crosses representative portions of the landscape. Originally developed as a method for observing spatial and environmental evolution along natural and anthropogenic gradients, it allows for the sequential analysis of ecological, settlement and infrastructural elements, relating them to each other through the continuity of the route (Han, 2021). In the field of geography, transects have been widely used for studies of land use, urban morphology and landscape classification, offering a layered representation of territorial dynamics.

As Forman (1995) and Antrop (2005) point out, the linear structure of the transect allows spatial transitions, ecological thresholds and functional discontinuities to be captured, making it particularly suitable for heterogeneous and dynamic contexts. Along the chosen route, variations in land use, vegetation cover, settlement density, infrastructure and morphological characteristics are recorded according to a criterion of observational continuity and mutual conditioning between the elements.

Historically, the method can be traced back to the early systematic studies of Patrick Geddes in the first decades of the 20th century. Geddes, a Scottish geographer and urban planner, proposed the transect as a tool for understanding the relationships between human settlement and the environment, observing the progression from the urban centre to rural and natural areas. His “valley section” represented an ideal section of territory from the mountains to the sea, along which the interaction between ecology, economy and social organisation could be analysed.

This approach was taken up by the New Urbanism movement in the 1990s, which reinterpreted it as a tool for spatial design and management.

In particular, Andrés Duany, one of the leading theorists of the contemporary concept, formalised it as an “urban-to-rural transect” and conceived it as a model applicable to today’s planning, dividing the territory into six zones (T1 to T6) ordered according to a gradient from the most natural to the most urbanised areas (Duany & Falk, 2020; Duany & Talen, 2002). Each zone corresponds to a specific building intensity, urban form and land use, in an attempt to restore order and morphological coherence to American suburban expansion (Bohl & Plater-Zyberk, 2006; Duany & Plater-Zyberk, 2000). In this sense, the transect takes on a broad scale and a regulatory function, serving as

a guiding framework for the development of urban plans and functional zoning consistent with a morphological vision of the territory.

However, the proposal developed in this contribution departs from this normative and rigidly sectoral interpretation in favour of an exploratory and experiential approach. In this sense, the method revisits and updates the original trans-areal and trans-scalar dimension, which has already been reinterpreted in contemporary studies.

Diedrich *et al.*, (2014), for example, reconfigure this approach through the lens of landscape architecture, configuring the transect as a narrative and cartographic device capable of restoring the relational and dynamic complexity of places.

Similarly, Hemmersam and Morrison (2016) highlight the cognitive value of the transect in place mapping processes in difficult urban contexts, emphasising its potential as a tool for situated exploration.

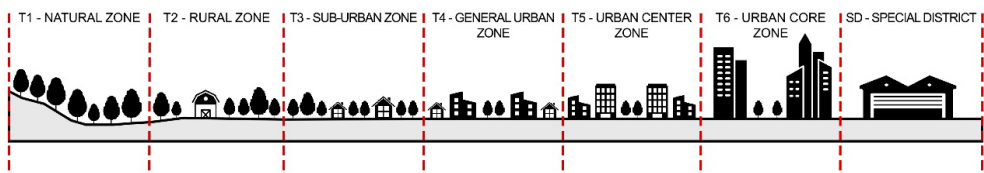


Fig. 1: Scheme of the urban-to-rural transect theorized by the New Urbanism group

Source: elaboration of I. Pistone based on the source <https://transect.org/>

The transect is therefore not limited to observing space, but rather defines it in a perceptive way, becoming an experience that traverses data, emotions and interpretations. The result is a practice of investigation and design that stimulates cooperation between disciplines and local knowledge, guiding new forms of reading, representation and transformation of complex landscapes. The transect understood here is therefore not a simple section of the territory, but takes the form of an irregular discontinuous line, a dynamic path connecting heterogeneous points in urban and peri-urban space. This trajectory is similar to a “sensitive line”, understood as a non-rigid route that combines physical, perceptual and emotional dimensions typical of qualitative landscape exploration. This notion implicitly recalls a phenomenological approach to geographical space, whose knowledge is built through physical and contextual experience (Macpherson, 2010).

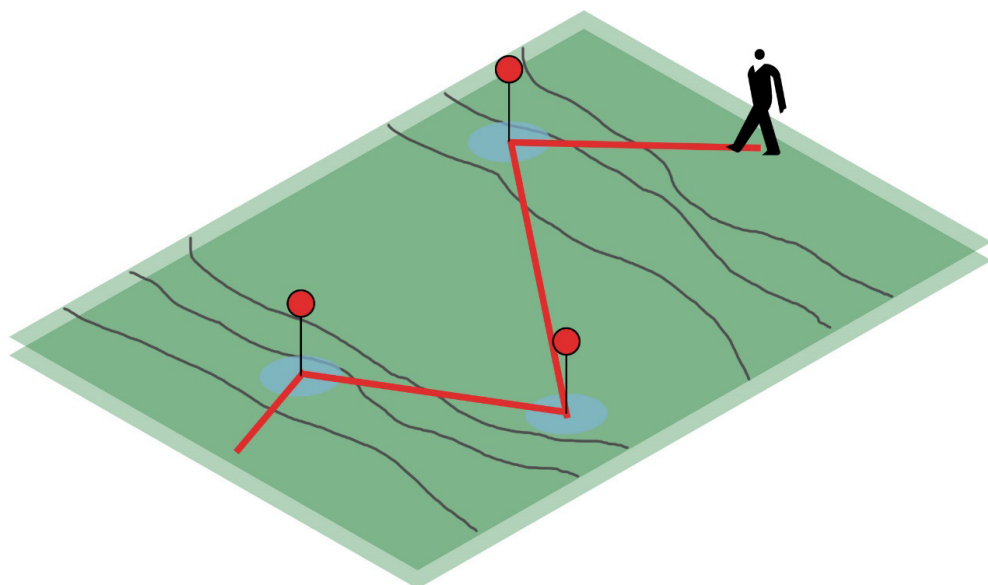


Fig. 2: Concept of the experiential transect: moving across the landscape is a linear yet not fixed movement, essential for knowing and enjoying a place

Source: Elaboration of I. Pistone

It is based on the relationship between cultural heritage, green spaces and basic services, but also degraded areas, physical barriers, inadequate infrastructure and orographic differences. In this logic, direct and site-specific experience becomes fundamental: the landscape is not understood from a distance, but through the physical, sensory and emotional experience of its most representative and critical features (Pistone *et al.*, 2025).

The experiential transect is therefore proposed as an operational tool for the situated understanding of vulnerable landscapes (Acierno & Pistone, in press). These landscapes are characterised by the simultaneous presence of intertwined forms of socio-cultural, infrastructural and ecological-environmental criticalities. Drawing on different perspectives – from landscape experience (Giorda, 2012) to infrastructure criticalities (Banister, 2008) and environmental dynamics (Selman, 2012) – a preliminary classification can be outlined in three types:

- Territorial landscapes with socio-cultural complexity: areas where widespread cultural assets, layered heritage or established practices intertwine with social factors and fragmented perceptions, influencing the enjoyment, recognition of assets and shared management of space;
- Landscapes with functional-infrastructural complexity: places marked by poor mobility and accessibility systems, weak relationships between functional components, or limited interconnection between services and local networks;
- Landscapes with ecological-environmental complexity: spaces where natural fragility, the presence of ecological constraints or environmental risks (hydrogeological, volcanic, climatic) determine limitations on public usability, raising questions about the coexistence of protection and accessibility.

The Phlegraean Fields are a prime example of all three of these complexities. The context is characterised by a difficult morphology, marked by the presence of craters, hills and uneven terrain that affect physical accessibility, a weak and discontinuous infrastructure network, with large areas lacking pedestrian and cycle connections, and environmental constraints and volcanic risks that impose restrictions on land use and public access to many areas. Added to this is a functional fragmentation between archaeological sites, natural areas, dense urban settlements and residual spaces, which hinders an integrated perception of the territory. This configuration produces a real spatial and perceptual disconnection, which makes it difficult to construct a coherent and shared image of the Phlegraean landscape (Acierno & Pistone, 2025).

At the same time, it is an area of significant cultural and landscape value, whose constantly growing tourist appeal is an important economic resource but also a source of pressure on the territory. Cultural and tourist use are thus two sides of the same coin: while on the one hand they promote the visibility and enhancement of the heritage, on the other they risk exacerbating congestion and exploitation, aggravating the already fragile infrastructure and environmental conditions of the area. As Tixier *et al.*, (2010) and Péron *et al.*, (2018), guided exploration through specific tools can help reactivate latent connections, reconnecting scattered elements of space in a unified interpretative narrative capable of guiding strategic readings and conscious enhancement processes. In this scenario, the experiential transect allows for a comprehensive and critical view to be restored through guided and participatory exploration of

the territory. Its value lies in highlighting both resources and critical issues, providing a knowledge base for future design interventions, enhancement policies and regeneration strategies, even with innovative forms. In this sense, digital technology acts as an information multiplier: it broadens the depth of the on-site experience and, through geo-narrative tools, allows us to overcome the physical limitations imposed by the environment, morphology and infrastructure.

The digital transect therefore takes on a dual role: on the one hand, it is a way for people to actively explore and immerse themselves in a place; on the other, it represents a platform for sharing knowledge, perceptions, and visions between citizens, experts, and public decision-makers. In a territory such as the Phlegraean Fields, marked by historical stratification, geological fragility and infrastructural limitations, the digital transect becomes a critical interface for building collective awareness and promoting more inclusive and sustainable forms of habitability (Acierno & Pagliano, in press).

In the next section, the theoretical and methodological approach of the digital experiential transect will be applied in practice through a geo-storytelling case study developed in the Phlegraean Fields, with the aim of exploring how spatial narrative can contribute to a deeper understanding, representation and enhancement of complex landscapes.

3. Operationalizing digital geo-storytelling: insights from the Phlegraeon Fields' transects

Digital geo-storytelling, implemented through the operational use of experiential transects, represents a methodological extension of citizen science in urban and landscape contexts (Sui & Goodchild, 2011; Wilson & Graham, 2013). Within this framework, the active involvement of non-expert users is not limited to information collection, but becomes a tool for shared landscape exploration, for the building of knowledge and for the generation of place-based narratives (Goodchild, 2007; Elwood, 2009).

Unlike other consultative or deliberative participatory practices – often structured around top-down models and limited to more organised or educated segments of the population – this approach can be seen as an accessible and intuitive way to get people involved through spatial and digital mediation. While conventional surveys offer valuable insights into users' perceptions of a given area, an experiential digital transect adds depth to this approach by enabling participants to explore the context both physically and digitally collecting images, descriptions, and memories that contribute to a shared, situated representation of place. Furthermore, thanks to the visual and immersive nature of interactive maps, the generation of meaning and value attached to places can involve users with different technical and cultural backgrounds, enhancing their diverse perspectives.

The result is an inclusive and transformative tool that combines the interactivity of cartographic narration with the experiential dimension, also making it possible to enhance the implicit knowledge of citizens, their perceptions and their local insights, strengthening the link between place, representation and action (Piga *et al.*, 2023; Degbelo, 2021).

In this work, digital geo-storytelling was developed using the ArcGIS StoryMaps environment, a GIS-based tool that allows interactive maps, photographs, descriptive texts, videos and hypermedia content to be integrated into a single narrative interface. Its modular structure allows the construction of thematic itineraries, providing spatialised information that guides the user along a georeferenced exploratory path. Compared to other solutions, this platform offers operational flexibility that is well suited to the representation of pedestrian transects and allows the stratification of landscape elements to be represented in relation to accessibility, visibility and usability conditions (Pistone *et al.*, 2025; Acierno & Pagliano, in press; Acierno & Pistone, in press)

In this sense, this methodological approach offers a new way of presenting and communicating the territory, combining the direct and situated perceptions of the user with a digital representation of the landscape. Thanks to the possibility of updating and integrating the data content over time, ArcGIS StoryMaps can act as an evolutionary cognitive device, capable of accommodating expert and non-expert contributions, promoting convergence between in situ observation and geospatial modelling (Caprari *et al.*, 2022; Ranatunga *et al.*, 2024).

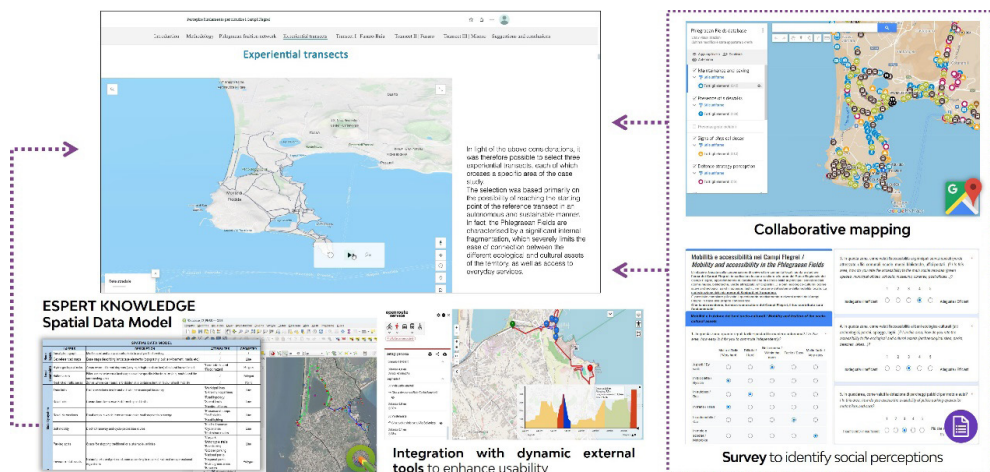


Fig. 3: Main elements of the Phlegrean Fields' digital geo-storytelling, coming from expert and non-expert knowledge, thanks to cooperative tools exploring physical-perceptive aspects

Source: Elaboration of I. Pistone

Direct experience of the territory, conveyed through walking, proved essential not only as a means of data collection, but also as a cognitive act in itself. The act of walking, in its spatial dimension, has enabled a sensitive reading of landscape, capable of capturing elements otherwise overlooked by traditional cartographic analyses: micro-variations in the terrain, interstitial passages, perceptual discontinuities, signs of marginality or local resilience (Ingold, 2004; Middleton, 2010). In this sense, walkability – understood not only as the degree of ease to move from one location to another, but also as environmental quality, safety and attractiveness of routes – has been used as a cross-cutting interpretative key for the selection and analysis of transects (Forsyth & Southworth, 2008; Speck, 2013).

In the case of the Phlegraean Fields, the storytelling activity began with the mapping of the local road system, aimed at highlighting the complexity of the accessibility network in relation to the area's unique volcanic orography. Based on this analysis, three digital experiential transects were identified in the municipal area of Bacoli, selected for their ability to connect archaeological and cultural heritage, ecological spaces and everyday services. The three transects selected in the municipal context differ in terms of their specific functions and the types of pedestrian use they are intended to support in different neighbourhoods of the city:

- *Fusaro transect*: The transect linking the Fusaro train station and the Aragonese Castle in Baia has a more specific cultural focus on archaeological remains, even if the path follows the shore of the city;
- *Baia-Fusaro transect*: The transect connecting Torregaveta beach to the Royal Casino in Baia has a more naturalistic and environmental character, due to the proximity of both the Fusaro Lake and the sea;
- *Miseno transect*: In this district, the identified route crosses the historical centre of the city, coming into contact with relevant heritage elements but also with high-value landscape areas.

The transects identified are designed to link up with existing transport networks within the urban fabric, facilitating progressive accessibility to the area and integration between slow mobility nodes. At the same time, they have been designed with the intention of symbolically representing the main landscape and cultural characteristics of the area. In particular, attention has been paid to the presence of the sea as an identifying feature, the location of historical and cultural heritage sites and the coexistence of ecological spaces. However, everyday services and basic infrastructure have also been identified, with the aim of providing a complex and detailed view of the Phlegraean landscape, both from a recreational and tourist point of view and in terms of services offered to ordinary citizens.

Transect	Prevalent character	Main connected assets	Length / walking time
Transect I – Fusaro	Cultural–historical	Fusaro station, Baia Archaeological Park, coastal area and port, Aragonese Castle, cultural and sport facilities	~4.0 km / ~47 min
Transect II – Fusaro–Baia	Environmental–landscape	Torregaveta station, Spiaggia Romana, Fusaro Lake, Parco della Quarantena, Royal Casino complex and archaeological hotspots	~5.8 km / ~70 min
Transect III – Miseno	Integrated cultural and ecological	Villa comunale, Miseno Lake, Piscina Mirabilis, Miseno Roman Theatre, urban beaches and coastal promontory	~3.5 km / ~42 min

Fig. 4: Scheme of the main features and assets connected by the identified experiential transects

Source: Elaboration of I. Pistone

The information component of the transects has been gradually enriched by a variety of heterogeneous data, combining objective geospatial parameters—such as distances, elevation profiles and slope indices—with perceptual observations relating to the state of infrastructure, the quality of lighting and the presence of any physical barriers. This was further enhanced by photographic data—specifically, georeferenced images of key points. In addition, descriptive qualitative annotations were added, helping to provide a more nuanced and layered picture of the observed elements.

All this information was systematised within a purpose-built frame according to a customised spatial data model structure, which made it possible to organise and thematise the different levels of information in a coherent manner (Sharma, 2021). In geographic disciplines, a spatial data model defines how real-world spatial phenomena are represented in a geo-spatial database, allowing for the structured collection, storage, and analysis of georeferenced thematic data. This includes not only the geometric representation of features (such as points, lines, and polygons), but also their semantic attributes, topological relationships and temporal dynamics (Longley *et al.*, 2015; Burrough & McDonnell, 1998). The use of a structured spatial data model is particularly crucial because it ensures methodological repeatability and facilitates the transferability of the approach: a well-designed model enables the replication of data structuring procedures from one transect to another, thus supporting the construction of an organic and interconnected system.

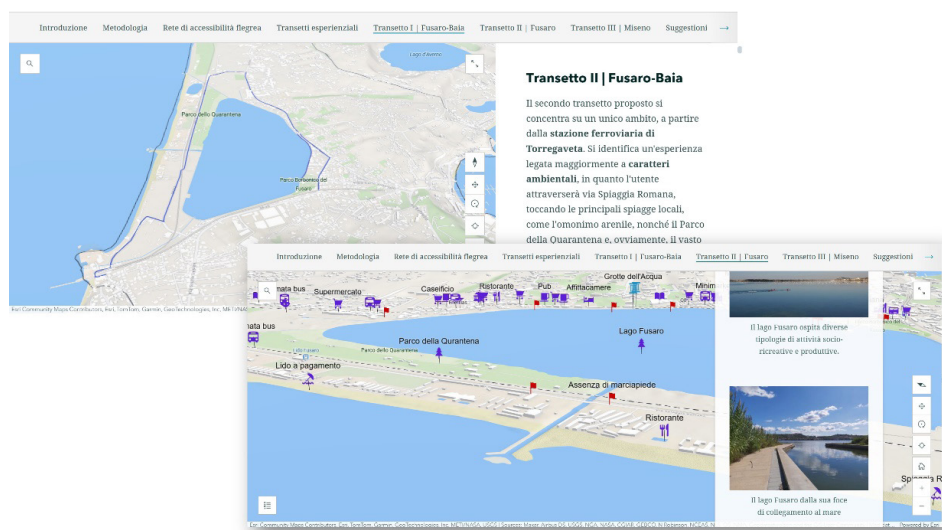


Fig. 5: View of the digital transect crossing the Fusaro and Baia districts in Bacoli, among cultural, environmental and functional assets

Source: Elaboration of I. Pistone

Crucially, this system enables the progressive networking of ecological, functional, and cultural assets, laying the groundwork for integrated strategies of slow mobility and territorial governance informed by bottom-up spatial knowledge flows.

Subsequently, the entire corpus was integrated into an interactive digital narrative platform, thus allowing for a visual, engaging and accessible representation of the exploratory routes, capable of combining analytical rigour and immediate communication. In line with this process, the assets were classified by layers, condensing the data to be collected in an organised manner, ranging from different types of green spaces to elements of archaeological heritage (in turn classified according to their degree of visibility and visitability), public and private services along the routes, and finally the infrastructure system and its dimensional and qualitative characteristics: this is important because the experiential transect approach is undeniably linked to the road routes along which it unfolds.

To enrich the analytical depth of the project, supplementary digital resources were adopted and linked to the main geo-storytelling environment, enabling more detailed, community-informed interpretations. Collaborative mapping techniques were implemented using Google My Maps: this approach made it

possible to involve the local community on the ground, inviting stakeholders to contribute to the progressive refinement of the mapped contents as they were integrated into the narrative database, through autonomous photographic documentation. This activity involved around 130 participants, including locals, tourists and students, between March and June 2024. The co-mapping platform was configured to allow users to catalogue visual data referring to assets worth enhancing and spatial criticalities to be resolved. This collaborative layer proved particularly valuable, as it brought the lived experience and local knowledge of non-expert users into the digital tool under construction, thus improving the overall quality of the resource while simultaneously strengthening users' awareness and engagement (Miller, 2006). Validation is here intended as a qualitative and participatory process of interpretive confrontation with local knowledge, more than a formal or structured process.

This integration of the StoryMaps tool with participatory tools such as survey-based data gathering does not merely support multimodal mapping; it constitutes a replicable framework that allows for iterative enrichment, community-informed refinement, and spatial storytelling at multiple scales. In this way, the methodology goes beyond communication, establishing a structured and flexible model for co-produced territorial knowledge. Furthermore, complementary digital tools were connected to the geo-storytelling system to diversify and enhance the information base:

- On one hand, tools such as OpenRouteService made it possible to gain greater control over the actual walkability of the area, assessed not only in terms of the presence of sidewalks or zones dedicated to slow mobility, but also in relation to topography and street gradients—an especially relevant feature considering the physical conformation of the Phlegraean Fields—with the aim of ensuring inclusive accessibility to the transects;
- On the other hand, it was possible to collect users' social representations through quantitative surveys, whose responses were stored in the digital repository. This allowed for the evaluation of social demand regarding landscape accessibility and contributed to the participatory construction of territorial knowledge. In addition, this allowed for a cross-reading between the data collected during the co-mapping phase and the perceptions expressed by participants, contributing to a more articulated understanding of landscape accessibility.

Overall, the experience in the Phlegraean Fields demonstrates how digital geo-storytelling—when combined with modular GIS platforms, community-generated content, and mobility-oriented spatial modelling—can serve not only as a descriptive device, but as an operational framework for sustainable landscape management. The integration of experiential narratives with geospatial infrastructure provides a flexible framework for inclusive planning processes and replicable applications.

These outcomes suggest that the geo-storytelling approach is capable of producing a dual impact: on the one hand, it strengthens the cognitive relationship between residents and their landscape through participatory exploration; on the other, it supports more informed, distributed and sustainable tourism practices by offering visitors immersive and context-sensitive access to the territory.

4. Operational implications of geo-storytelling: between community engagement and reflexive tourism

Digital geo-storytelling appears to hold significant potential as a framework for activating community-based processes of spatial knowledge co-production. Rather than being limited to data collection, local participants were engaged in forms of co-authorship: through participatory practices, they were invited to map, narrate and interpret their territory, integrating situated knowledge into structured spatial frameworks. These practices align with the logic of citizen science, which values local knowledge not as an ancillary element but as a generative asset.

The digital experiential transect, as a hybrid between physical exploration and digital narration, facilitated a context-aware and meaningfully immersive engagement with the landscape, offering a cognitive and emotional reading of infrastructural barriers, marginalities and symbolic geographies. The result is a narrative space where expert and community-based perspectives converge, enabling more plural, open and inclusive interpretations. This participatory dimension resonates with the notion of accessibility as a multidimensional concept—physical, perceptual and socio-cultural—which geo-storytelling rearticulates through a combination of movement, mapping and interpretation. In this context, the methodology does not merely represent space but actively contributes in its ongoing negotiation and co-definition, enhancing territorial awareness and reinforcing community agency.

The same methodological configuration supports a shift in the tourist experience, promoting slower, more reflexive and context-sensitive forms of exploration. By combining walkability practices with digital mapping, the experiential transect transforms the landscape into a narrative interface: rather than reducing the landscape to a sequence of consumable highlights, the experiential transect reassembles its layered complexity into a system of relations that are walked, narrated, and interpreted in context. The inclusion of ecological, cultural and infrastructural layers within the same spatial storyline fosters interpretive depth and mitigates the reductive tendencies of overtourism. In this way, tourists are no longer passive observers but participants in a shared journey of discovery and reflection. This method enables access not only to physical places but to the stories, conflicts and values that shape them, contributing to a more sustainable and responsible model of tourism. By challenging the dichotomy between iconic destinations and marginal spaces, geo-storytelling proposes a more equitable form of valorisation, in which even ordinary and fragile

landscapes can become sites of meaning, learning and care.

Taken together, the results suggest that digital geo-storytelling can act as a flexible and replicable device for reconfiguring the relationship between space, knowledge and citizenship. This reinforces the theoretical premises outlined in the introduction, particularly the asymmetry between high-profile destinations subject to overtourism and less visible, everyday spaces often neglected by dominant planning narratives—a dynamic that geo-storytelling seeks to rebalance through distributed visibility, narrative inclusion, and situated interpretation. In this sense, it responds to the need for more inclusive and situated forms of landscape enhancement, as discussed in Section 1, by rebalancing visibility, interpretation, and value attribution across the territory. Moreover, the operational deployment of the experiential transect—presented in Section 2 not as a normative planning tool but as a device of perceptive and narrative activation—finds practical confirmation in the observed results. Its hybrid structure, grounded in physical experience and enhanced by digital tools, facilitates a non-linear, context-sensitive reading of space that is particularly suited to complex geographies such as the Phlegraean Fields.

By anchoring the act of knowing in a relational and embodied practice, the integration of geo-storytelling and the digital experiential transect contributes to the emergence of new forms of place-making, planning and territorial awareness. These two dimensions—narrative and operative—function complementarily: while digital geo-storytelling offers a framework for the plural interpretation of landscapes, the transect grounds such interpretation in the act of walking, observing and mapping, thus reinforcing the situated and co-produced nature of spatial knowledge. Its strength lies not only in the integration of data and experience, but in the construction of a shared interpretive ground—a space where landscape is not merely read but co-produced. This formulation brings together the interpretive plurality of geo-storytelling and the situated, embodied logic of the experiential transect into a digitally mediated practice of spatial inquiry. In this integrated framework, the digital layer plays a crucial role: it acts as a dimensional bridge between the interpretive openness of geo-storytelling and the spatial precision of the experiential transect. By enabling the synchronisation of narrative, perceptual and spatial data, digital technologies enhance the mutual understanding of these two complementary dimensions, allowing the co-presence of plural voices and structured observation within the same analytical environment. This convergence offers a promising horizon for future research and application, particularly in the fields of education, participatory planning and integrated landscape governance. It suggests that the coupling of narrative tools and

experiential methodologies, mediated through digital infrastructure, can form the basis of an operational and transferable strategy for the valorisation of complex and fragile landscapes, paving the way for further applications aimed at testing its relevance and adaptability across different territorial contexts and analytical scales.

5. Conclusions and future directions for digital landscape valorisation

Digital geo-storytelling, as developed and applied in the context of the Phlegraean Fields, has emerged as a promising method for integrating spatial fragments, local memories, and technical data into a cohesive interpretive framework. This approach directly responds to the initial objectives of the study: to support territorial education, promote responsible tourism, and enhance social inclusion through the active involvement of local communities in landscape interpretation and valorisation. Its value lies not only in its descriptive capacity but also in its educational potential to foster territorial awareness and to activate collaborative practices of regeneration and co-design. In this sense, the framework can also be understood as a place-making device, capable of triggering cognitive, symbolic, and physical transformations by fostering processes through which space is collectively interpreted and endowed with meaning.

The framework has proven useful as an informative foundation for co-design processes, reinforcing community presence in the production of spatial knowledge and in the collective definition of transformative scenarios. Its educational component is equally significant: when applied to landscape interpretation, digital geo-storytelling becomes an effective didactic tool for schools, educational programs, and active citizenship workshops. Thanks to its modularity, it can be adapted to diverse audiences, promoting situated, participatory and conscious learning.

Nevertheless, the method also presents some limitations. Firstly, while the reliance on digital skills and connectivity may pose barriers for certain users, a more substantial challenge lies in the need for a coordinating figure capable of guiding and sustaining the participatory process over time. To be effectively embedded in governance dynamics, the methodology cannot function as a self-standing tool but requires institutional recognition and alignment with formal planning practices. Additionally, translating perceptual and narrative complexity into structured data raises critical questions regarding standardisation, representativeness, and the operational integration of such outputs within existing decision-making frameworks.

Despite these criticalities, the narrative transect model stands out as a promising foundation for the integrated valorisation of complex landscapes. Its flexible structure makes it replicable across different geographic and cultural contexts, provided it is tailored to local specificities. Additional developments

could involve the use of artificial intelligence for the narrative classification of content or interoperability with official territorial databases. At the same time, the digital infrastructure underpinning the method serves as a dynamic repository of georeferenced and multimodal content. This makes it a valuable informational resource for researchers, technicians, and policy actors, offering access to detailed spatial, perceptual and socio-cultural data that can support analysis, design and planning at multiple scales.

Through a sensitive narrative line—constructed by walking, observing, and telling—the landscape is restored not as a mere container, but as a living and dynamic structure. In this way, digital geo-storytelling repositions the act of knowing within its experiential and situated dimension, responding to the questions posed in the initial theoretical framework concerning socio-territorial accessibility and the possibility of constructing shared forms of knowledge capable of overcoming the physical and symbolic isolation of complex landscapes.

The ultimate aim is to place digital geo-storytelling at the service of local communities, deploying it through experiential transects as practical instruments of social, cultural and environmental development. By linking spatial assets and services, and potentially relieving pressure from overloaded landscape areas, the approach lays the groundwork for more integrated and equitable valorisation strategies.

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The combination of natural, anthropological, economic, social and cultural elements defines a tourist area. Tourism represents a significant opportunity for territorial redevelopment and greater economic and employment prospects, with considerable potential to contribute to various aspects of sustainability. It plays a pivotal role as an instrument for the promotion and development of the territory. The range of economic activities that constitute the tourism offer is therefore expected to adopt behaviors guided by a common interest, identifiable not only in the conservation but, above all, in the sustainable use of resources resulting from the interaction between human activity and the natural environment. The aim of this book is to encourage reflection on the analysis of current realities and future opportunities for a more resilient, inclusive and sustainable tourism model. Through selected case studies, the authors, adopting a critical approach, a multidisciplinary outlook, and methodological rigor, assemble a mosaic that reveals the complexity of the issues examined in the contributions gathered in this volume.

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