

# Interpretive Narratives of Geoheritage: Experiences in French Geoparks

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## Keywords

Heritage interpretation  
Geoparks  
Symbolic appropriation  
Interpretive media

## Abstract

This article investigates interpretive panels at geosites in three French geoparks, aiming to understand how different narrative strategies communicate aspects of geoheritage. The research adopts a qualitative approach, based on a critical analysis of 17 panels collected in the field. The theoretical framework is grounded in the heritage typology proposed by Doumit (2007), which identifies five narrative dimensions — scientific, historical, symbolic, artistic, and sensory — along with an analytical framework encompassing four interpretive approaches: educational, communicational, discursive, and integrative. The results indicate a predominance of the scientific/natural dimension in the analyzed panels, highlighting an emphasis on technical and geological aspects. However, in some cases, there is articulation with other dimensions, such as historical, symbolic, and sensory, especially when the content relates to social practices, local memories, or cultural elements. These connections enrich the interpretive experience and provide a more contextualized reading of the territory. Regarding interpretive approaches, educational and communicational orientations prevail, focusing on technical explanations and visual resources, which help make scientific content accessible to diverse audiences but tend to limit active visitor participation. In contrast, discursive and integrative approaches — which encourage visitors to co-construct meaning and foster emotional connections to places — are less frequent, indicating an underexplored potential. The discussion proposes a reflection on the role of interpretive devices as cultural mediators of territory, emphasizing their capacity to construct meaning, promote belonging, and strengthen the relationship between communities, landscapes, and local heritage. By combining knowledge, memory, and experience, such devices can contribute to broader processes of social valorization and appropriation of geoheritage. The study also engages with Brazilian experiences and reinforces the importance of interpretive strategies that integrate multiple heritage dimensions through more sensitive and participatory approaches. It advocates for cultural mediation that promotes community involvement, a sense of belonging, and actions oriented toward sustainability, thereby enhancing the social and educational impacts of geoparks.

## INTRODUCTION

Geodiversity refers to the variety of abiotic elements on the Earth, including rocks, landforms, soils, and hydrological systems (Gray, 2013). More recently, the concept has expanded to include the atmosphere and oceans (Gray, 2025). When some aspects of geodiversity are recognized for their exceptional scientific, educational, symbolic, or aesthetic value, they are considered geoheritage (Brilha, 2016). Geoheritage consists of material traces of Earth's history that, beyond their scientific value, acquire symbolic or identity-based meanings through the relationships societies establish with them (Cayla, 2009; Henriques; Reis, 2021). Thus, geodiversity becomes heritage both for what it reveals about the planet's evolution and for the meanings socially attributed to it.

This process of value attribution, known as heritagization, involves interconnected stages: the selection and justification of value, conservation, display, and the symbolic and functional valorisation of heritage. The entire process is permeated by ongoing social appropriation, through which individuals and communities construct meanings and emotional connections with the heritage (François *et al.*, 2006). Traditionally, heritagization has privileged visible materiality and expert authority (Duval; Gauchon, 2021; Lee, 2024). However, it has increasingly been broadened by approaches that recognize cultural, symbolic, and emotional ties (Brilha, 2016; Portal; Bétard, 2019; Henriques; Reis, 2021).

In this context, interpretation plays a central role. Interpretive narratives construct meaning and connections, shape memory, and influence decisions about what should be remembered, valued, or forgotten (Duval; Gauchon, 2021; Knackmuhs, 2017). Although all heritage encompasses multiple stories, not all of them are included in institutional practices (Lee, 2024). Interpretation, as a process of meaning-making mediated by communication and experience (UNESCO WHIPIC, 2023), offers the potential to highlight silenced narratives and foster stronger bonds between people and places.

Interpretation inherently involves values, and reflecting on those values requires asking: What is being valued? By whom? In which contexts? With what expectations? The stronger the connection between people and places, the greater the likelihood of community engagement in heritage protection (Lee, 2024). Sensory and immersive interpretive practices have gained prominence for promoting symbolic

appropriation and emotional and political bonds. Among these, Uzzell (2024) introduces the concept of a "heritage bath" to describe intense experiences of immersion and emotional connection with the environment.

While progress has been made in the interpretation of geoheritage, critical analysis of its communicative tools—especially regarding discourse, language, and symbolic meanings—remains underexplored. This article contributes to that discussion by analyzing interpretive materials (panels and exhibition displays) documented in French geoparks. It aims to understand how these narratives communicate values, construct meanings, and evoke connections—geodiverse (i.e., symbolic, cognitive, and emotional relationships with elements of geodiversity), cultural, or affective—based on four approaches: educational, communicational, discursive, and integrative (UNESCO WHIPIC, 2023).

## METHODS

This study employs a qualitative approach, grounded in the critical analysis of interpretive materials collected in the field—specifically, panels and exhibition displays—to understand how visual and textual discourses convey values and construct meanings surrounding geoheritage in various French geoparks.

Seventeen panels were selected based on thematic diversity, visibility, and their presence along strategic circuits within the geoparks. Data collection was carried out during the first half of 2024. The sample aimed to represent a variety of discourses, ranging from panels focused on scientific dissemination to others emphasizing symbolic, sensory, or emotional aspects, to capture the full range of meanings conveyed in geoheritage interpretation.

The analysis is not limited to contemporary conceptions of interpretation but instead integrates both classical and recent approaches. While it draws inspiration from the current notion of heritage interpretation as meaning-making mediated by communication, participation, and experience (UNESCO WHIPIC, 2023), the study also acknowledges the significance of foundational contributions and their reinterpretations over time. It is based on the premise that interpretation should consider both internationally recognized values - such as Outstanding Universal Value (OUV) - and locally attributed meanings by communities, simultaneously aiming to inform,

engage, and negotiate meanings across diverse cultural contexts (UNESCO WHIPIC, 2023).

As an analytical framework, the study adopts the typology proposed by Doumit (2007), originally developed to identify narratives used to justify heritage protection actions in karstic contexts. In this study, that structure is reinterpreted as an analytical tool for reading interpretive materials, specifically, how different meanings of heritage are communicated to the public.

We understand these dimensions as a key to analyzing the narrative strategies employed in exhibition media, regardless of formal protection objectives. This typology proves

helpful in capturing the diversity of meanings attributed to landscapes, even outside karstic contexts. The scientific dimension, for example, may encompass geomorphological, paleontological, or hydrogeological aspects, often combined with emotional or cultural elements. The symbolic dimension includes myths, popular religiosity, or local historical figures. Other dimensions refer to aesthetic, historical, or sensory experiences, depending on the narrative focus. As a distinctive feature, this study proposes a cross-analysis between these dimensions and the four heritage interpretation approaches: educational, communicational, discursive, and integrative (Chart 1).

**Chart 1 – Interpretive approaches and their foundations**

Interpretive Approach	Authors	Main Focus and Distinctive Features
Educational	Tilden (1977); Beck and Cable (1998); Nowachi (2021)	Interpretation is understood as an educational activity that aims to reveal meanings and foster an understanding of heritage through direct experiences, original objects, and sensory engagement. Its distinctive feature lies in combining learning, awareness, and accessibility, with a special emphasis on fostering heritage consciousness across diverse audiences.
Communicational	Howard (2003); Moscardo (2014); McKew (2022)	Interpretation is conceived as a communicative process that mediates between heritage and the public using tools such as signage, design, guides, and narratives. Its distinctive feature is the emphasis on meaning-making through various media, highlighting storytelling and persuasive communication to enhance engagement, particularly in tourism contexts.
Discursive	Silberman (2013)	Interpretation is treated as a social practice in which heritage becomes the subject of public deliberation, symbolic negotiation, and collective meaning-making. Its key feature is the value placed on active public engagement, reframing interpretation from an instructive process into a space of narrative and political contestation.
Integrative	UNESCO WHIPIC (2023)	Interpretation is understood as a collective construction of meaning that fosters connections between people and heritage places, based on ethical participation and the representation of multiple values. Its distinctive feature is the explicit recognition of the political dimension of interpretation, legitimizing diverse stakeholders as co-authors of meaning. This approach offers an integrative perspective, merging elements of the educational, communicational, and discursive dimensions.

Source: The author (2025). Adapted from UNESCO WHIPIC (2023).

The four interpretive approaches guided the analysis of the panels. The educational approach emphasized the transmission of scientific knowledge; the communicational approach focused on the mediating resources used in meaning-making; the discursive approach considered the interpretive devices as spaces of symbolic negotiation; and the integrative approach highlighted the articulation of

cognitive, affective, cultural, and political dimensions. Together, these frameworks enabled the mapping of the narrative strategies adopted by the geoparks.

The analysis was conducted through the identification and categorization of narratives present in the interpretive panels, based on two principal axes: (a) the predominance or absence of the heritage dimensions proposed by Doumit

(2007); and (b) the alignment with the different interpretive approaches outlined in Chart 1.

The analytical process followed defined stages, including a systematic reading of the panels and the organization of data into textual, visual, and contextual records. Categorization was based on two theoretical axes and pre-established criteria applied consistently. Although the analysis was conducted individually, it included a rigorous review process and documentation of decisions to ensure methodological consistency and transparency.

This intersection between types of heritage narratives and interpretive approaches enabled the identification of patterns, contrasts, and strategies through which geoparks establish connections between science, memory, landscape, and territorial identity.

## CASE STUDIES

The Geopark label is a voluntary, non-regulatory tool that aims to value geodiversity, serving as a space for territorial experimentation where various local actors develop conservation practices for geoheritage in its broadest sense. Each geopark mobilizes a specific set of values associated with geodiversity and structures a territorial development strategy consistent with these elements (Zouros, 2005).

The conceptual foundation of this approach can be traced to the Charter of the Rights of the Memory of the Earth, proclaimed in Digne-les-Bains in 1991. This document introduces an ethical basis for geoconservation, inspired by the Universal Declaration of Animal Rights and centred on the concept of the "memory of the Earth" (Du; Girault, 2018).

Although formal recognition by UNESCO did not occur until 2015, the first geoparks emerged in 2000, with Europe playing a leading role. France was a pioneer in this process, with the Haute-Provence Natural Geological Reserve among the founding members of the European Geoparks Network, alongside Vulkaneifel (Germany), Lesvos (Greece), and Maestrazgo (Spain) (Bétard *et al.*, 2023).

As of 2024, France had nine UNESCO-recognized geoparks: Haute-Provence (2000), Luberon (2004), Massif des Bauges (2011), Chablais (2012), Monts d'Ardèche (2014), Causses du Quercy (2017), Beaujolais (2018), Armorique (2024), and Normandie-Maine (2024). Many of them originated from pre-existing protected areas, such as Haute-

Provence, Luberon, Massif des Bauges, Monts d'Ardèche, and Causses du Quercy (Portal; Aubron, 2022). This pattern continued with more recent applications, such as Armorique and Normandie-Maine, which were also based on established natural parks.

The three French geoparks analyzed in this study present distinct institutional trajectories: Luberon was recognized in 2004, following a consolidated process initiated with the creation of the Natural Geological Reserve (1987) and its integration into the Regional Natural Park (1977) (Balme; Legal, 2018); Monts d'Ardèche received recognition in 2014, following a community-driven movement that began in the 1990s and led to the creation of the Regional Natural Park in 2001, integrating natural heritage, agriculture, and sustainable development (Provence Alpes Digne-Les-Bains Tourisme, 2021); Chablais, recognized in 2012, stands out for not having originated directly from a natural park, but rather from local initiatives focused on education and awareness-raising around geodiversity.

## RESULTS

### Luberon Geopark

#### *Saint-Martin-les-Eaux Geosite*

At the *Saint-Martin-les-Eaux* geosite, two main panels from the interpretive trail were analyzed. The first, *Une économie tournée vers le sous-sol* (Figure 1A), addresses the exploitation of underground resources as a strategic and historical element of the region. The text dates back to the 19th century, highlighting the extraction of gypsum, lignite, and petroleum, and mentions the contemporary use of artificial cavities for the safe storage of hydrocarbons. Schematic illustrations depict geological cross-sections and mining scenes, combining technical knowledge with labour history and memory.

The second panel, *L'aventure thermique à Saint-Martin-les-Eaux* (Figure 1B), explores the history of local thermalism through the narrative of a tourist's daily routine in the 19th century. It describes the bathing environment, treatments with sulfurous waters, and the social role of thermal establishments, along with information on the therapeutic properties of the water. The panel combines period photographs, illustrations of the former spa complex, and a stylized map of the subterranean water flow, creating a narrative that integrates scientific, historical, and cultural aspects of water use.

Both panels are part of an open-air circuit that includes scenographic and interactive elements, such as life-sized metal silhouettes, plaques with inscriptions about different types of water (sulfurous, ferruginous), and references

to practices like inhalation (Figure 1C). The setting promotes a form of interpretation that emphasizes sensory immersion and emotional connection with local memory.

Figure 1 – Interpretive devices at the Saint-Martin-les-Eaux geosite: (A) underground resource exploration; (B) history of thermalism; (C) metal installation alluding to thermal practices



Source: The author (2024).

### *Bruoux Mines Geosite (Gargas Ochres)*

The former ochre mines of Gargas, now repurposed as a tourist site, present a narrative that weaves together geodiversity, labour memory, and environmental regeneration, forming a heritage landscape marked by multiple layers of time and meaning. The interpretive panels are located at the entrance of the circuit, nestled among vegetation and colourful cliffs, acting as mediating devices between visitors and the territory.

The panel *Le Roman de l'Ocre* (Figure 2A) presents a timeline of ochre history, from prehistoric use to industrial exploitation and its subsequent patrimonial and artistic reconversion. The narrative combines historical, technical, and emotional elements, integrating characters, production data, images of workers, and chromatic variations of the mineral. This approach emphasizes the historical and symbolic dimensions of heritage, valuing both technical knowledge and working-class culture.

The panel *Exploiter l'ocre, à ciel ouvert ou en galerie?* (Figure 2B) addresses the extraction methods - open-pit and underground - explained based on the depth of the overburden. Technical diagrams, historical photographs, and

schematic illustrations display tools, support structures, and ore transport systems. The current preference for open-pit mining is justified as a continuation of technical tradition and controlled heritage, suggesting an interpretive perspective oriented toward the preservation of local know-how.

Other panels enrich the interpretive experience. *Les Ogres de Gargas* (Figure 2C) presents the mineralogical composition of the ochre sandstones (quartz, goethite, hematite, kaolinite) and maps the primary ochre deposits in France, blending scientific insight with aesthetic appreciation. *De l'extraction à la fabrication de l'ocre* (Figure 2D) outlines the processing stages - extraction, washing, settling, drying, and grinding - reinforcing the visit's technical and educational aspects.

Finally, the panel *Après l'exploitation* (Figure 2E) focuses on the site's environmental regeneration, highlighting plant recolonization, the return of fauna, and the ecological reshaping of the landscape. The narrative suggests a complete cycle of territorial transformation, from extraction to reconciliation with nature, pointing to an integrative interpretive approach that combines information, ecological awareness, and symbolic resonance.

Figure 2 – Interpretive panels at the Mines de Bruoux geosite: (A) history of ochre exploitation; (B) open-pit and underground extraction methods; (C) mineralogical composition and distribution of ochre sandstones; (D) post-extraction environmental regeneration; (E) ochre transformation process, from extraction to production



Source: The author (2024).

## Chablais Geopark

### Dranse Delta Geosite

The Dranse Delta (Figure 3A) is one of the most ecologically significant geosites within the Chablais Geopark, characterized by the confluence of fluvial and lacustrine processes and a wide variety of habitats in transitional areas. Designated as a *Nature Réserve*, the site features interpretive materials focused on environmental education and awareness for conservation.

The "*Réserve Naturelle Delta de la Dranse*" panel (Figure 3B), located at the entrance to the réserve, provides information on its legal status, access rules, and prohibition symbols (fishing, swimming, dogs, fire, etc.). The content

emphasizes the fragility of the environment and the importance of protecting species during their nesting period. The signage aims to guide visitor behaviour in line with the réserve's conservation goals.

At the Maison des Dranse, the réserve's interpretive centre, a large panel titled *La nature au fil de l'eau* (Figure 3C) chronologically narrates the delta's transformation process. The timeline begins with river course rectification work in 1942, followed by the construction of dams in the subsequent decades and the creation of the Nature Réserve in 1986. The narrative highlights the restoration efforts carried out between 2012 and 2014, which included reopening old channels, removing artificial barriers, and replanting adapted vegetation.

Figure 3 – Dranse Delta Geosite: (A) View of the Dranse River delta; (B) Environmental protection signage at the entrance to the nature reserve; (C) Panel at the Maison des Dranse presenting the ecological restoration history



Source: The author (2024).

### *Pont du Diable Geosite*

The Pont du Diable geosite is part of an interpretive trail focused on the geological history of the Alpine region, structured around three primary stages in the territory's geological evolution. The panels combine accessible language, educational visual resources, and a straightforward chronological narrative that links the Earth's deep time to the formation of the present-day landscape.

The introductory panel, *Temps de la Terre et temps des Alpes* (Figure 4A), presents the “three times of Chablais,” establishing a connection between the global geological timeline and local events. On the left, a timeline illustrates key moments in Earth's history, such as the origin of life, the Cambrian explosion, and the extinction of the dinosaurs. On the right, a regional chronology highlights transformations that shaped the Alps, with emphasis on marine sedimentation, Alpine tectonics, and glacial cycles. The panel serves as a conceptual framework for visitors, offering a structured overview to help them understand the landscape.

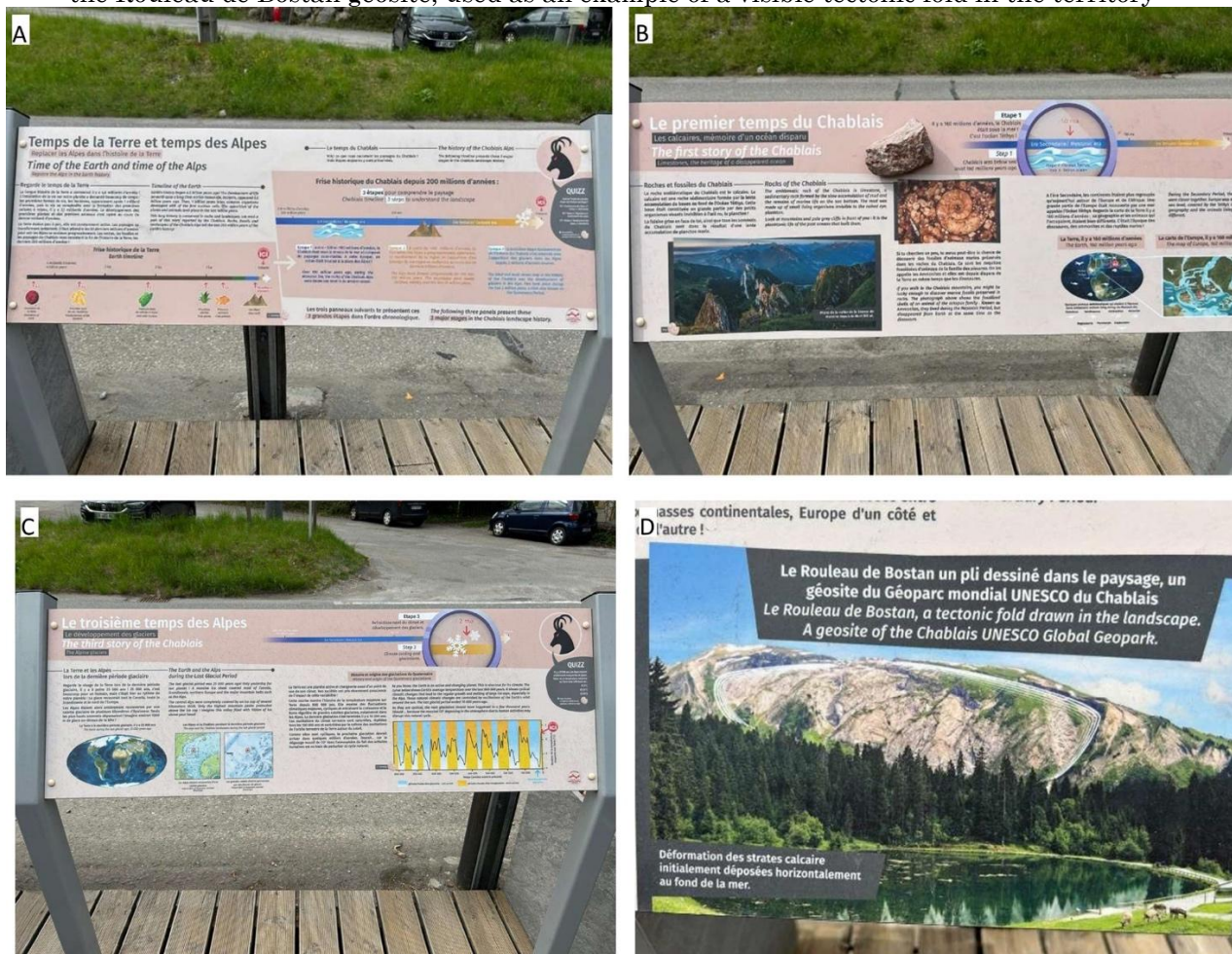
The panel *Le premier temps du Chablais* (Figure 4B) explains the marine origin of the mountains, based on the formation of limestone

during the period when the region was submerged beneath the Tethys Ocean. Fossils of ammonites, belemnites, and plankton are presented as material evidence of extinct marine life. Visual emphasis is placed on the Dranse de Morzine landscape, identified as a visible expression of this geological heritage. The panel blends scientific information with visuals that help audiences imagine past environments.

The panel *Le troisième temps des Alpes* (Figure 4C) addresses glacial activity during the Quaternary period, explaining how global cooling cycles shaped the region's relief. The text links the current landscape forms to temperature fluctuations driven by Earth's orbital variations. A graph illustrates climate changes over the past 800,000 years, reinforcing the scientific and chronological reading of events. The content emphasizes the recurrence of natural cycles and their geomorphological impact.

Finally, the Rouleau de Bostan geosite (Figure 4D) features a visible tectonic fold in the landscape. The panel highlights the deformation of originally horizontal limestone layers as geological evidence of the forces that shaped the terrain. Overlaid graphic lines on the image of the mountain help make the geological phenomenon legible to non-specialist audiences.

Figure 4 – Pont du Diable Geosite: (A) Introductory panel “Temps de la Terre et temps des Alpes”, which presents the geological timeline of Earth and the Chablais region; (B) Panel “Le premier temps du Chablais”, which explains the marine origin of the rocks and highlights the local fossil fauna; (C) Panel “Le troisième temps des Alpes”, which describes the effects of glacial cycles on landscape formation and links climate variations to the current relief; (D) Complementary panel on the Rouleau de Bostan geosite, used as an example of a visible tectonic fold in the territory



Source: The author (2024).

## Monts d'Ardèche Geopark

### *Coupe de Jaujac and Basaltic Flow of Jaujac-Fabras Geosite*

Located at the confluence of the Lignon and Ardèche rivers, the Coupe de Jaujac geosite (Figure 5A) is recognized for its well-preserved lava flow, associated with the young strombolian volcano of Jaujac. The main interpretive panel, Coupe de Jaujac et coulée basaltique de Jaujac - Fabras (Figure 5B), provides a straightforward geological narrative of this process.

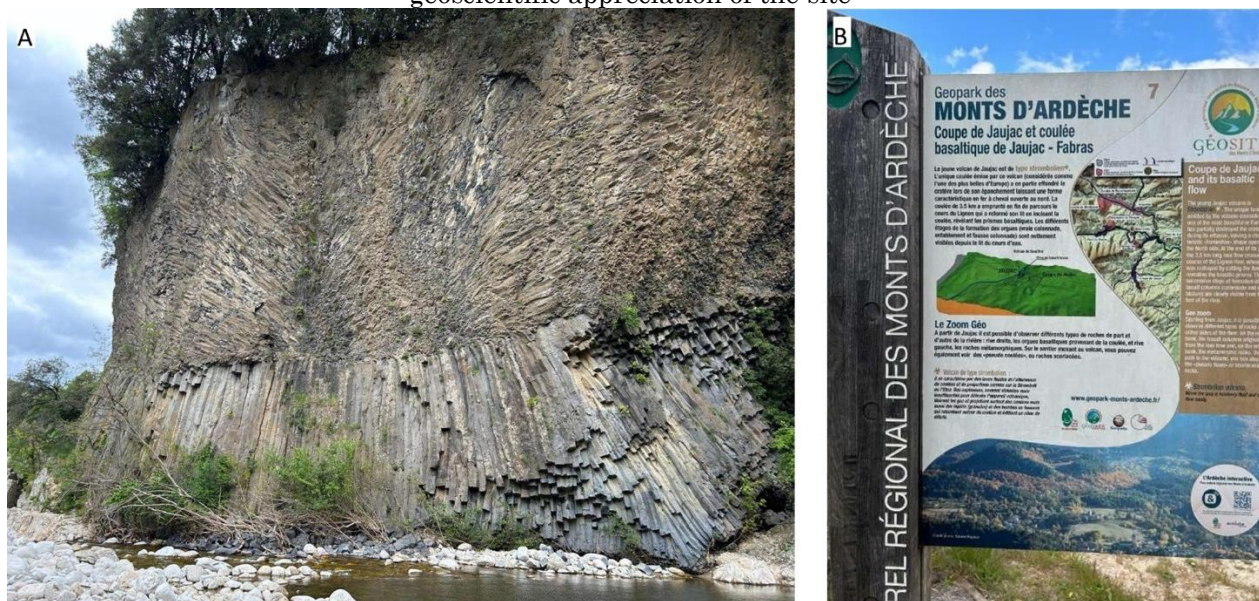
The text explains that the observed structure corresponds to the lower part of a lava flow that originated from the Jaujac crater and travelled approximately 3.5 km, channelled through the river valley. The progressive solidification of the

lava gave rise to vertical prismatic columns visible along the river course.

A cross-sectional diagram illustrates the flow path from the crater to the area where the panel is located, helping readers understand the spatial dynamics of the volcanic activity. The panel also points to the so-called Zone Gé, a geological interpretation area and privileged site for observing these formations.

Additional elements include a location map, explanations about the type of volcanism, the process of column formation, types of rocks observable along the trails, and suggested hiking routes. Altogether, these resources present the geosite as a didactic example of recent volcanism that has shaped the local landscape.

Figure 5 – Coupe de Jaujac and Basaltic Flow of Jaujac–Fabras Geosite: (A) View of the basaltic column wall formed by the slow solidification of an ancient lava flow; (B) Interpretive panel explaining the volcanic origin of the formation and highlighting the role of the geopark in promoting geoscientific appreciation of the site



Source: The author (2024).

### *Geossítio Les bombes du Souilhol*

Located along an interpretive trail, the *Les bombes du Souilhol* (The Bombs of Souilhol) geosite (Figure 6A) features an exhibit designed to explain volcanic activity. The panel of the same name (Figure 6B) explains that there was an initial explosive phase, with the ejection of incandescent fragments - known as volcanic bombs - followed by an effusive phase, which generated lava flows in the Ardèche and Lignon river valleys.

The text highlights that the magma's high fluidity and temperature (around 1200 °C)

contributed to the formation of fragments with distinctive shapes. Some of these bombs solidified in mid-air, taking on rounded or twisted forms. One of them, of notable size, is prominently displayed at the site itself, measuring approximately 1 meter in diameter. It weighs between 2 and 10 tons and is presented as one of the largest visible volcanic bombs in France.

At the end, the panel emphasizes the importance of conservation, asking visitors not to collect rock fragments, even the smallest ones.

Figure 6 – Les bombes du Souilhol Geosite: (A) Interpretive trail highlighting one of the large volcanic bombs visible along the route; (B) Triangular interpretive panel describing the strombolian origin of the volcano and guiding visitors in observing eruptive forms



Source: The author (2024).

### *Carrefour des Jeunes Volcans Geosite*

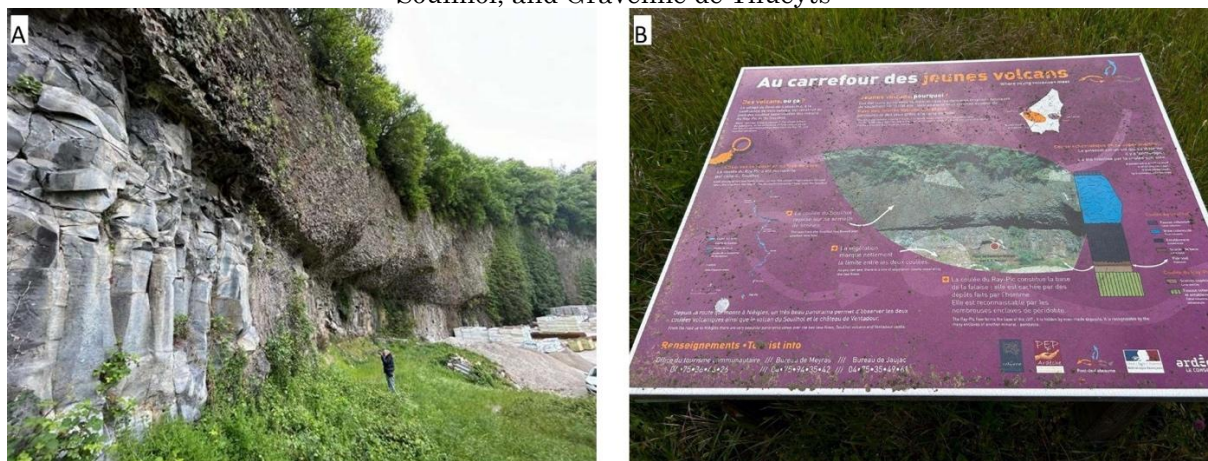
This geosite is situated at a panoramic viewpoint that provides a direct view of the superposition of three lava flows, associated with recent volcanic activity in the Ardèche region (Figure 7A). The interpretive panel *Au carrefour des jeunes volcans* (Figure 7B) proposes an integrated reading of the landscape, situated along the so-called “young volcanoes line,” which includes formations less than 80,000 years old.

The content presents a comparative view of three distinct flows: the Ray-Pic flow, located at the base of the outcrop and recognizable by its

peridotite enclaves; an intermediate flow extending toward Coulet and the Cascade de l’Aps, which is partially covered; and, above both, the Souilhol flow, which rests atop a layer of porous and fragmented lava. An aerial photograph with colour overlays, arrows, and explanatory captions visually reinforces the differences among these formations. A schematic side section further clarifies the geological layering.

The panel also highlights the contrast in vegetation as an indicator of transitions between flows, and points out the visibility of the site from the road ascending toward Niegles.

Figure 7 – Carrefour des Jeunes Volcans Geosite: (A) Panoramic view of the outcrop with basalt columns and superimposed layers resulting from different eruptive episodes; (B) Interpretive panel presents the superposition of three distinct volcanic flows, highlighting the events of Montfol, Souilhol, and Gravenne de Thueyts



Source: The author (2024).

## DISCUSSION

The analysis of interpretive panels recorded at seven geosites across the Luberon, Chablais, and Monts d'Ardèche Geoparks made it possible to identify recurring patterns in how content is constructed, organized, and communicated to the public. These patterns were systematized into two complementary categories: (i) the heritage dimensions mobilized in the narratives (Chart 2), and (ii) the predominant interpretive approaches (Chart 3). Both frameworks reveal how the interpretive materials not only convey information but also shape how audiences engage with geoheritage.

Chart 2 synthesizes the presence of five heritage dimensions (Doumit, 2007), showing a clear dominance of the scientific/natural dimension, which is foundational in five of the seven geosites. This reflects the central role of geodiversity as the basis of interpretive discourse in geoparks, but also reveals a certain discursive homogeneity centred on the explanatory value of science. Geosites such as Pont du Diable, Coupe de Jaujac, and Carrefour des Jeunes Volcans exemplify this pattern, with a strong emphasis on geological processes and limited activation of other dimensions. This pattern may reflect the influence of Earth sciences, the technical-scientific bias in content development, and the pursuit of legitimacy

through evidence. The emphasis on natural aspects suggests a traditional educational approach and points to the need for future research into how professional backgrounds and cultural contexts influence interpretive narratives in geoparks.

In contrast, geosites such as Saint-Martin-les-Eaux and Mines de Bruoux more intensely mobilise historical, symbolic, and sensory dimensions, linking geodiversity to labour memories, thermal culture, and socio-environmental transformations. In these cases, natural heritage is reconfigured as lived landscape, emphasizing not only the geological past but also the ways of life that have interacted with it. The presence of interactive features, such as metal silhouettes, stylized maps, and immersive resources, reinforces the activation of symbolic and sensory layers of meaning.

Chart 3 presents the predominant interpretive approaches. The educational approach is widely dominant across all geosites, structuring the expository logic of the panels and promoting conceptual understanding of geological phenomena. This orientation is particularly evident at geosites with a more technical and scientific character, such as Pont du Diable, Les Bombes du Souilhol, and Carrefour des Jeunes Volcans.

**Chart 2 – Heritage Dimensions Mobilized in Each Analyzed Geosite**

Geopark	Geosite	Scientific/ Natural	Historical	Legendary/Symbolic	Artistic	Picturesque/Sensorial
Luberon	Saint-Martin-les-Eaux	✓✓	✓✓✓	—	✓	✓✓
	Mines de Bruoux	✓✓	✓✓✓	✓✓	✓	✓✓
Chablais	Delta de la Dranse	✓✓✓	✓	—	—	✓
	Pont du Diable	✓✓✓	—	—	✓	✓
Monts d'Ardèche	Jaujac-Fabras	✓✓✓	—	—	✓	✓✓
	Les bombes du Souilhol	✓✓✓	—	—	—	✓✓✓
	Carrefour des jeunes volcans	✓✓✓	—	—	—	✓✓

Legend: ✓ slight presence; ✓✓ predominant presence; ✓✓✓ structuring presence; '—' indicates no perceptible presence of the dimension. Source: The author (2025).

**Chart 3 – Predominant interpretive approaches by geosite**

Geopark	Geosite	Educational	Communicational	Discursive	Integrative
Luberon	Saint-Martin-les-Eaux	✓✓	✓✓✓	✓	✓✓
	Mines de Bruoux	✓✓✓	✓✓	✓	✓✓
Chablais	Delta de la Dranse	✓✓	✓	—	✓
	Pont du Diable	✓✓✓	✓✓	—	✓
Monts d'Ardèche	Jaujac-Fabras	✓✓✓	✓✓	—	✓
	Les bombes du Souilhol	✓✓✓	✓✓✓	—	✓✓
	Carrefour des jeunes volcans	✓✓✓	✓✓	—	✓

Legend: ✓ slight presence; ✓✓ dominant presence; ✓✓✓ structuring presence; '—' indicates no perceptible presence. Source: The author (2025).

The communicational approach appears as a complementary support, especially in sites that use graphic resources, visual diagrams, and storytelling to facilitate mediation with non-specialist audiences, as seen in Coupe de Jaujac or Delta de la Dranse. However, the discursive approach - which assumes a multiplicity of voices and the shared construction of meaning - is virtually absent from the panels analyzed. Even in contexts with strong symbolic or cultural significance, such as Mines de Bruoux, the narrative remains centred on technical authority and expository linearity.

Notably, the integrative approach is significantly present in some cases, such as Delta de la Dranse and Mines de Bruoux, where interpretation brings together ecological, historical, and community values. In these examples, there is an evident effort to integrate different actors and temporalities in the recognition and valorization of heritage,

aligning with the principles advocated by UNESCO WHIPIC (2023).

Thus, the findings suggest that while the analyzed panels convey relevant content and offer consistent interpretative experiences, there is room to expand narrative diversity and strengthen public participation in meaning-making. More effectively incorporating symbolic and discursive dimensions, as well as reinforcing participatory practices, could enrich heritage mediation, making it more attuned to the cultural and territorial pluralities that characterize geoparks.

Despite its contributions, the study has limitations: it focuses on three French geoparks and a small number of panels, which restricts broader generalizations. The analysis is qualitative and context-specific, and does not account for future updates or additional media formats. Nevertheless, the patterns and variations observed contribute meaningfully to the ongoing debate on heritage mediation,

particularly regarding narrative diversity, symbolic engagement, and participatory geoconservation.

## FINAL CONSIDERATIONS

The results of this study demonstrate that the interpretive devices analyzed in French geoparks serve a function that extends beyond mere information. By integrating heritage dimensions - scientific, historical, symbolic, sensorial, and aesthetic - the panels act as cultural mediators of the territory, contributing to meaning-making, identity recognition, and the appreciation of geodiversity.

The systematization of interpretive approaches revealed a predominance of educational and communicational strategies, centred on the transmission of scientific content and the use of visual resources for mediation. In contrast, discursive approaches - focused on the collective construction of meaning - and integrative ones - based on the recognition of multiple values and voices - were less prominent. This imbalance suggests that, although the interpretive devices offer coherent and engaging experiences, there is room to expand more participatory and representative practices.

Examples such as Mines de Bruoux, Saint-Martin-les-Eaux, and Les bombes du Souilhol demonstrate a stronger articulation between historical content, sensory resources, and immersive environments, coming closer to the notion of a "heritage bath" (Uzzell, 2024), which centres on prolonged and affective place-based experiences. These approaches not only communicate geodiversity but also foster emotional and symbolic bonds between people and landscapes.

In the Brazilian context, initiatives such as the Projeto *Caminhos Geológicos* (Mansur; Nascimento, 2007), the interpretive panels on geology and geomorphology at Parque Nacional do Iguaçu (Iguaçu National Park) implemented by Mineropar (Moreira, 2014), and the works of Oliveira *et al.* (2017), Borba *et al.* (2020), and Costa *et al.* (2022) reinforce the role of interpretive materials as tools to connect science, territory, and society. These experiences highlight the importance of using accessible language, considering local cultural contexts, and promoting audience engagement in geoscience communication - challenges directly related to the findings of this study.

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## AUTHORS CONTRIBUTION

Úrsula de Azevedo Ruchkys: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Validation, Writing – original draft, Writing – review & editing.



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