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► To cite this version:

Mélanie Duval, Christophe Gauchon. The Janus-faced dilemma of rock art heritage management in Europe: a double dialectic process between conservation and public outreach, transmission and exclusion. *Conservation and Management of Archaeological Sites*, In press, 10.1080/13505033.2020.1860329 . hal-03078965

HAL Id: hal-03078965

<https://hal.science/hal-03078965>

Submitted on 21 Feb 2021

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Duval Mélanie, Gauchon Christophe, 2021. The Janus-faced dilemma of rock art heritage management in Europe: a double dialectic process between conservation and public outreach, transmission and exclusion, *Conservation and Management of Archaeological Sites*, doi.org/10.1080/13505033.2020.1860329

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Title: The Janus-faced dilemma of rock art heritage management in Europe: a double dialectic process between conservation and public outreach, transmission and exclusion

Abstract: In this paper, we discuss the management strategies applied to rock art in western cultural contexts. How do the persons responsible for rock art sites manage the tension between the two opposing imperatives of, on one side, their conservation and long-term transmission, and the other, their opening to the public to enable their heritage value to be shared and transmitted in the present? What forms do the articulation of conservation and public access take? Drawing on a typology of the many possible configurations, we discuss the choices made by the actors in charge of decorated sites, as well as the variability of some of the criteria considered, such as the 'carrying capacity' of a site, to define visit protocols. We thus demonstrate that the implementation of quotas depends not only on climatic and biochemical factors but on the priorities of the decision-makers and their interpretation of the preservation of a decorated site as well. Finally, our empirical approach leads to a discussion of the accessibility of rock art sites from the angle of heritage access rights and the heritage-making process. What meaning do we ascribe to sites that remain closed and thus cannot be experienced by the public? To what degree are they (still?) heritage sites and for whom? Through an empirical and comparative approach, we address these questions based on an analysis of case studies in France and northern Spain.

Keywords: rock art sites, heritage-making process, conservation, public access, heritage management, heritage values, France, Spain

Introduction

In the western cultural context, rock art sites occupy a specific niche in the range of archaeological sites. At once vestiges of past civilizations, modes of expression and artistic productions, they have historical, aesthetic and environmental dimensions, as well as, depending on the actors and authors, immaterial values linked to interpretive theories (Clottes 2003; Clottes and Lewis-Williams 2001; Jouary 2002; Lorblanchet 1995). In the framework of the western approach to the heritage-making process (Chastel and Babelon 2008), where priority is given to that which can be seen (Leniaud 1992) and where the act of transmitting tends to supplant the quality of the heritage sites themselves (Jeudy 2001), rock art sites, located in continually evolving open-air or underground environments (Giesen et al. 2014), are associated with specific management modalities that are guided by the principle of precaution. In response to degradations (due to archaeological excavations and/ or tourism activities), as well as advances made in archaeological science, knowledge of environments, and the growing heritage values attributed to rock art sites, the institutional actors have made the principle of precaution their primary motivation (Brunet and Voué 1996). On this point, the manners of articulating between the protection requirements and tourist activities at rock art sites are now radically different than they were at the beginning of the 20th century when they were marked by destructive excavations and the opening of several caves in south-western France and northern Spain to tourism (Duval et al. 2019a).

The necessity to preserve rock art is seen as even more essential given that the European sites are characterized by temporal ruptures between the authors of the art and the current visitors (Clottes 1998). Any degradation is thus irreversible, and once it is damaged, rock art is considered as lost forever (Vidal 2001). From this perspective, the challenges differ from those in contexts with temporal continuity. In Australia, for example, the artworks are still retouched (or new motifs are added) to spiritually recharge the so-called Wandjina paintings to ensure the continuity and renewal of the social practices of the Aboriginal tribes of the Kimberley region, and their transmission through time (Mowarlarlai et al. 1988; O'Connor et al. 2008).

In the western context, on the other hand, this irreversible loss is reinforced by the interdiction to intervene on the original artworks, resulting in the current policies on archaeology and conservation, which reflect the view that rock art sites are fundamentally different from other monuments and artworks, which are frequently restored. Among the painted sites, cleaning and renovation operations were nonetheless undertaken at Font de Gaume Cave (Jaulin 1998), and at Rouffignac Cave (Geneste 1999), both done at the end of the 1960s. Rock engravings from Trois-Rivières in Guadeloupe were moved to the Moule Departmental Archaeology Museum when they were threatened by the constructions of dams, and the rock engravings at Lanslevillard were moved during the construction of the Val Cenis ski resort at the end of the 1960s. But today's heritage curators are much less likely to adhere to interventional solutions. Firstly, their extreme caution is based on 'ethics' and a 'moral interdiction' (Geneste 1999) that stems from the absence of documentation on the true intentions of the prehistoric artists, as well as our ignorance of the practical conditions of the realization of the artworks, and their true initial state (appearance). In addition, while professionals are today capable of precisely reproducing the artworks, such as at the Chauvet-Pont d'Arc Cave replica (Tosello et al. 2012), curators and researchers still see them as forgers, and their interventions are thus restricted to the creation of replicas or other tourism or education (valorization) projects. Secondly, their caution arises from our greater understanding of the inherent fragilities of the underground environment. Intensive interventions, such as the use of ventilators or biocide compresses at Lascaux Cave, have led to a cascade of consequences resulting in a bio-atmospheric destabilization of the cave that threatens the preservation of the artworks (Bastian and Alabouvette 2009).

Seen as unacceptable by the heritage-actors, as well as by a large portion of the greater society, this fear of irreversible loss, in turn, leads the managers and curators to take various measures to control the accessibility of rock art sites, juggling the often opposed challenges of preservation and opening to the public. How do those in charge of rock art sites manage these two opposing poles with, on one side, the imperatives of conservation and long-term transmission and on the other, the opening of the sites to the public to enable their heritage value to be shared and transmitted in the present? What are these underlying challenges? What does the manner in which these heritage-actors manage the articulation of the challenges of protection and accessibility reveal about the values that play a role in the process of heritage-making, organization, hierarchization and malleability between these actors and the other regional factors with which they must articulate?

In its most extreme form, the primacy given to long-term transmission, which is linked to the principle of precaution, can lead to the exclusion of visitors to the sites based on the knowledge that any form of visit is a potential source of damage. Moreover, this exclusion of visitors raises the question of the durability and meaning of the heritage-making process (Smith 2006). Based on previous research that demonstrated the essential role of experience in that which is considered as heritage (Duval et al. 2019b, Jones 2010), we can legitimately ask to what degree the sites closed to visitors can still be considered as heritage-sites. In other words, can the management of accessibility to rock art sites result in a form of de-heritage-making process, with the motivation to transmit these sites in the long term leading to the subtraction, or even confiscation, of rock art sites from the public domain? On this point, our questions echo those of N. Ndlovu, contributing to debates on the meaning and socio-spatial effects of prohibiting all forms of visits to rock art sites, and heritage sites in general. In this paper, we thus question the validity of the conservation policies which, aiming for transmission at all costs (Jeudy 2001), paradoxically erase the meaning of the process of heritage-making itself by dissociating the preserved places from the public for whom they have meaning in the present.

Based on a typology, we discuss the issues associated with the accessibility of rock art sites, focusing on how the management of their accessibility enters into a relationship (tension?) with their heritage-making process. Using an empirical approach, our interrogations are based on an analysis of the modalities of access to rock art sites (decorated caves, painted and engraved open-air sites), focusing on the alpine rock art sites (Vallée de la Maurienne and Vallée des Merveilles in the Mercantour, France; Valcamonica, Italy), the decorated sites in southern France (Gorges de l'Ardèche, Vézère Valley), and northern Spain (Altamira, the decorated caves of Cantabria and the Basque Country), as well as some information from other contexts depending on their relevance. The data was collected during several field seasons in the regions cited, assimilating field observations, interviews with the persons involved in these issues, and analysis of the gray literature (management plans, reports, etc.).

I. Typology of the modalities of public access to European rock art sites

Since the discovery and revelation of Palaeolithic cave art at the turn of the 19th and 20th centuries, the public's curiosity for this ancient art has never diminished. This art is presented in many forms (Geneste 1999; Kaminiski 2014). The typology presented here is constructed according to a ranked scale ranging from the strictest conservation, prohibiting any type of public access (category 1), to the complete absence of regulation concerning access to the site (category 5).

1.1. Site closed with no public outreach (Category 1)

Conservation is the only possible objective, excluding any form of opening to the public. In this context, unground rock art sites are strictly closed. Only the persons responsible for their conservation and the researchers, under specific conditions, can have access these sites. These caves are not necessarily more vulnerable than others, but either their touristic interest is not considered sufficient, or the chronology of their discovery and protection led to a decision in favor of strict conservation, with no forms of reproduction.

Belonging to this category are the caves of Chabot and Ebbou in the Ardèche (with a few elements of information in the regional prehistory museum of Orgnac-l'Aven), and Cussac Cave and La Mouthe Cave (Figure 1) in the Dordogne. The Cosquer Cave in the (Bouches-du-Rhône) is currently in this category but should change categories in the future when its replica in the Villa Méditerranée in the heart of Marseille is completed (planned for 2022). In Cantabria, the cave of Flecha is also closed to the public and is not accessible to the public due to its very small size and poorly visible paintings, thus considered as secondary by the conservation actors. In this case, the closing of the site to the public is justified by the juxtaposition of the interest of the site and the investment required to open it to the public (visit organization, hiring of guides), and further justified by the presence of other nearby painted caves that are open to the public (El Castillo and Las Monedas). This category also includes caves visited for several centuries by spelunkers, which, following the discovery of art on their walls, were then closed to the public. The Puech d'Arsou Cave (Lot, France), for example, is composed of a single, 75-meter-long gallery long visited by spelunkers. Nevertheless, not a single trace of art was recognized in the cave until September 2009, when a single decorated panel (engravings, finger marks, paintings) was discovered at 45 meters from the entrance. The Regional Directorate of Cultural Affairs of the Midi-Pyrénées thus decided to close the cave (Le Guillou et al. 2010).

Figure 1: The La Mouthe Cave entrance, M. Duval, August 2011

There are nonetheless exceptions in this category with caves that can be visited occasionally with the agents in charge of their conservation. One must know of these possibilities, however, as well as to whom the request must be addressed, and how to justify the request. Examples in this category are the caves of Chabot and Ebbou and the Morne Rita cave on the island of Marie-Galante, Guadeloupe. Other caves, whether they have been obtained by the State or are privately owned, are completely closed to the public with no exceptions (Cussac, La Mouthe and Cosquer caves). In an extreme form, the primacy of the issues of conservation can lead to the definitive closing of caves. For instance, the galleries of the Baumelle Aven (Causse de Blandas, Gard), discovered in 2009, contains large ceramic remains, vestiges of earth-moving, human bones, and panels decorated with 'schematic linear art'.

After a rapid topography and archaeological evaluations (with no excavation or artefact collection), the cave was definitively closed to ensure its 'security and protection' (Boschi et al. 2010).

Also belonging to this category are open-air sites with intentionally reburied rock engravings. This is the case in Haute-Maurienne, an Alpine valley in Savoie, for the rocks located near the Charles-Albert fort (town of Aussois), as well as for the Dalle du Vallonnet (town of Termignon, heart of the Parc National de la Vanoise). In 1992 for the former and 1995 for the latter, these sites were re-covered with geotextile and buried under several tons of dirt. The aim is to protect the sites from erosion, this ensuring their preservation in the long-term. Before they were buried, their art was recorded, and several large casts were made (Figure 2). However, due to disagreements between the stakeholders, the absence of strong political support and a lack of financial resources allotted to this domain, the casts have not (yet?) been displayed in exhibitions. The recording and casts of the art are currently kept in archives depositories that are not accessible to the public (Gotti 2019). Here the art has been made doubly inaccessible with the burying of the rocks and the archiving of the casts.

These sites, closed to any type of public outreach, are thus completely sanctuarized, and in a way, their heritage-making process lacks meaning. Purely administrative, it has few social implications and is scarcely appropriated by the public (Rautenberg 2004).

Figure 2: Casting the Dalle du Vallonnet, F. Ballet, 1995

1.2. Site closed with 'compensatory' public outreach tools (Category 2)

a. Exhibition, classic museographic tool. In this category, the closing of a rock art site is accompanied by the creation of reproduced elements enabling this heritage kept closed and at a distance from the public to be seen. These elements can take the form of panels or other valorization (outreach) tools placed in museums or public spaces. The Parc de Préhistoire in Tarascon-sur-Ariège, for example, displays replicated panels of Marsoulas Cave (Haute-Garonne, closed to the public). In Ardèche, near the Chauvet-Pont d'Arc Cave and before the opening of the facsimile in 2015, two locations shared this task: the exhibition created at Vallon-Pont-d'Arc in June 1955 and the Regional Prehistory Museum at Orgnac-l'Aven (open since 1986), which integrated a presentation of Chauvet Cave alongside other decorated caves in the gorges. While these presentations were often decried for not equalling the level of the discovery, they played an important role in the long period (around 20 years) between the discovery of Chauvet Cave and the opening of the facsimile: they created a temporal continuity that anchored the presence of the cave in the social space, thus participating in the heritage-making process. The supposed obsolescence of the museographic techniques employed should not overshadow this essential role.

On the other hand, we can doubt the efficacy of the information panels situated in the public space, which, though located near the sites closed to the public, they are disconnected from any outreach procedures and are thus rarely seen by the public passing in proximity. For example, while the panel on the Dalle du Vallonnet, at the Refuge du Plan du Lac (Termignon, Parc national de la Vanoise), presents some visual elements of the buried slab a few hundred meters away, it is located some

distance from the visitor's paths. With no mention made near the terrace of the refuge and no explanations by the guardians of the national park, this panel has very little potential to convey knowledge on this type of heritage and explains why the Dalle du Vallonnet belongs to Category 1.

Digital tools can also be employed to make these permanently closed sites accessible. In the field of rock art alone, there is a broad range of such tools in use, with many combinations (Pinçon and Geneste 2010; Kaminski 2014). These digital innovations can take the form of models enabling the users to experience the sites from a distance (e.g., the multimedia catalog of 25 'Major Archaeological Sites' published by the French Ministry of Culture¹). Using 3-D immersion techniques and 'engaged interpretations' involving soundscapes and differential lighting might help to create a sensory space that evokes strong visitor emotions (Fèvres-de-Bideran 2014), even if the debate continues on the effects produced for the users and the capacity of the latter to experience that which makes heritage via the digital world (Di Giuseppantonio di Franco et al. 2016; Jones et al. 2017; King et al. 2016). In the case of poorly visible paintings, the use of 3D models could even lead to virtually visiting a cave as it supposedly was at the time of its creation, with paintings that are barely visible today in the real cave being restored in the virtual model (Fritz et al. 2010; Kaminski 2014). These digital models can be experienced via dedicated internet sites, as well as through 3D films shown in different types of places, requiring virtual reality glasses or headsets (on the subject of the Santimamiñe Cave in Spain, see Baeza and Cantalejo 2013; Kaminski 2014). Coupling a sensory experience with digital reality, hybrid devices can also enrich in-situ visits via the use of augmented reality, these new interpretation techniques leading the public in turn to new manners of appropriating cultural heritage sites (López-Menchero Bendicho et al. 2017; Mazel 2017).

b. Partial or total copy or facsimile. The aim, in this case, is to reconstruct the rock art sites and replace them within an environment similar to that of the original site, thus enabling the visitors to more fully experience this type of heritage (Duval et al 2019b). These copies-facsimiles are presented to be the best compromise to achieve the most efficient conservation and optimal touristic development of a site since these two aims become completely dissociated from one another once a facsimile has been created.

For rock engravings, an in-situ copy is possible. For example, in 1988, the conservation and public outreach challenges expressed by the curators of the 'Sorcerer' engraving in the Vallée des Merveilles (Mercantour) led to the creation of an exact copy placed in the location of the original in the middle of the hiking paths, while the original itself was removed and airlifted to the Merveilles Departmental Museum in Tende, where it can be observed by visitors in a secure environment (Dinkel 1997). This solution results in a reversal of statuses: to ensure its preservation, the original rock is displayed in a museum and thus becomes a decontextualized archaeological artefact. The copy, on the other hand, in the interest of recreating the original context for the public, is displayed in the original location of the real rock engraving in the heart of the Vallée des Merveilles landscape and thus becomes an object that can be experienced as heritage. The same is true for statues exposed in urban environments,

¹ <http://archeologie.culture.fr/fr>, consulted the 25/10/2019

where the question of 'real' or 'fake', fiction or hyper-real is raised in a similar manner (Baudrillard 1981; Brown 1999; Eco 1985). For example, copies of Michelangelo's David are displayed in the Piazza della Signoria in Florence, as well as on the Prado in Marseille, while the original is displayed at the Galleria dell'Accademia of Florence.

The situation is different for decorated caves for which the objective is to recreate simulacra of the underground environment to render the artworks visible in environments similar to those of the originals. In theory, all decorated caves could be reproduced as facsimiles, but, in reality, this possibility depends on several factors. First, the stakeholders of the site in question must perceive it as a resource for the region. Once this has been achieved, the procedure is still very long and costly because it is necessary to have obtained very precise knowledge of the cave and its artworks, the financial packages are very exigent, and an artistic team capable of realizing the new work of art must be assembled (Malgat et al. 2012). Such procedures are thus launched only for caves perceived as prestigious based on the quality of the initial paintings, their state of preservation and their estimated age, Upper Palaeolithic caves taking preference in this domain. Far from being uniform and identical, the construction of a facsimile reflects the choices made by the various actors involved in the process, whether in terms of the location, the construction modalities, or scenographic projects (cf. Table 1).

Cave	Facsimile date and name	Location	Building type	Contents	Installations inside the copy	Visit modalities	Number of visitors
Altamira	1964, Altamira Cave reproduction	400 kms away in the garden of the National Archaeological museum of Madrid; also displayed in the Deutsches Museum in Munich	Semi-buried museographic site	Representation by photogrammetry of the ceiling as it was in 1962, realized by Erich Pietsch of the Deutsches Museum in Munich	Representation of the ceiling installed in a room with modern walls; a mirror on the floor enabled visitors to observe the ceilings without raising their head; constant lighting	Entry fee for an unguided visit with a recording providing information	Data not recorded
Altamira	2001, facsimile known as the 'Neo-cave'	Close to the original cave, on the same site as the Alta Mira National Museum and Research Centre	Modern building	Cave represented at the time of its Magdalenian occupation	Creation of an artificial entrance linking the reception area and the replica. Once inside the replica, the visitors can observe the real entrance to the cave on the left, non-obstructed as during the prehistoric period (a large tinted window	Entry fee for unguided visits	282,443 visitors in 2018; open year-round

					gives a view to the outside). Progression through the replica with explanatory platforms. Once in the decorated ceiling room, lighting and walkways to facilitate observation. System of walkways to facilitate moving through the space.		
Lascaux	1983, facsimile known as 'Lascaux 2'	Very close to the original cave	Buried building; a first museographic area contextualizes the cave before entry into the copy	Identical reproduction of the walls, ceilings and artworks in the cave as they were when discovered in 1941. Identical representation of 40% of the spaces in the original cave (containing 90% of the artworks)	Concrete floor with modified slope to facilitate the movements of different types of people. Since the opening of Lascaux 4, The Chamber of the Bulls is visited by flashlight; followed by continuous diffuse light.	Entry fee and guided visit. Reservation required in the high season	70,000 in 2018; Open November to April
Lascaux	2016, facsimile known as 'Lascaux 4'	Less than 500 meters as the crow flies, at the bottom of the hill on which the original cave is located, in the International Centre for Cave Art. Contains several types of spaces dedicated to cave art	Very modern building; Visit path that aims to create the impression of entering into a cave	Recreation of the walls, ceilings and artworks of the cave based on a digital model realized in the original cave in 2010. Representation of 90% of the spaces in the original cave with a topographic contraction of some parts and exclusion of parts difficult to access in the original cave (Shaft, Large Diacalse, Silted-up Chamber, Chamber of the Felines) These parts are reproduced as suspended panels in the 'Lascaux Atelier', which is entered as one leaves the cave replica	Some parts of the floor are recreated; addition of a ramp, a staircase and a corridor to facilitate the movement of groups and enable visits by those with reduced mobility. The main panels are continuously lit with diffused light. To recreate a cave atmosphere, the temperature is lower than it is outside.	Entry fee and guided visit; the visitors are equipped with digital tablets and audio headphones to enable them to hear the guide	400,000 visitors in 2018. Open year-round, except January

Ekain	2008, replica called Ekainberri	In the Sasarrain Valley, 600 meters from the original cave	Very modern building; walk from the parking lots to the replica	Representation of the main decorated panels (80%) as they were when they were discovered in 1969. Panels positioned on either side of the path in the order of their appearance in the real cave; between the panels, the non-decorated parts of the real cave were not reproduced. The distance between the panels in the real cave were shortened in the copy.	Reproduction of the walls, ceilings and floors, with an uneven floor covered with clay, which contributes with its incline to the 'tilted' vision of the cave; progression on a walkway lined with barriers, stopping points on platforms, successive lighting of the panels, which rhythms the timing of the visit	Entry fee and guided visit	36,044 visitors in 2018; open year-round
Chauvet	2015, facsimile known as the 'Cavern du Pont d'Arc'. Renamed 'Chauvet 2-Ardèche' in February 2019	Less than 3 km as the crow flies from the original cave and in a similar karst environment; the copy is part of a group of buildings including an interpretation centre, exhibit rooms, etc.	Very modern building; Visit path meant to give the impression of entering into a cave	Anamorphosis of the underground space with a contraction of the 8,000 m ² of the cave into 3,000 m ² ; identical reproduction of the panels, recreation of the non-decorated parts from scales selected in the cave as it is today. Cave reproduced as it was when it was discovered in 1994, and not as it was during the Aurignacian occupation. The arrangement of the panels respects the order of their appearance in the original cave, except at the end of the tour, where the visitor immediately exits the cave without retracing their steps as they would if they walked back to the entrance, as they would in the original cave.	Visitor progression on a walkway above the reconstituted floors; Walkways lined with barriers; observation stops on platforms; progressive lighting of the panels as the visitors reach them. Temperature lower in the copy than outside to create an underground ambiance	Entry fee and guided visit; visitors equipped with audio headsets through which they directly hear the explanations of the guide	420,000 visitors in 2018; open year-round

Table 1: main features of the Lascaux, Ekain, Chauvet, and Altamira cave replicas. For a detailed analysis of the Chauvet-Pont d'Arc replica, see Cachat et al. 2012; Malgat et al. 2012 ; Malgat et al. 2015 ; Duval et al. 2019b. See also James 2016, 2017.

Other than the reproductions of the Altamira ceiling, which take centre stage in the gardens of the National Archaeological Museum in Madrid and the Deutsches Museum in Munich, and correspond more to mobile archaeological artefacts, the facsimiles are located in immediate proximity to the decorated caves that they represent. The persons in charge of these projects justify this concern for location by the argument of landscape coherence, which corresponds to current scientific hypotheses concerning rock art: the environmental context of the caves partly explaining why prehistoric groups decided to produce their art in these locations, it is necessary to enable the visitors to perceive and understand the landscape environment. The location of facsimiles very near the decorated caves is thus perceived as a method to 1) limit the semiotic and environmental rupture forcibly produced by a facsimile; 2) participate in the creation of a sense of authenticity (for example see Mariezkurrena 2005 on Ekainberri location issue) and; 3) explain to the visitors the importance (today supposed) of the links between the rock artworks, the selected site, and its economic and symbolic environment. The districts in which the decorated caves are located try to keep the restitution spaces within their administrative borders due to their economic advantages (up to 420,000 visitors per year for the Chauvet-Pont d'Arc facsimile) and the prestige attributed to rock art (especially Palaeolithic) in the European context (see Cachat et al. 2012 for a detailed analysis of the issues surrounding the location of the Chauvet-Pont d'Arc facsimile; see Parga-Dans and Alonso González 2018 on the economic significance of the Altamira copy).

The mode of presentation of the facsimiles also reflects differences in the state of the cave to be presented to the public, its state during its occupation by the authors of the rock art *versus* its state at the time of its modern discovery (see Lasheras Corruchaga and De Las Heras 2010 on the subject of Altamira, or Lima 2012 on the Lascaux replicas), and the aim to recreate an underground environment (e.g., restitution, or not, of the walls and speleothems between the decorated panels, and/or the ceiling and floor, the lighting, modification of the temperature and humidity to mimic as much as possible the underground conditions). These differences are determined by the techniques available when the facsimiles are constructed (although the characteristics of Lascaux II relativize this criterion), the opinions of the persons in charge of the project, and the funds available for such realizations. For example, the Chauvet-Pont d'Arc facsimile, including the preparatory phases and its production, cost more than 50 million euros, in addition to the 20 million invested in regional development (Cachat et al. 2012).

Regardless of the techniques used by the building engineers, the visitor's feeling of authenticity in a decorated cave replica is *de facto* not the same as the experience they would have done if they have visited the real one. The copies, relying on techniques of creation, anamorphosis and facsimiles, result in the production of a new place, following a logic of 'creative preservation' (Morin 1999). Through a process of decontextualization/recontextualization, 'the new staging, studied lighting, orientation, and general ambiance of the place, and especially the angle from which the visitor sees the artwork, totally modifies the original artwork. Therefore, the reproduction technique itself, and the isolation of a fragment, then contribute to structuring new representations of Prehistory, which conform to our cultural universe' (Geneste 1999).

Even if it is different, the main question is whether this feeling of authenticity is satisfying to the visitors. On this topic, the research conducted on the visitors to the Chauvet 2-Ardèche Cave (Duval et al. 2019b), enriched by observations made in the Vézère Valley and the Cantabria/Basque Country region (Stummer 2019), demonstrate that the qualification of an authentic experience depends largely on the care taken to create a simulacrum of the underground environment (sensation of going underground, dim lighting, humidity, odour, underground landscape), in other words, the role of materiality in the construction of a credible work (Foster and Curtis 2016; Holtorf 2013; Jones and Yarrow 2013). The differences between Lascaux 2 and Lascaux 4 (Figures 3a, 2b, 2c and 2d) are partly because Lascaux 2 has remained open to the public (even if it was the necessity to close it that justified the construction of Lascaux 4), with sold-out visits in the high tourist season, praised by the visitors and tourism actors in the region:

Seriously, if you must choose between the two, go to Lascaux 2, this visit is much more intimate, it feels like we're in the real cave, with the smell and humidity. There are fewer drawings reproduced than in Lascaux 4, but at least you have the impression of seeing the real cave. While in Lascaux 4, you always know you're in a fake. There's too much technology, too many people, and the big building feels like an airport terminal' (informal discussion with personnel at the Tourist office in Les Eyzies de Tayac, May 2019).

Figure 3a: Lascaux 2 facsimile entrance, M. Duval, May 2019

Figure 3b: Visit by flashlight in the Hall of the Bulls in Lascaux 2, M. Duval, May 2019

Figure 3c: International Centre for Cave Art containing Lascaux 4, M. Duval, May 2019

Figure 3d: Visit to Lascaux 4, M. Duval, May 2019

The satisfaction of visitors to decorated cave replicas is also linked to their understanding of the need and requirements to preserve the caves. On this point, it is admirable to realize that the visitors have integrated the point of view of the curators and they consider themselves as a threat to the preservation of the cave:

if I have the choice between visiting the real cave or the fake one, I choose the fake because we can't risk visiting the real one. It's too fragile. Can you imagine if something happened to Lascaux?!' (FR_27, visitor survey at the Chauvet-Pont d'Arc Cave replica, summer 2016 and 2017; see also Parga Dansa and Alonso González 2019 on the Altamira replica and the visitor's acceptance of the principle of its closing).

Their understanding, and even more so, their acceptance of the imperatives of conservation and the curator's arguments, contributes to their propensity to voluntarily suspend their disbelief and qualify as authentic that which they know is fiction (Flon 2012; Lambert 2013; Winkin and Lallement 2015).

The significance of this sense of authenticity also leads the authors of cave art guidebooks to present them at the same level as original caves. D. Butaeye (2017), for example, lists facsimiles in the list of caves open to the public, without explicitly mentioning that they are copies.

These two categories, 2a and 2b, are not exclusive of each other, and some closed sites present many forms of restitution. The most emblematic example is that of Lascaux, whose public outreach takes many forms: panel reproductions at 'Le Thot', five kilometres from the original cave, displays in the National Prehistory Museum in Les Eyzies, an international itinerant exhibition known as 'Lascaux 3' (Weissberg 1998) and two facsimiles, 'Lascaux 2' (on top of the hill) and 'Lascaux 4' in the International Centre for Cave Art at the foot of the hill, both in the town of Montignac, near the original cave. We can add to this list, the virtual visit of the cave on the Internet site of the French Ministry of Culture, as part of its multimedia catalog of 25 'Major Archaeological Sites'².

1.3. Site open to the public with a visit protocol adapted to conservation needs (category 3)

The conciliation of the challenges of protection and opening to the public can lead to the establishment of visit protocols. In this case, the configurations are more or less flexible, aiming to limit the number of groups, the number of visitors per group, and the visit duration. Circadian and seasonal rest periods are also imposed at some sites.

In open-air sites, rock engravings can be discovered within dedicated parks during organized visits of all or some of the engravings. In Lombardie, Italy, for example, several parks have been developed to make the Valcamonica engravings accessible to the public. The most famous and often visited one is the National Park of Rock Engravings Naquane. The configuration of this park on the side of a hill permits its protection by barriers, an access door, and the installation of a ticket office and shop (Figures 4a and ab). Upon entering the park, the visitor is invited to follow a guided visit of the different trails created to pass near the engraved rock slabs or explanatory panels on the contents of each one. In this case, the open-air configuration does not prevent the site from being closed or supervision of the entries. This is also the case for the Trois-Rivières rock engraving archaeological park in Guadeloupe, where the visitors, accompanied by a guide, discover the Pre-Columbian engravings in a space closed by barriers and supervision of visitor access, although, in this case, it is easily possible to avoid the barriers and enter into the park.

Figure 4a: Entrance to the National Park of Rock Engravings Naquane, M. Duval, August 2017

Figure 4b: discovery path to the rock engravings in the National Park of Rock Engravings Naquane, M. Duval, August 2017

In extreme cases, the conservation challenges of open-air rock art sites and the regulation of their opening to the public can lead to site closings (figure 5). For example, the Cap-Blanc rock shelter in

² <http://archeologie.culture.fr/fr>, consulted on 25/10/2019

Dordogne (France) contains a 13-meter-long sculpted frieze of horses and other animals. The initial configuration of the rock shelter was completely changed by modifications to the site: the reception building, built against the rock shelter, gives the impression of visiting a fresco in a cave. Very clearly, the aim of the French government was to prevent any kind of intrusion on the site. This sectorial vision of rock art sites considered as artworks contrasts with the arguments sometimes made by the same persons that the role led by the environmental context in the location of original rock art sites must be explained. In this example, the links between the frieze and its location in a rock shelter has been totally lost and broken.

Figure 5: Cap Blanc: positioning of the reception building along the cliff face to enclose the rock shelter, M. Duval, May 2019

In principle, it is easier to protect the public opening of underground sites because the topographic features of the cavities can be used to regulate their access through the installation of barriers or doors, or by building reception buildings in front of the cave entrance (figure 6).

Figure 6: The constructed entrance to Combarelles Cave, Dordogne, M. Duval, May 2019

Whether the caves contain paintings or engravings, the articulation of preservation and accessibility issues can lead to the establishment of quotas determined by atmospheric monitoring of the cave and aiming to define the frequentation limits that enable proper conservation. For example, the large volumes in Rouffignac Cave (Dordogne) permit a quota of 550 persons per day, a number that is attained only during the high tourist season (field observation, May 2019). In a drastically different situation, a few kilometres from Rouffignac, only 78 persons per day are allowed to visit the Font de Gaume Cave (field observation, May 2019), versus 180 persons in 2011. This reduction in the number of authorized visitors stems from new analyses of the climatic conditions in the cave. Today, only six, 30-minute visits per day are allowed in the cave, and from mid-May to mid-September, these visits are allowed only in the morning and early afternoon to prevent the hot afternoon air from entering into the cave when the door is opened. This reduction in the number of authorized visits, in turn, led to increased tourism pressure, which the conservation actors now exploit with a form of dramatization of the rarity of available visits (numbered seats in front of the ticket office; announcement of the number of available visits; field observation, May 2019).

Depending on the atmospheric readings, these quotas can also vary from one day to the next. For instance, according to the UNESCO World Heritage inscription file, 'Cave of Altamira and Palaeolithic Cave Art of Northern Spain³', the caves of El Castillo and Las Monedas in Cantabria can respectively receive 280 and 210 visitors per day. Since their inscription in 2008, however, these quotas have been increased to 300 persons per cave, and thus 600 per day for both sites, though always pending the atmospheric conditions recorded in each cave. If the readings are unacceptable, the quotas are lowered until the temperature, hydrometric and CO₂ readings descend below the thresholds established by the conservation teams (field observation A. Strummer, April 2019). Though usually defined by the services responsible for conservation, these quotas can also be proactively established by the site owners (e.g., Sorcier Cave and Bernifal Cave in Dordogne). Often confidential, these data are difficult to compile,

³ <https://whc.unesco.org/uploads/nominations/310bis.pdf>; consulted on 12/11/2019

especially since they do not consider the same criteria, are not centralized, and differences between the protocol texts and their application sometimes exist.

1.4. Site open to the public with no visit protocol adapted to conservation needs (category 4)

Some caves with engravings or paintings can be visited by the public with no accessibility regulations or protocols to guarantee their conservation. This does not always mean that the site owners do not care about the heritage site under their responsibility, but that often, the tourist interest in the site is limited and does not justify regulations beyond those associated with its inscription as a historical monument (Grotte des Merveilles, Lot, France). In other cases, open-air sites are sometimes open to 'light tourism' with no defined visit protocols, either because this was not part of the original project, or because the regional stakeholders are reluctant to consider this type of site as a heritage resource and the funds necessary to organize the site for tourist activities are thus not granted. The Parc Archéologique des Lozes (Aussois, Haute-Maurienne) is an excellent example (Figures 7a and 7b). Open in 2001, this park offers a path between different rock engravings. There are walkways and explanatory panels that recall the installations at Valcamonica. Even if there is no entry fee, not many tourists visit the park—at most, a few hundred persons per year. The site is little known by visitors or locals and is thus marginal to the other tourist activities in the village (field observation, July 2019). The initial investment in this park, several thousand euros, contrasts with its weak appropriation and low frequentation. In the Antilles, near the Trois-Rivières Archaeological Park, the Coulisserie trail also enables visitors to discover rock engravings on their own, following or not, the explanations given by a free smartphone application created by the tourist office. There are also panels presenting the rock engravings at the Duplessis site and at the mouth of the Pérou River at Capesterre Belle-Eau. The state of preservation of these latter two cases is, nevertheless, such that it is more representative of the abandonment of the site than of its frequentation (field observation, January 2018).

Figures 7a and b: the Parc Archéologique des Lozes, Savoie, M. Duval, July 2019

In total, categories 3 and 4 include around twenty caves open to tourists in France. At a dozen of these caves, visitors can see cave paintings (Bèdeilhac, Bernifal, Cougnac, Font-de-Gaume, Gargas, Merveilles, Niaux, Pech Merle, Rouffignac, Villars, La Vache, Arcy-sur-Cure) and at seven of them, engravings or sculptures (Bara-Bahau, *grotte* de Saint-Cirq également appelée grotte du Sorcier, chaire à Calvin, Cap-Blanc, Combarelles, Isturitz et Pair-non-Pair). In addition, there are many regions with rock engravings or painted rock shelters with more or less elaborate and structured tourist or educational installations: Vallée de la Maurienne around Lanslevillard and Bessans, the massif des Bauges, the Vallée des Merveilles in the Mercantour, the rock engravings of Fontainebleau, the Pre-Colombian rock engravings in Guadeloupe, etc. For these two categories 3 and 4, the conservation requirements have not prohibited direct contact between the visitors and the rock art, whether Palaeolithic, Protohistoric or Historic.

1.5. Site open to the public with no form of public outreach

This situation is less well-known and often unsatisfying in terms of conservation. It concerns caves known for a long time but in which artworks have been identified only recently and are not protected by regulations. Their access can thus remain open, and the artistic representations have not been judged sufficiently spectacular to merit policies concerning their accessibility. This is often the case for caves containing engravings identified as Protohistoric, such as the Puit aux Ecritures (Shaft with Writing) in the Vercors and the cave of Déroc in Ardèche where animal representations were discovered in 2002 (Brunel et al. 2007), which did not lead to changes in its public accessibility. This is also true for open-air sites, such as engravings located along hiking trails, and which are most often not even noticed by the hikers: depending on the time of day and the lighting conditions, many of them are indeed difficult to see. In Haute-Maurienne and Tarentaise, it is common to see hikers picnicking just next to the engravings, if not on top of them, without even noticing them (field observation, July 2019). In Guadeloupe, the district of Trois-Rivières has hundreds of rock engravings located on private plantations or in forests, which do not benefit from any form of public outreach or regulation of their accessibility.

Far from being exclusive, these categories constitute a framework that does not prohibit hybrid configurations among the sites belonging to several categories. Altamira Cave, for example, currently corresponds to category 2a (exhibition of panels in several museum spaces), 2b (facsimile) and 3, with weekly visits to the original cave (currently possible after 12 years (2002-2014), for five persons per day; Parga-Dans and Alonzo González 2019). Below, we will further discuss the originality and significance of this latter protocol.

This typology is also flexible, allowing sites to switch categories due to changes in regulations, scientific knowledge of preservation issues in underground and open-air environments, the definitions of rock art site carrying capacities, as well as the evolution of public outreach tools, regional projects and the values that the stakeholders attribute to rock art sites. Furthermore, sites of the same nature and located in the same place are not necessarily considered in the same manner by heritage stakeholders. For example, in the district of Trois-Rivières in Guadeloupe, the valorization modalities of engraved rocks can be very different, ranging from non-recognition to the development of an archaeological park regulating visitor access (field observation, January 2016 and 2018). The dynamic and relative nature of this typology thus enables us to examine and discuss the factors that determine the access conditions to rock art sites.

II. What issues and criteria are considered when deciding whether to open a site to the public?

2.1. The relativity of the physical characteristics of the sites and the criterion of carrying capacity

The type of environment in which rock art is situated can play a role in the manner in which the stakeholders envisage the articulation of conservation and public access challenges. In principle, as shown by our typology, it is easier to control the modalities of access to underground rock art sites. We must not fall back on determinism, however, considering the examples of Valcamonica, Cap Blanc and Guadeloupe, where the logic has been to close open-air spaces.

This first 'environmental' criterion is joined by an additional set of parameters taken into account by the conservation actors: site size, atmospheric conditions, and visit sensitivity (i.e., carrying capacity)

are often evoked (convoked!) by the conservation team to justify the implementation of quotas. Nevertheless, a comparison of the quotas defined reveals their relativity, as well as the criteria that intervene in the articulation of the conservation and public access issues.

To start the discussion, taken the example of the cave of Combarelles (Vézère Valley, France), which contains more than 600 engravings dated to the Palaeolithic. The authorized quota of visitors per day is 42, divided into six groups of seven persons accompanied by one of the two guides working at the site⁴. The evolution of this quota is particularly instructive for understanding the factors that intervene in the articulation of conservation and public access challenges.

Following the discovery, in 1901, of prehistoric art on the walls of its chambers, the Combarelles cave was heavily visited: in the 1970s, there were 20,000 to 30,000 visitors per year (versus 7,280 visitors in 2018). In the early 1980s, the limit was still at 300 visitors per day with, in the high season, up to 20 visits per day. Climatic analyses realized at the end of the 1980s led to a decrease in the number of authorized visits to 114 per day. This number was justified by the role of visits on the increased CO₂ level in the cave and by its effects on the visitors and guides. Concerning the guides, the occupational health physician determined that to limit their ingestion of CO₂, they should not lead more than three visits per day.

Due to the combined effects of 1) the climatic study at the end of the 1980s, 2) the recommendations of the occupational health physician, 3) the change from private to State government management and, 4) the retirement of guides who were not replaced, the quota was gradually reduced to 66 persons per day, and today, 42. In fact, there is currently nothing that would prevent the State from assigning more guides to Combarelles cave and to raise the quota back to 114 daily visitors. The quota applied today is, in fact, justified by the number of guides and number of visits authorized per day per guide, and not by conservation measures aiming to preserve the cave art. The position of the State to not assign more personnel to the cave is partly due to its financial viability: while decorated caves were the main tourist resources of the Vézère region during most of the 20th century, since the 1990s, the area has experienced a significant increase in the tourist activities offered and in the competition between sites. Furthermore, tourism is highly seasonal in this region, with very little frequentation from mid-October to early April. In addition, the Combarelles cave contains engravings rather than paintings, and this type of cave art is perceived as less prestigious by the visitors (though we don't know the basis of these different perceptions of engravings and paintings).

The same issues of cost-effectiveness account for the quota applied at the Cufín Cave in Cantabria, Spain. Being one of the sites included in the UNESCO World Heritage site 'Paleolithic Cave Art of Northern Spain', this public access protocol is specified in the application file: 'The cave is open all year, with two visits per day (except Mondays and Tuesdays) in the morning (10.00 am) and afternoon (4.00 pm), with a daily maximum number of 25 visitors⁵'. On the field, condition to access the site are different: this site is open to the public for five days during the Holy Week, and then for three months

⁴ This site is managed by the Monuments Nationaux service, which also manages the Font de Gaume cave and Cap Blanc rock shelter; while one guide is permanently assigned to Combarelles Cave, the second one also works at these other sites.

⁵ <https://whc.unesco.org/uploads/nominations/310bis.pdf>, p.93; consulted on 12/11/2019.

from mid-June to mid-September, with a maximum of four visits of six persons per day (maximum of 24 visitors per day) (field observations A. Stummer, spring 2019). In 2018, it received 1,352 visitors. The differences between the recommendations stated in the World Heritage application and the quota currently applied are explained by 1) the logistics necessary to permit visits to this cave (car transport followed by thirty minutes by foot on a trail to the cave entrance, the cave visit and then return); 2) the number of guides employed (one guide in place to lead all of the daily visits, rotation with the guides at other decorated sites for the days off); 3) the modifications that would be necessary to receive more visitors (improving the trail, parking lot, reception locale, etc.) and; 4) the competition with other decorated caves in the region (El Castillo, Altamira). Though it is appreciated by its visitors, the Cufin cave is not a touristic priority for the managers of decorated caves in Cantabria, who, therefore, voluntarily decreased the daily visitor quota for reasons not related to the preservation of the cave art.

These two examples are similar to what we have demonstrated concerning the rock art sites selected to be opened to the public in the Drakensberg Massif in South Africa (Duval and Smith 2014a, 2014b): in addition to the characteristics defined for the opening of sites to the public, it is above all a need for regional equity that was determinant (having sites open to visitors in the different valleys of a 250 km long massif), as well as the challenges of local tourism development (sites offering the possibility to employ some of the local population as guides). Our comparison of these case studies reveals the importance of the stakeholder's roles and the regional configurations of visitor quotas in the management of rock art sites open to the public. Understanding the issues surrounding the accessibility of rock art sites, and more broadly of heritage sites in general, forcibly requires a geographic approach that is both multi-scalar and chrono-systemic.

2.2. Diverging perceptions of heritage access rights

The manner in which the stakeholders manage the articulation between protection and public access also informs us on their perception of the right to Heritage, itself intrinsically linked to the right to Culture, contained in article 27 of the Universal Declaration of Human Rights adopted by the United Nations General Assembly on 10 December 1948. In this respect, our remarks echo the thoughts of N. Ndlovu on human rights in Heritage studies.

In her report 'Access to cultural heritage as a human right' presented to the Human Rights Council at the United Nations in 2011, F. Shaheed stresses:

Considering access to and enjoyment of cultural heritage as a human right is a necessary and complementary approach to the preservation/safeguard of cultural heritage. Beyond preserving/safeguarding an object or a manifestation in itself, it obliges one to take into account the rights of individuals and communities in relation to such object or manifestation and, in particular, to connect cultural heritage with its source of production. Cultural heritage is linked to human dignity and identity. Accessing and enjoying cultural heritage is an important feature of being a member of a community, a citizen and, more widely, a member of society (United Nations Human Rights Council, 2011).

Internationally recognized, the right of access to cultural heritage is approached differently in different countries (Belder 2017; D'Addetta 2017; Durbach and Lixinski 2017; Jokilehto 2012). In its domains of application, this issue of the right of access to cultural heritage is often apprehended in association with (i) the recognition of cultural diversity (Durbach and Lixinski 2017), (ii) the access and protection of cultural heritage during armed conflicts (Assi 2012; Kraak 2018; Stone 2012), (iii) the rights of local populations to access their cultural heritage following World Heritage inscriptions, particularly in post-colonial contexts (Ekern et al. 2012), (iv) the scale-related conflicts that can exist between international, national and sub-national heritage strategies (Logan 2012), (v) the recognition of the rights of migrants and diasporas in access to cultural heritage (Arokiasamy 2012), (vi) the rights of minorities and autochthonous populations (Ormond-Parker 2005 ; Ween 2012; Xanthaki et al. 2017) with, in this domain and in association with rock art sites, considerations of how, in post-colonial contexts, management modalities inherited from Western Heritage management interfere with the access rights of local populations to heritage (Ndlovu 2009, 2011, 2016; Taruvinga 2005; Taruvinga and Ndoro 2003).

Nevertheless, we found no evidence of discussions or case studies on the rights of access to heritage for ordinary citizens, during times of peace and in stable democracies, and without autochthonous issues or post-colonial contexts. In principle, the subject is not debated in France, or at least not on the mainland, the concerns being different in the overseas territories where there are many autochthonous issues. It is, nonetheless, in response to strong public demand that the *Journées du Patrimoine* (Heritage Days) were created in France in 1984. During one weekend in mid-September, the doors of national palaces such as the Élysée and the Assemblée Nationale are opened to the public, along with museum reserves and library depositories across the country, all of which are closed during the rest of the year. The repeated success, year after year, of this operation (an average of 15 to 17 million visitors over three days) clearly shows that the French are curious about these elements of heritage, which they maintain with their taxes and which are most often inaccessible to mere mortals. Though the 'right to heritage' is not clearly expressed in communications by the Ministry of Culture, it is indeed also to satisfy this right that this operation mobilizes public and private heritage actors.

We propose the hypothesis that the lack of debate on the right to Cultural Heritage in France is directly linked to the history of national heritage policies. Following the French Revolution, scholars and savants were directly implied in the development of national government administrations to address the question of heritage: they inventoried, classified and protected; they designated the monuments meriting this title. These elements became historical and geographic markers in a country undergoing a re-composition, and in which a lack of intervention by the State was seen as the cause of the degradation of monuments during the Revolution and the period that followed (Chastel and Babelon 2008; Choay 1992). During the 20th century, 'the monumental cause was internalized in the manner of a *habitus*' (Lazzarotti 2019⁶). Consequently, the heritage issue was marked, at least in France, by a form of acceptance and internalization of the declarations of scientists and institutions (Leniaud 1992), expressed by visitors during our field observations:

⁶ Original French version: "la cause monumentale est intériorisée, à la manière d'un *habitus*"

in any case, the real cave is closed; the scientists and everyone responsible for protecting it know what they're doing. If they say it's necessary, then that's the way it is (FR_46, survey of visitors to the Chauvet-Pont d'Arc replica, summer 2016 and 2017).

It seems to us that this internalization of the conservation regulations excluding any public access is particularly marked for decorated caves, and we propose the hypothesis that this is due to two main factors: 1) the context of the underground environment and 2) the role of decorated caves in the construction of the French Nation-State.

The social acceptance of conservation measures that exclude visitors seems to be partly linked to the specific context of underground environments. The closing of a cave is indeed perceived as more acceptable than the closing of an open-air location, suggesting that the social acceptance of conservation policies is related to the common uses of the place in question (Laslaz et al. 2014). Natural reserves in underground contexts, such as the T.M. 71 cave (Aude, France), for example, could be completely closed to any type of frequentation without any objections. In these environments that are less amenable to diverse uses, the closing of such spaces is thus perceived as a lesser affront to public rights.

The role of decorated caves, and specifically those dated to the Palaeolithic, in the construction of the French Nation-State at the end of the 19th/20th century, also explains the social acceptance of their closing. Attesting to the creative genius of *Homo sapiens*, these caves have been set up as high places (Micoud 1991) and France makes it its duty to be a guarantor of their preservation through time, in the eyes of the rest of the world. In 2007-2008, the reaction of France to the question of whether Lascaux cave should be put on the list of World Heritage sites in danger reflected this sentiment. While other countries strive to have their sites placed on the list of World Heritage in danger in order to receive funds for conservation actions, the French State perceives this possibility as a 'threat.' In response to this tarnishing of its national pride, the French State held an international symposium entitled, 'Lascaux and Preservation Issues in Subterranean Environments' (Paris, January 2009; Coyle 2011), established an international scientific committee from 2001 to 2017, and a held second international colloquium entitled, 'Lascaux the Beautiful, seven years of research and care' (Paris, October 2017). Perceived as 'geosymbols' of the French NationState, the preservation of decorated caves is seen as a responsibility of the State, as is the challenge of demonstrating the competency of France in this domain, heritage being one of the pillars of its international cultural influence.

In the realm of heritage rights, conservation actors in France take strong, or even extreme, actions to exclude any form of frequentation in favour of strict conservation, even if some sites could tolerate visitors under certain conditions. For example, the locations of rock engravings in Alpine valleys are intentionally removed from communication media and IGN maps, not because they are particularly vulnerable, but because the conservation services are not equipped regularly monitor them in the long-term. To prevent potential degradations, they thus choose not to indicate the existence of these rock engravings. This prevents regional stakeholders and local populations (with little knowledge of this topic) from appropriating, even though the appropriation dynamics resulting from their valorization may contribute to conservation efforts: one is more motivated to preserve that which one knows and understands (Duval and Smith 2014a). This is a good example of the limits of measures aiming to hide in order to preserve.

As we saw in the typology and category 1, this type of policy can go as far as burying engraved rocks, as has been done at Aussois and Termignon. In this case, and lacking valorization via the casts kept in the reserves, the rocks exist as heritage in an immaterial form as a point on the national archaeological map and in the *Atlas des Patrimoines* (Heritage Atlas). Furthermore, some of the archaeologists that participated in these projects have expressed the following sentiments,

the Vallonnet one is incredible to see but as long we don't know how to preserve it, it's better off where it is [inaccessible, buried under several cubic meters of dirt] (R. Chemin, personal communication to G. Gotti, May 2019);

when we discovered the rocks near Charles-Albert, and we removed the sediments covering them up, we discovered very well-preserved engravings. We took photos, made tracings and casts, and then decided to cover them back up to preserve them (F. Ballet, personal communication, November 2019).

This same logic exists elsewhere and for other types of archaeological sites. For example, lake dwelling remains (also called pile dwellings or stilt dwellings) listed as a World Heritage Site at the scale of the Alps since 2011, were intentionally buried under recent constructions because it was believed that being buried under motorway bridge pillars and parking lots would ensure their long-term preservation (field observations on the shores of Lake Neuchâtel and personal communication, S. Wüthrich, September 2016). The difference here, however, is that pile dwellings are presented to the public in several other places around Lake Neuchâtel, while the valorization of rock engravings is still anecdotal in Maurienne.

Concerning decorated caves, the access modalities for the Chauvet-Pont d'Arc cave are emblematic of the position of the State services pertaining to heritage access rights. Immediately following the discovery of the Chauvet-Pont d'Arc cave in December 1994, a protection plan was put into action: installation of an armoured door and surveillance cameras; a prefectural order forbidding entry into the cave and walking nearby; listing as a historical monument; extension of the classified site of Pont d'Arc and; expropriation of the land above the cave. And all of this happened very fast! From the moment of the first declarations to the press, all the political and heritage conservation actors at the time unanimously agreed on the necessity for the cave to remain closed to the public and for some form of reproduction to be created. Nevertheless, even if the closing of the cave to the public was immediately presented as an essential measure for its conservation, R. Amirou (2000, p.17), though having no personal stakes in the situation, was one of the rare authors to express doubts concerning the validity of this choice: 'At Combe d'Arc, there is a series of large galleries joining several rather vast chambers [...]. In the opinion of user associations, the preservation of archaeological remains is not necessarily incompatible with an opening to the public'. In effect, due to the volume of the Chauvet-Pont d'Arc cave, the problem is very different from that at Lascaux Cave, and the curators themselves took this difference into account. As a result, visits to the Chauvet Cave were initially not completely forbidden to the public: from 1998 to 2001, a maximum of five visits per week by groups of four to five people were organized and managed by the research team director based on the model applied at Lascaux for a few years. In 2001, the arrival of a curator led to the establishment of a quota of 500, and then 200, visits per year. These visits were distributed as followed: 30 for the discoverers, 30 for

the State services, 30 for scientists other than the research team, and 110 for other visitors, the curator believing that ordinary citizens, if they were sufficiently motivated and wrote a letter in this sense, should be allowed to experience this heritage. In 2009, 175 persons visited the cave, in addition to the two research sessions. Seven hundred additional ordinary citizens awaited their turn.

As at the Combarelles cave, these decreased quotas were justified by the presence of radon and CO₂ in the cave, and by the regulations imposed by the occupational health physician who, depending on the atmospheric conditions in the cave, limited the time of presence of the guardians. Acting as certified guides, the presence of these guardians is required for each entry into the cave, and the number of visits depends on the hours of presence they are allowed. Starting in 2009, the need for scenographic teams to enter the cave to define the contours and contents of the replica justified a revision of the system: the visits for ordinary citizens were suspended and the time of presence of the certified guides was devoted to the facsimile project and research teams. Since the opening of the facsimile, the former visit system has not been re-established and in response to motivated letters from ordinary citizens, the curator of the Chauvet-Pont d'Arc cave justifies this position as follows:

Dear Mr./Ms. X, I have received your request to visit the Chauvet-Pont d'Arc Cave. The rare authorized entries are dedicated to maintenance and research. A significant outreach effort was made via the creation of the 'Caverne du Pont d'Arc' restitution centre located in the Vallon-Pont d'Arc, Razal site. This is the largest and most realistic replica ever made. I am confident that you will understand these particular conditions which justify the impossibility to receive visitors at the Chauvet Cave, in the interest of its optimal preservation. Sincere regards' (letter received on 15 March 2017, signed by the curator of Chauvet Cave, following a visit request as an ordinary citizen, name anonymous for the need of this paper).

Exceptions are made on rare occasions, however. For instance, in October 2018, the discoverers of the cave, who benefit from a quota of 30 visits per year, donated one visit for a raffle organized by the Vallon-Pont d'Arc city hall to raise funds for the restoration of the old village. Having purchased a ticket for five euros, the winner among the 1100 candidates was able to visit the real cave with the discoverers⁷.

For the Chauvet-Pont d'Arc cave, solutions have never been sought to enable a type of visit that would ensure the conservation of the cave and the security of the visitors, as the principle of precaution linked to the history of Lascaux Cave prohibits any attempt to modify the atmospheric conditions of Chauvet Cave. Furthermore, even if the radon and CO₂ rates return to levels acceptable for an opening to the public, the cave will never be able to tolerate the number of visitors now received at its facsimile (420,000 visitors in 2018).

The situation is different at Altamira Cave, where, since 2014, new forms of accessibility have been defined. After the discovery of the paintings in 1879, Altamira Cave was opened to tourists at the start of the 20th century, after which its frequentation progressively increased, reaching 177,000 annual visitors in 1973 (Lasheras Corruçaga and Fatás Monforte 2006). In the same manner as at Lascaux one decade earlier, these frequentation numbers resulted in a bio-atmospheric destabilization of the cave.

⁷ France Bleu Drôme Ardèche, 04/10/2018, "Vallon-Pont-d'Arc : Antoine va visiter la véritable grotte Chauvet" ; <https://www.francebleu.fr/infos/culture-loisirs/vallon-pont-d-arc-antoine-va-visiter-la-veritable-grotte-chauvet-1538667436>

Overwhelmed by the amplitude of this phenomenon, the municipality of Santillana del Mar transferred the property of the cave to the Spanish State, which decided to reduce the number of visits to 8,500 per year. This configuration continued for around twenty years, until the facsimile, known as the 'Neo-Cave' was created. Following the opening of the facsimile, visits to the real cave were suspended ... until 2014 when ordinary citizens were again offered the possibility to visit the original cave (Parga-Dans and Alonzo González 2019). After an initial experimental phase, this possibility to visit the real cave was maintained and still exists today. It is viewed as an essential ingredient to maintain the heritage-making process:

The possibility to directly experience the Altamira Cave contributes to maintaining the values that define a cultural heritage site. The perception of a visitor when they visit the replica is not the same as the experience that they can have when contemplating the original. *Unforgettable, incredible, spectacular, marvelous, unique, captivating, and exciting* are just a few of the adjectives used by the visitors to describe their experience as they leave the real cave. Heritage is our memory, knowing it and being able to experience it is not only a right but also enriches our society⁸.

For the director of Cantabrian decorated caves, this understanding means that:

Altamira must remain open. It is a keystone of Spanish heritage, which belongs to the Spanish and which they must be allowed to visit. Yes, it is a fragile cave, but if no one is allowed to visit it, it will lose its meaning (personal communication to A. Stummer, spring 2019).

Since 2014, every Friday morning, the replica visitors are invited to participate in a free drawing. Five tickets are picked in the mid-morning and the five winners are invited to visit the original cave that same day. To ensure transparency, the names of the persons who have visited the original are published on the Altamira website.

Our comparison of the current access policies for the Chauvet and Altamira caves reveals differences in the manners in which their respective institutions conceive the articulation between the challenges of conservation and public access. In the case of the Chauvet-Pont d'Arc cave, conservation is perceived as a technical activity aiming to ensure the long-term transmission of a place that is no longer visited and can no longer be appropriated in its current state, even if, paradoxically, it is listed as a World Heritage Site to which each individual is meant to have access. While Altamira operated under a similar configuration from 2001 to 2014, the authorization, since 2014, of visits for ordinary citizens, demonstrates a motivation to maintain the social and experiential link between the place and its beneficiaries, while also democratizing access to the original cave. In this case, the aim is to preserve the original cave for both present and future generations, without the latter excluding the former through the mechanisms denounced by N. Ndlovu. We believe that Altamira provides an interesting lead to explore in the domain of rock art site management: instead of an 'integral conservation' policy

⁸ "La posibilidad de disfrutar directamente de la cueva de Altamira contribuye a mantener los valores de identificación con el patrimonio cultural. La percepción que el visitante tiene al salir de la neocueva no es comparable con la experiencia que supone la contemplación de la obra original. *Inolvidable, asombrosa, espectacular, maravillosa, irrepetible, apasionante, única, deslumbrante* son algunas de las expresiones con las que los visitantes han descrito su experiencia a la salida. El patrimonio es nuestra memoria y su conocimiento y disfrute no solo es un derecho sino que enriquece a la sociedad"; Programa de Investigación para la conservación preventiva y régimen de acceso de la Cueva de Altamira, 2014, p. 16; <https://ipce.culturaydeporte.gob.es/dam/jcr:1bcf7df2-bb5e-4fc8-830d-996942658037/programa-investigacion-altamira.pdf>

excluding the public, the current management strategies at Altamira reflect a logic of 'appropriate and sustainable conservation', integrating the public in adherence to a protocol that is both strict and democratic. This procedure, and this opportunity for the average citizen, gives meaning to the public funds dedicated to the preservation of the original cave, all the while enabling greater access to rock art via the copy, which remains accessible to all.

Conclusions

The question of the accessibility of rock art sites, and heritage sites in general, is a political one, and the responses of those responsible for the conservation of these sites reflect their perceptions of the balance required to reconcile the challenges of protection and public access. These challenges involve interactions between physicochemical properties (the composition of the artworks and the alteration processes of rock surfaces), themselves linked to the environment in which the rock art exists (open-air or underground), environmental conditions (e.g., the climatic monitoring of a cave), and social constructions (the definition of thresholds based on the carrying capacity of a site). The typology that we propose here shows some of the different forms of articulation that have been configured between these two polarities in tension: protection and public access. It also demonstrates the importance of contextualizing the arguments made by the conservation actors: each form of articulation between protection and public access is forcibly localized and to understand the issues underlying their choices requires a detailed analysis of the game of stakeholders.

The choices made also reflect a hierarchization of the priorities and values based on which a place is deemed a heritage site (Smith 2006). In the extreme cases in which conservation issues exclude any form of public access, a site is considered as heritage due to its artistic and scientific values, which must be preserved at all costs (Jeudy 2001), even that of dismissing the need for public appropriation of the site, which is, in reality, equally essential to the functioning of the heritage-making process. In this situation, all forms of the public are excluded, regardless of social or financial criteria. We could, in effect, imagine visitor quotas with very high entry fees, as is practiced for other types of heritage sites, such as certain wildlife reserves in southern Africa (e.g., Botswana).

To this issue of public access, some heritage curators retort that there are replicas to ensure the missions of public outreach and education. But the nature of a replica, as we saw in the first section of this paper, is always influenced by several biases. *De facto*, no replication is free of interpretation: 'The past is continually constructed by individuals or groups who, for whatever reason, choose to interact with it (...) A replica is a construction based on contemporary interpretations of the past' (Stone and Planel 1999). The copy of any object, place or monument, being the result of choices and negotiations, transmits a discourse influenced by the Authorized Heritage Discourse (Smith 2006), and is thus an expression of a dominant, legitimate culture (Bourdieu 1979). In the case of the Chauvet-Pont d'Arc cave, the copy transmits a certain manner of conceiving rock art in which, since the discovery of Lascaux, the artistic values are emphasized (Bataille 1955). The cave is thus perceived and treated as a work of art, via a monumental approach (Aujoulat 2004). By presenting the copy as place where one can experience that which defines heritage, the heritage actors participate in a transfer of heritagity between the original cave and the copy (Duval et al. 2019b), and even more so, they convey the values

and characteristics based on which, according to them, the original cave constitutes heritage, therefore reproducing the values of elites.

In the end, such dynamics challenge our interest in preserving the original: only accessible for researchers or even technicians (as at Lascaux where human presence is limited to 80 hours per year for technicians only⁹, while the scientists must work from the 3D model), reproduced via 3D models and copies that become the places where each person can experience this heritage, what is the interest of preserving these places if they are cut off from the rest of the world? How should we view this resolute aim to transmit in the long term, places that are, paradoxically, in the process of de-heritage-making process? In our opinion, this position reflects the anguish of loss expressed by western societies, and thus a manner of rebuffing the passage of time (Leniaud 1992, 2002; Jeudy 2001). In this respect, the personification of Lascaux Cave and the discourse on its state of preservation are eloquent: the cave has 'fallen ill many times'¹⁰ (green disease, white disease, black disease), and since 2010, 'it is stable'¹¹. In the words of Muriel Mauriac, curator of Lascaux Cave, "we treat it like an old convalescent woman, with respect, deference, care and vigilance"¹², and Yves Coppens, president of the International Scientific Committee for Lascaux Cave from 2010 to 2017, in his concluding remarks on the colloquium 'Lascaux the beautiful, seven years of research and care' (2017), reminded us that the objective is to 'protect the cave, mortal like each of us, for as long as possible'¹³. What meaning do we give to this quest for a form of immortality at all costs, to this fossil-making process which, paradoxically, erases all meaning from the heritage-making process?

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⁹ Le Monde, 23/10/2017, "Lascaux va mieux mais reste convalescente"; https://www.lemonde.fr/sciences/article/2017/10/23/lascaux-va-mieux-mais-reste-convalescente_5204867_1650684.html

¹⁰ France Info, Nouvelle Aquitaine/ Dordogne, 11/12/2016, "Et si Lascaux rouvrait au public..."; <https://france3-regions.francetvinfo.fr/nouvelle-aquitaine/dordogne/si-lascaux-rouvrait-au-public-1152873.html>

¹¹ Le Monde, 23/10/2017, "Lascaux va mieux mais reste convalescente"; https://www.lemonde.fr/sciences/article/2017/10/23/lascaux-va-mieux-mais-reste-convalescente_5204867_1650684.html

¹² Geo, 27/07/2018, "Grotte de Lascaux : de l'ombre à la réalité augmentée" ; <https://www.geo.fr/histoire/lascaux-de-l-ombre-a-la-realite-augmentee-189186>

¹³ https://www.lemonde.fr/sciences/article/2017/10/23/lascaux-va-mieux-mais-reste-convalescente_5204867_1650684.html

French mountains and then extended his field of analysis to tourism developments, heritage-making processes and protected areas, with a particular interest of the use of toponyms in heritage logic.
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Acknowledgements: this article is the result of several field campaigns carried out by the two authors, of Master's work of students of the Department of Geography/ University of Savoie Mont Blanc, and of numerous discussions with colleagues' archaeologists. Our thanks go to G. Gotti, F. Ballet and to the members of the Departmental Conservation of the Heritage of Savoie for the fieldwork done in the French Alps; to A. Stummer, J. Altuna and J.-J. Delannoy for the Spanish data; to C. Malgat, F. Prud'homme and L. Mayer for the Ardèche side; to A. Brancelj and X. Meyer for the Italian fieldtrips; to J. Monney and all his team for the work done in the Guadeloupean Island; to N. Ndlovu and to our French and South-Africans colleagues involved in the SORAT project for fruitful exchanges during the field mission in the Vézère Valley. Several types of funding have made it possible to carry out these different missions and this work was supported 1) by the LABEX ITEM (ANR-10-LABX-50-01), within the program "Investissements d'Avenir" operated by the French National Research Agency (ANR) ; 2) the CDP-Patrimoine IDEX UGA ; 3) the IFAS funding through the application's calls 2019 ; 4) the french Ministry of Culture for researchs done in Guadeloupe Island 5) the french Ministry of Foreign Affairs and the NRF through the Protea call 2018 and 6) the support of EDYTEM through the annual allocation.

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Figures



Figure 1: The La Mouthe Cave entrance, M. Duval, August 2011



Figure 2: Casting the Dalle du Vallonnet, F. Ballet, 1995



Figure 3a: Lascaux 2 facsimile entrance, M. Duval, May 2019



Figure 3b: Visit by flashlight in the Hall of the Bulls in Lascaux 2, M. Duval, May 2019



Figure 3c: International Centre for Cave Art containing Lascaux 4, M. Duval, May 2019



Figure 3d: Visit to Lascaux 4, M. Duval, May 2019



Figure 4a: Entrance to the National Park of Rock Engravings Naquane, M. Duval, August 2017



Figure 4b: discovery path to the rock engravings in the National Park of Rock Engravings Naquane, M. Duval, August 2017



Figure 5: Cap Blanc: positioning of the reception building along the cliff face to enclose the rock shelter, M. Duval, May 2019



Figure 6: The constructed entrance to Combarelles Cave, Dordogne, M. Duval, May 2019



Figures 7a and b: the Parc Archéologique des Lozes, Savoie, M. Duval, July 2019