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"Experiencing Place through Virtual Reality: A Geographical and Cognitive Perspective from the Case of Noto (Sicily)"

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Abstract:

Background: The integration of immersive technologies into geographical research opens new epistemological and methodological perspectives on how places are perceived, represented, and experienced. This study explores the intersection between human geography and cognitive science through the use of virtual reality (VR) as a medium for spatial experience and territorial interpretation.

Methods: The research adopts a qualitative and exploratory approach centered on the pilot project *"Noto in Virtual Reality"*, developed at the University of Messina (COSPECS Department). The project consists of a virtual tour of the Modica di San Giovanni Winery in Noto, Sicily, reconstructed through a combination of 360° photographs and 3D scans implemented in Unreal Engine. It should be emphasized, however, that the simulation encompasses not only the winery, but also the surrounding area, providing a comprehensive view of the opportunities offered by the territory. Participants interact with the immersive environment via Meta Quest 3 headsets. The project is currently in its initial implementation phase and represents the first experimental application of the proposed model. The study draws upon theoretical frameworks from phenomenological geography (Tuan, 1977; Relph, 1976; Turri, 1998, 2014) and cognitive psychology to analyze the relationship between presence, sensory feedback, and spatial cognition.

Results: Preliminary observations indicate that virtual reality reproduces, within certain limits, the perceptual and emotional richness of physical space. The immersive experience elicits a strong sense of presence and engagement, suggesting a form of *experiential realism* where perception and territorial understanding converge. The project highlights the potential of VR as a tool for communicating enogastronomic landscapes and enhancing spatial awareness through multisensory interaction.

ISSN: 3035-062X
2025, 2(2)
Preliminary Reports and Negative Results in Life Science and Humanities

Conclusions: Virtual reality does not substitute real-world geography but extends it, offering a space for experimentation where perception, representation, and knowledge converge. When used critically, VR can serve as a cognitive and communicative device that makes the relational nature of place visible, supporting both academic research and local development strategies. The case of Noto illustrates how immersive technologies can strengthen the dialogue between geography and cognitive sciences, contributing to the renewal of geographical methodologies and the enhancement of territorial identities.

Keywords: Cognitive geography; Embodied perception; Immersive technologies; Place experience; Virtual reality

1. Introduction:

1.1. Space as Experiential Construction: Project Aims and the Territorial Value of Noto

Human beings are never devoid of space: they constantly inhabit a web of relationships, perceptions, and representations that shape their experience of the world. Every act of knowledge implies a relationship with space, which is never neutral or merely physical but always culturally mediated and lived. Within the Italian geographical tradition, Turri (1998, 2014) emphasized that space cannot be reduced to its measurable dimension but must be understood as a system of symbolic and practical relations that contribute to the construction of the sense of place. Spatial experience, from this perspective, is a continuous process of interpretation and attribution of meaning that links the perceptual and cultural dimensions of human existence.

This view has solid roots in phenomenological reflection. As Merleau-Ponty (1969) observed, the body is the anchoring point of perception and the primary site from which the world is experienced. Spatial experience is therefore embodied, situated, and intersubjective: the subject never perceives an abstract space but rather a concrete and sensitive environment, charged with affective values and symbolic references. From this theoretical framework arise the perspectives of Yi-Fu Tuan (1977) and Edward Relph (1976), who consolidated a conception of space as an experiential construction grounded in memory, corporeality, and language. For Tuan, place is not a simple geographical location but a dimension of human experience generated by the relationship between perception, emotion, and meaning.

ISSN: 3035-062X
2025, 2(2)
Preliminary Reports and Negative Results in Life Science and Humanities

This approach has also been extended and applied within geography to complex and marginal territorial contexts, where the perception of space plays a key role in meaning-making processes and in practices of local development (Vincenti, 2019). Within this framework, territorial representation is not a purely descriptive act but a form of mediation between space and knowledge. Maps, photographs, or narratives are cognitive devices that translate lived experience into language and symbol, contributing to the collective construction of landscapes.

Today, this reflection is renewed in light of the digital transition, which reshapes the relationship between physical and mediated presence. The advent of immersive technologies – particularly virtual reality – offers geography a tool of remarkable cognitive and communicative potential. Through VR, territories can be explored in an experiential and multisensory way, transforming representation into a situated act of knowledge. As Ash, Kitchin, and Leszczynski (2018) observe, digital media do not merely reproduce space but co-produce it, generating new ways of experiencing and understanding geographical reality. In this sense, virtual reality represents a highly promising threshold for contemporary geography: a field in which lived, represented, and imagined spaces intertwine, opening new interpretative and methodological possibilities for the study and narration of territories.

1.2. Virtual Reality, Space and Perceptual Experience

We can consider ourselves biological organisms and social agents. As such, we live our lives within spaces defined by boundaries. Inhabiting these extensive spaces is part of what defines our social and biological identities (DeLanda, 2005).

What do we mean by virtual space? When we refer to immersive virtual space, we mean a computer-generated artificial environment that one can seemingly enter with the aid of various devices. We can define virtual space as a spatiotemporal "arena" where mental models or abstract constructs of the world can be given virtual embodiment – both visually and auditorily – in three dimensions and be animated through time. These can then be kinesthetically explored by others through full-body immersion and real-time interaction, even while such constructs retain their immateriality (Penz et al., 2004).

It was recommended that, to study the impact of virtual reality environments on cognition, research should focus on the perceptual and cognitive abilities of adults and children during participation, in order to understand both the positive and negative effects.

ISSN: 3035-062X
2025, 2(2)
Preliminary Reports and Negative Results in Life Science and Humanities

Within such virtual environments, it is common to refer to 3D objects. By this term, we mean computer-generated entities that meet the following criteria: (1) there must be an accurate description of the model being designed; and (2) it must be presented in a realistic and integrated format so that it can be visualized and interpreted without introducing uncertainty regarding the represented properties (Gaggioli & Breining, 2001).

An important point to emphasize is that virtual reality has already emerged as an effective instrument for simulating realistic interactions across various domains. VR offers promising advantages for simulating and assessing the dynamics of real-world interactions. VR technology allows individuals to be immersed in lifelike scenarios, situations, and contexts that closely resemble their real-world counterparts. The essential point, however, is to understand to what extent the users' experience of a virtual prototype can be equivalent to that of its real counterpart, the physical product. There is no doubt that in recent years VR has gained popularity in the field of User Experience (UX) for both research and design purposes. VR enables researchers to create immersive and ecologically valid environments in which they can assess individuals' reactions and interactions toward products and services. Additionally, this technology allows the collection of multiple data types in the same session, such as movement tracking, self-report measures, and physiological responses. Virtual experiences are linked to a range of conceptual frameworks that must be examined to fully grasp the psychological states arising from engagement in such environments (Pizzolante et al., 2024).

First of all, let us focus on the concept of *immersion*. A system can be defined as immersive if it provides visualizations across all sensory modalities, along with tracking that preserves fidelity to the equivalent sensory modalities of the real world. *Presence*, on the other hand, is a human reaction to immersion. Within the same immersive system, individuals can experience varying levels of presence (Slater, 2003). Certainly, to promote presence, the architectural and aesthetic aspects of the virtual environment are important, but dynamic scene interactions and adaptive environmental feedback also have a positive impact. An equally important conceptual framework concerns *multimodal sensory feedback*. The integration of multiple sensory modalities – visual, auditory, tactile, or olfactory – enhances the sense of immersion and presence. Such feedback can also improve spatial awareness and facilitate emotional resonance. As a result, the experience becomes more engaging, learning more effective, and cognitive load reduced (Wei et al., 2025).

ISSN: 3035-062X
2025, 2(2)
Preliminary Reports and Negative Results in Life Science and Humanities

Another key concept is that of *affordance* and its relation to potential action. The concept of affordance was originally developed in psychology by James J. Gibson and used to describe the perceived opportunities for action available to an individual within a given environment. What concerns us here is the interpretation of this concept in relation to the design of virtual environments. In this context, *affordance* refers to the latent possibilities for action offered by an environment, a tool, or an artifact. In contrast to the traditional cognitive approach, affordance theory suggests that an excessive focus on declarative semantic knowledge and information processing is unnecessary, as humans perceive the environment directly in relation to its action potentials. Therefore, affordances should provide users with cues about the functions of available objects, as well as clear visual signals for their application and use (Moloney et al., 2018).

When these conditions are met, it becomes possible to develop immersive VR environments that effectively replicate real-world experiences. A study comparing users' experiences with the *Graziella* bicycle – presented either on the Sumerian or Sansar VR platforms, or in a physical environment – supports this claim. The results of this study, despite certain limitations (such as an imbalance between participant groups in terms of gender), revealed minimal differences between the virtual and real evaluation conditions, particularly regarding perceived realism and sense of presence, thus confirming the promising potential of virtual reality (Pizzolante et al., 2024).

In light of these theoretical premises, it becomes necessary to test how virtual reality can act not only as a medium for representation but also as a tool for spatial experience and territorial interpretation. To explore this hypothesis, the research focused on the town of Noto, in southeastern Sicily – chosen as a representative context where cultural heritage, sensory perception, and enogastronomic tourism intersect. The following section illustrates the methodological framework and development process of the virtual prototype designed for this case study.

2. Materials and Methods:

2.1. Geographical Space as an Experiential Construction

Contemporary geography has progressively moved away from the idea of space as a fixed and measurable entity, embracing instead a processual, relational, and situated perspective. Space is not an objective datum but a social and cultural construction that takes shape through practices, representations,

ISSN: 3035-062X
2025, 2(2)
Preliminary Reports and Negative Results in Life Science and Humanities

and interactions among actors, materials, and symbols. Henri Lefebvre (1974) had already argued that every society produces its own space, reflecting both its power structures and its relational models. In this view, space is not a neutral backdrop for human action but the outcome of a collective process of production in which physical, economic, symbolic, and perceptual dimensions are dynamically intertwined.

This conception has been further developed by authors such as Doreen Massey (1994), who interprets space as a *becoming*, a field of ongoing interaction between subjects and places. As Massey explains, space is an open relational field shaped by flows, connections, and differences, where territorial identities are never fixed but constantly negotiated. The experiential dimension, within this framework, does not oppose the structural one: perception and representation become practices through which space is continuously produced and imbued with meaning.

Claude Raffestin's (2019) reflections also contribute to this perspective, emphasizing the role of mediation and communication in the construction of territoriality. For Raffestin, space is a product of the relationship between energy, information, and power, and representation is one of its essential instruments. Territory, therefore, is not merely the space *occupied* by a community but the outcome of the relationships that the community establishes with its environment and with itself, through both material and symbolic forms of appropriation.

In Italy, the work of Giuseppe Dematteis (1985) further reinforced this approach by defining territory as a network of functional and identity-based relations organized around a collective project. The experiential dimension, in this sense, is not marginal but a crucial component of territoriality: it is through experience that individuals and communities recognize, interpret, and redefine places. Geography, therefore, is not limited to describing spaces but becomes a tool for understanding their meanings and orienting practices of transformation.

In light of these reflections, speaking of *experiential space* means acknowledging that geographical knowledge is always situated – emerging from the interaction among body, perception, culture, and environment. The use of digital and immersive tools such as virtual reality extends this awareness, offering the possibility of exploring space as a shared, multisensory field of experience. VR does not replace real space but amplifies its relational dimensions, making visible the connections, perspectives, and emotions that shape the perception of place. In this sense, virtual reality does not represent a

ISSN: 3035-062X
2025, 2(2)
Preliminary Reports and Negative Results in Life Science and Humanities

detachment from the real but rather a new form of mediation between knowledge, representation, and territorial experience.

2.2. Mental Images and Destination Image

Traditional tourism geography adopted the definition of *tourist* proposed by the United Nations, according to which a tourist is a person who travels for reasons of leisure, family, health, meetings, business, study, etc., staying for at least 24 hours in a country or region different from their usual place of residence (U.N. Statistical Office, 1978). However, from a contemporary perspective, that definition appears overly broad and, in a sense, limiting. A fundamental element to consider is the motivation that leads tourists to choose one destination rather than another (Bagnoli, 2014).

In the current context, the choice of a tourist destination is heavily influenced by the consumption of informational content online, both textual and visual. It is through such content that expectations are built and a mental image of the destination is formed.

It is not surprising that observing specific images induces the formation of mental representations. In this respect, one can consider the contribution of Finke (1986), who argued that mental imagery may influence visual perception and vice versa, thus highlighting a dynamic and bidirectional relationship between these processes. What follows is an integrated perspective on the interaction between mental imagery and visual perception, which posits that both phenomena share common neural bases and interact in complex ways to facilitate the processing of visual information.

However, perceiving an image does not end with a merely visual act but is the outcome of a lived experience in which the individual activates a cognitive process made possible by their corporeality (Malvica, 2024). Landscape appears simultaneously as tangible reality and visual construction, but it also serves as an interpretative and translational tool for reading and reworking the contemporary world (Farinelli, 1991; Farinelli, 2015).

Therefore, there is a deep interconnection between the individual and the environment, mediated by an essential emotional dimension that helps transform geographic space into landscape – understood as the result of subjective and culturally situated perception (Daniel, 2001; Lothian, 1999).

In this context, it is crucial to highlight the concept of *destination image*, developed since the 1970s and commonly translated as *immagine di destinazione*. This concept does not simply represent the means by which a place is promoted or communicated, but rather the mental construction that an individual

ISSN: 3035-062X
2025, 2(2)
Preliminary Reports and Negative Results in Life Science and Humanities

elaborates about a given destination. The central aspect lies in acknowledging the subjective component involved in the interpretative process, emphasizing how the perception of a destination is influenced by personal, cultural, and emotional factors (Ahmed, 1996; Hunt, 1975).

But what do we mean by *image*? On one side, an image can be understood as a means of communication between the individual and the world (Ingold, 2001), and on the other as an object that re-presents reality and allows access to perceptual mechanisms through its re-presentation (Parisi, 2018). The communicative power of visual stimuli is also recognized by human geography, which views landscape as the result of interactions between humans and their environment.

A tourist destination, moreover, should have a distinctive toponym, which acts as a true *commercial brand*, preferably evocative of images. A toponym arises when a society ascribes value to a location, elevating it to a *place* by giving it identity and a geographic name (Bagnoli, 2014). In this framework, strong competition emerges among destinations, based mainly on their perceived image in the tourism market (Baloglu & Mangaloglu, 2001; Joppe, Martin & Waalen, 2001). It therefore becomes necessary for destinations to develop a positive image to achieve competitive advantage (Baloglu & McCleary, 1999; Gartner, 1993). Understanding tourists' perceptions of a given place is thus essential to identify its strengths and weaknesses, as well as to define effective promotional strategies (Chen & Uysal, 2002; Leisen, 2001; San Martín & Rodríguez del Bosque, 2008).

One useful case study in this domain concerns the Tohoku region of Japan. In a study, Malaysian citizens were interviewed as potential tourists. The research showed that correlations among sensory, cognitive, and affective components significantly influence intention to visit. Among these, the affective image proved to be the most influential, although itself conditioned by sensory and cognitive components. Sensory images, historically neglected, thus emerge as fundamental. It is relevant to note that each sensory image represents an individual attribute, and the combination of several attributes constitutes a cognitive process (Shams & Seitz, 2008), which is subsequently translated into the cognitive image (Compeau, Grewal & Monroe, 1998).

Tohoku, located in northeastern Japan, features notable attractions such as natural heritage, traditional festivals, gastronomic specialties, and local crafts, but it is also associated with images of destruction caused by the 2011 tsunami and nuclear incidents. Malaysian tourists were chosen as a reference group because, in 2018, approximately 468,000 Malaysians visited Japan. The research was based on the analysis of content published on the Facebook page of Tohoku Tourism (in English), which

ISSN: 3035-062X
2025, 2(2)
Preliminary Reports and Negative Results in Life Science and Humanities

had about 194,000 followers in 2019. Seventeen visual attributes and four auditory ones were identified between April 2016 and March 2017, assessed via a five-point Likert scale ranging from "very insignificant" to "very impressive." Cognitive and affective attributes were also analyzed on a five-point Likert scale ranging from "very unfavorable" to "very favorable," with the addition of the option "I don't know." The questionnaire also collected demographic information, such as age, sex, and prior experiences in Japan. After a preliminary verification phase, the questionnaire was digitized using Google Forms, which was the version employed in the main survey. Participants, divided into small groups, were asked to visit the Facebook page of Tohoku Tourism before completing the online questionnaire.

Results showed a positive perception of the destination, highlighting the significant role of the visual component – clearly considered a sensory element – in determining both the affective image and the intention to visit. These findings align with the literature that recognizes the visual component as the predominant sensory stimulus (Krishna, 2012; Nghiêm-Phú, 2017). However, it is worth noting that the auditory image demonstrated an even greater impact in the formation of the cognitive and affective dimensions of the image (Nghiêm-Phú & Bagul, 2020).

This element is crucial for the current line of research, since the use of virtual reality enables the integration of broader sensory stimuli, thereby enhancing specific tourist destinations. The formation of a mental image inevitably generates expectations, which, if fulfilled, can yield positive effects on perceived destination value and stimulate favorable feedback. Conversely, a discrepancy between expected image and experienced reality may generate frustration and disappointment (Malvica, 2024).

2.3. The Development of the Pilot Project "Noto in Virtual Reality"

As previously noted, virtual reality represents an effective tool for providing more realistic and immersive representations, thereby increasing individuals' intention to visit a given location. Our pilot project consists of a virtual tour focused on the city of Noto and the Modica Winery of San Giovanni, with particular attention to the surrounding territory and to food-and-wine tourism. The simulation includes a visit to the winery's indoor spaces as well as to characteristic locations in the city of Noto (for example, Via Nicolaci, a renowned street that hosts the Infiorata festival).

Prior to data collection, authorization for photographic, audio, and video recording was obtained from the owner of the Modica Winery through the signing of a release form. The same authorization was signed by the staff members who appear in the recordings. The virtual environment was reconstructed

ISSN: 3035-062X
2025, 2(2)
Preliminary Reports and Negative Results in Life Science and Humanities

using 360° photographs and videos captured with an Insta360 X4 – 360° 8K Action Camera, and additional 3D scans were produced through dedicated applications. The collected material, currently being processed, is integrated into Unreal Engine—a real-time 3D engine that enables the creation of interactive VR environments—using the Blueprint visual scripting system, a node-based programming language that allows connections between modular blocks.

The virtual environment will be tested by participants using the Meta Quest 3 headset available at the Consorzio Universitario Mediterraneo Orientale (CUMO) in Noto, which hosts the Department of Cognitive, Psychological, Pedagogical, and Cultural Studies (COSPECS) of the University of Messina. Testing may also take place at the main COSPECS site in Messina, where the same device is available.

The sample will consist of approximately 60 participants, balanced by gender. Participants will primarily be university students recruited from departments affiliated with the University of Messina. To reduce sampling bias, in addition to ensuring gender balance, volunteers external to the university who are interested in visiting Noto and the Modica Winery will also be included. Participation is restricted to adults, members of the non-clinical population, and/or individuals with physical disabilities that do not prevent them from taking part in the simulation.

Following the VR simulation, participants will complete post-activity Likert-scale questionnaires designed to assess their level of enjoyment and engagement, as well as their spatial behavior in VR (for example, perceived ease of use, sense of presence, etc.).

It is also possible that physiological parameters will be examined using eSense devices—wearable biofeedback instruments—available within the department's facilities.

Once data collection is complete, descriptive statistics and inferential tests will be applied to explore the relationships between the variables of interest and the recorded behavioral indicators.

The following section discusses the expected results, highlighting the relationship between immersion, sensory feedback, and cognitive interpretation.

3. Results and discussions:

3.1. Virtual Reality and Experiential Tourism

In recent years, virtual reality (VR) has emerged as one of the most promising technologies for territorial analysis and representation. The possibility of immersing oneself in three-dimensional and

ISSN: 3035-062X
2025, 2(2)
Preliminary Reports and Negative Results in Life Science and Humanities

interactive environments allows users to experience space not only as an object of observation but as a lived experience, in which perception, memory, and emotion become integral components of geographical knowledge. Interest in VR within territorial studies stems from the awareness that every representation is a selective and interpretive act: in this sense, virtual reality does not simply reproduce space but reinterprets it, revealing connections, perspectives, and relationships that would otherwise remain hidden.

The immersive dimension fosters a form of situated knowledge, in which the subject perceives themselves as part of the represented environment. According to Riva and Mantovani (2012), the sense of presence that characterizes virtual experiences arises from the integration between perceptual stimuli and cognitive processes of spatial construction, producing a kind of *experiential realism*. VR thus becomes a laboratory for analyzing spatial behaviors and environmental perception, as well as a medium for renewing the ways in which places are narrated and valued.

Recent research on the perception of landscape and destination image supports this embodied and relational understanding of spatial experience. Malvica, Nicosia, and Porto (2023), for instance, emphasize how the relationship between projected and perceived landscape images can reveal tensions between institutional representations and visitors' experiential, co-created perceptions. Their study on Etna Park shows that tourists tend to prefer explorative and proximal perspectives that evoke a sense of bodily presence rather than distant, contemplative views. These findings resonate with the use of immersive technologies such as VR, which similarly engage users through multisensory and embodied modes of spatial interaction. Virtual reality, in this sense, becomes not only a visualization tool but also a platform for co-producing place meanings, bridging the gap between projected narratives and lived perceptions of territory.

In the tourism context, virtual reality has established itself as a medium of mediation between the material and imagined dimensions of territory. Immersive experiences, virtual tours, and interactive environments allow visitors to anticipate or prolong their relationship with a place, fostering emotional and cognitive engagement that goes beyond mere visual information (Guttentag, 2010). VR does not replace the physical experience of travel but rather complements it, expanding its narrative and perceptual potential. It enables the construction of a denser image of place, where knowledge blends with sensory suggestion.

ISSN: 3035-062X
2025, 2(2)
Preliminary Reports and Negative Results in Life Science and Humanities

From a geographical perspective, this opens the way to a new form of territorial empathy – a technologically mediated mode of engagement with place that nevertheless preserves the experiential quality of the relationship with landscape. Virtual immersion facilitates processes of identification and contextual understanding, allowing users to explore spatial relationships, morphology, and landscape structures in a more intuitive and participatory way. In this sense, VR can be seen as a tool for spatial literacy, capable of stimulating a more conscious and critical perception of space.

Applications in experiential tourism, however, also reveal certain limitations. The effectiveness of virtual experience depends not only on the realism and interactivity of the environment but also on its ability to evoke meanings beyond the technical dimension. The challenge for geography lies in reconciling the precision of representation with the symbolic and narrative depth of experience. VR is therefore not merely a technology but a language through which new forms of knowledge and territorial storytelling can be constructed, opening innovative scenarios for geographical research and communication.

3.2. The Aims and Aspirations of the Pilot Project "Noto in Virtual Reality"

The potential of virtual reality (VR) has been widely acknowledged, and it is precisely this potential that we aim to explore. The project was conceived to develop virtual reality simulations that provide users with an immersive overview of the locations they wish to visit. This approach may not only encourage tourism in certain areas but also offer an alternative form of *visiting* for individuals with physical disabilities who would otherwise be unable to engage in such experiences.

The main objective of this initiative is to create a virtual tour focused on wine and food tourism. While future developments may extend to a broader regional mapping, the prototype phase concentrates on the town of Noto and, specifically, the Cantina Modica di San Giovanni Winery. A distinctive feature of this project is that the simulation is not limited to the interior of the winery but also encompasses the surrounding landscape. This allows participants to gain a comprehensive understanding of the opportunities offered by the territory, thereby facilitating the decision to encourage or discourage potential visits. For instance, showcasing the Baroque architecture of Noto may promote visits among enthusiasts of this architectural style. Moreover, as previously noted, the simulation also enables individuals with physical disabilities to "experience" these locations or to assess whether they are accessible given their specific conditions.

ISSN: 3035-062X
2025, 2(2)
Preliminary Reports and Negative Results in Life Science and Humanities

As the prototype has not yet been submitted, we do not have concrete results to present. However, based on the current state of the art, we anticipate that the outcomes will be positive. Findings from previous studies indicate that participants perceived the virtual experience as nearly comparable to a real-world visit. Feedback indicates high levels of enjoyment, engagement, and perceived realism. Beyond these empirical outcomes, the project aims to demonstrate how immersive environments can reproduce, to a significant extent, the perceptual richness of physical space. More importantly, it underscores a deeper implication: virtual space can serve as a laboratory for rethinking geographical experience itself, bridging cognitive perception and territorial representation.

Reiterating that this is a prototype that has not yet been tested, we cannot be certain about the outcomes or the level of user enjoyment. Moreover, at this stage, we have chosen not to include either sound or written descriptions of the locations visited. This may represent a limitation of the simulation; therefore, we do not rule out the possibility of implementing such features in the future.

In this sense, *Noto in Virtual Reality* is not simply a technological experiment but a case study that illustrates how digital mediation can enhance the relationship between geography, perception, and territorial narration. The next section presents the broader theoretical and methodological implications of this approach, situating the pilot project within contemporary debates on spatial representation and experiential geography.

4. Discussion and Conclusions

Based on the results we expect from the pilot project, this section discusses the broader theoretical and methodological implications of using virtual reality as a tool for geographical inquiry. The reflection moves beyond the technical dimension of VR, addressing its epistemological significance and its potential to renew the relationship between geography, perception, and territorial representation.

The introduction of virtual reality into geographical research opens a field of reflection that extends far beyond its instrumental use, engaging with fundamental questions concerning space, knowledge, and experience. Since geography is rooted in the relationship between spatial representation and understanding, VR today represents a critical frontier: a medium capable of expanding the ways in which places are perceived, interpreted, and communicated, while redefining how geographical knowledge itself is constructed. The possibility of inhabiting a virtual space generates an immersive form

ISSN: 3035-062X
2025, 2(2)
Preliminary Reports and Negative Results in Life Science and Humanities

of knowing that lies between direct experience and symbolic mediation, making explicit the situated and relational nature of geographical understanding.

From a theoretical standpoint, VR provides a concrete way to explore the relationship between represented and lived space, challenging the traditional distinction between observer and landscape. The user, immersed in a digital environment, is no longer an external spectator but an integral part of the scene – perceiving, moving, and interacting. In this sense, virtual reality is not merely an extension of the visual field but a transformation of the viewpoint, shifting the emphasis from *looking at* to *living within* space. This approach strengthens the phenomenological and embodied orientation of contemporary human geography (Tuan, 1977; Relph, 1976), offering an operational framework in which body, perception, and language intertwine in the construction of meaning.

However, the cognitive potential of VR is accompanied by significant critical challenges. The risk of reducing space to a simulacrum – privileging spectacle over experiential depth – calls for rigorous methodological awareness. As Ash, Kitchin, and Leszczynski (2018) remind us, digital media are never neutral tools: they co-produce spatial realities, selectively amplifying certain aspects of lived experience while silencing others. VR must therefore be understood as a territorial device that, when used critically, can make visible the relational and dynamic nature of place; but when adopted uncritically, risks generating new forms of distance and abstraction.

Within the applied context of the *Noto in Virtual Reality* project, VR offers an opportunity to test these reflections in practice. The creation of a 3D model of the historic center and the Modica Winery – designed for immersive exploration through Oculus technology – provides a way to engage geography with advanced digital languages without losing its territorial grounding. Here, three-dimensional reconstruction is not a mere technical exercise but a means to activate interpretive experience: exploring the urban and productive landscape becomes a way of reconstructing the relationship between space, memory, and local identity. In this sense, VR functions as a form of cognitive mediation, useful not only for research but also for the enhancement and communication of territory.

Looking ahead, future research perspectives move in several directions. On one hand, the integration between geography, cognitive psychology, and communication sciences can help to better understand how immersive experiences influence place perception and the construction of destination image. On the other, the participatory use of territorial VR models opens new opportunities for spatial planning and local governance, providing tools that combine scientific rigor with narrative engagement.

ISSN: 3035-062X
2025, 2(2)
Preliminary Reports and Negative Results in Life Science and Humanities

From a technological standpoint, further developments are planned. Although the current prototype focuses on a single winery in Noto, future iterations may include simulations of additional wineries and other locations within the surrounding areas or across Sicily. Software improvements are also envisioned, including the extension of 3D modeling to external environments, not only interiors. Finally, the integration of physiological variable analysis is being considered, thanks to the interdisciplinary nature of the hosting department. One of the project's key strengths lies precisely in this convergence of multiple fields – psychology, geography, and digital communication – showing how their intersection can produce mutual benefits.

Ultimately, virtual reality does not replace geography – it revitalizes it. It restores to the discipline its original vocation as an inhabited knowledge, capable of connecting body, technology, and territory within a unified experience of understanding.

Ethical approval: Not applicable. (The study did not involve human or animal subjects.)

Informed Consent Statement: Not applicable. (No human participants were involved in the research.)

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ISSN: 3035-062X
2025, 2(2)
Preliminary Reports and Negative Results in Life Science and Humanities

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