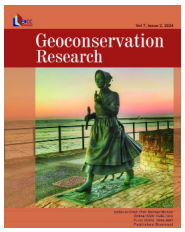

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Differences and Convergence in the Interpretation of Geoheritage, Inside and Outside Geoparks

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Abstract

Geoheritage, as an emerging type of heritage, is presented in geopark museums and interpretation centers as well as in galleries of many natural history museums. It has however been taken up differently by these institutions, whose displays have their own characteristics, in which the very term geoheritage is often absent. However, a study of these locations in the French and Spanish Catalan contexts also reveals commonalities. Even though the popularization of the geoheritage concept can probably explain this situation, there have been profound changes in museums and more broadly in the heritage sector in recent decades. This is because these institutions face the need to recreate the link between natural and cultural heritage in a context marked by both decolonization issues and the challenges of the climate crisis.

Keywords: Geoheritage; Geoparks; Interpretation Centers; Natural History Museums; Franc Catalonia

Introduction

As a researcher in Museum Studies working in an Art and Media College, I only recently discovered geoheritage, perhaps a consequence of the long academic divide between the "hard" and "soft" sciences. This happened in 2016, following my participation in the Geopark project of the European Union's H2020 program, coordinated by Yves Girault of the National Museum of Natural History in Paris. My interest in analyzing the rationale behind the creation of geoparks, in connection with a new trend that uses geoheritage as a place branding tool (Van Geert 2019a), led me to visit geology and paleontological galleries located outside geoparks, mainly in Western Europe cities. Trained in the humanities and social sciences and having hitherto been interested in analyzing changes in ethnographic museums (Van Geert 2020), these institutions seemed far removed from my research interests. Looking at some of them for the first time through the filter of my research in geoparks (Van Geert 2019b), I was particularly surprised by the absence of direct/explicit reference to the geoheritage concept within the texts, labels and interpretive displays of these galleries. How can this situation be explained?

One possible reason is the division between "Museum Studies" (centered mainly on major ex situ museums) and "Heritage Studies" (focused mainly on in situ displays, site museums and interpretation centers), which has had a major impact on professional practices. There is a further split within Museum Studies between "Museology" and "Science Museology", the latter being based on different theories and practices from those found in museums exhibiting cultural heritage. There is then a deep divide between the presentation of geoheritage in geoparks, and the planning of exhibitions of geological and paleontological collections in natural history museums, located mainly in cities. It is important to state at the outset that this situation has not arisen from the people working in geoparks and in museums, who may sometimes be the same, but rather from specific internal logics that evolve differently, with little dialogue.

Here, I address the different ways in which the concept of geoheritage has been taken up through their exhibitions and narratives in museums and interpretation centers in geoparks and natural history museums. We first review the geoheritage concept based on French and international literature, before exploring the specifics of its presentation in displays in geoparks and natural history museums on the basis of observations made in Spanish (specifically Catalan) and French Geoparks and museums between 2017 and 2022, with special attention to exhibitions, texts, devices, interpretation panels and websites. Despite different practices, there are some commonalities driven by fundamental transformations in the role of heritage institutions, in line with prevalent societal issues around the need to rethink our relationship with nature and our planet in the context of the current climate crisis.

Back to the Basics: The Geoheritage Concept

While the history of the geoconservation concept goes back a long way and has been the subject of much debate (Burek & Prosser 2008), the notion of geoheritage emerged in the early 1990s, following the First International Symposium on the Conservation of our Geological Heritage at Digne-les-Bains in France. The appearance of this concept and its subsequent consolidation gave rise, as for all types of heritage, to the constitution of a "Heritage Chain" (Fabre 2013) made up of five links: designation, classification, conservation, restoration and dissemination. The designation link consists of the preparation of geoheritage inventories to serve as a basis for the implementation of conservation policies (De Wever *et al.* 2018). After documentation, measures for the (geo)conservation and restoration of geoheritage can take place at different scales. Finally, the dissemination link is made up of promotion and activities aimed at making heritage appreciated beyond the scientific community through publications, guided tours, panels, exhibitions, museums, interpretation centers, media programs, etc.

The consolidation of this heritage chain has been accompanied by reflections on this new heritage concept at the crossroads between natural sciences and heritage studies. The meaning of geoheritage quickly extended beyond all the material traces located in situ at geosites representing phenomena (volcanism, magmatic segregation, metamorphism, alteration, sedimentation, etc.) and/or bearing witness to the history of the Earth (paleontology, global tectonics, climate, etc.), to also include the material (and therefore transportable) aspects of these traces, preserved ex situ in natural history museums since at least the end of the 18th century (Fröhlich *et al* 1998), but also most recently in interpretation centers and visitor centers created alongside the new natural parks and/or geoparks. This approach, uniting the different aspects of geoheritage, has been increasingly discussed since then and has been the subject of a growing number of publications, such as this volume.

From a conceptual point of view, the term geoheritage has also gone beyond a unique geological and/or paleontological concept. Reynard (2005) already pointed out that the values of geomorphosites go beyond mere scientific values (bearing witness to the Earth's history) to include economic, historical, cultural or even aesthetic values. Following this same logic, Bétard (2017) indicates that geological collections in museums are not limited to the abiotic portion of natural heritage, but are also most often charged with a cultural dimension, allowing them to be considered as "hybrid constructs at the interface between naturalistic or geoscientific knowledge, a sensitive approach, a collective appropriation and/or a political decision." In the same way, Brocx & Semeniuk (2007) indicate that geoheritage offers "information or insights into the evolution of the Earth; or into the history of science, or that can be used for research, teaching, or reference." As a result, geoheritage encompasses not only geological sites and museum specimens but also "objects bearing witness to the history of the Earth and natural geological phenomena. The heritage values of these sites and objects reside in the information they contain and in the cultural significance that is attached to them" (Qu'est-ce que le géopatrimoine? 2023).

This concept of geoheritage has formed the basis of geoparks since the early 2000s (Du & Girault 2018), which were recognized by UNESCO as a means of promoting geoheritage from a scientific and educational point of view, as well as (geo) tourism (Olson & Dowling 2018), to encourage the economic development of local (rural) areas. Situated at the (sometimes tense) intersection between territorial development and heritage enhancement in an area (Girault 2019), geoparks use the term "geoheritage" to encompass all the heritage (cultural and natural) present in an area through the history of the Earth. Therefore,

> "While a UNESCO World Geopark must demonstrate the international importance of its geological heritage, its main objective is to explore, develop and celebrate the links between this geological heritage and all other aspects of natural, cultural and intangible heritage. It is about reconnecting humanity at all levels with the planet, 'our home', and highlighting the ways in which it has, over 4,600 million years, shaped aspects of our lives and societies" (Géopatrimoine et patrimoine géologique 2019).

Interpretations of Geoheritage within Geoparks

This concept of geoheritage is reflected in many interpretation tools visible in geoparks, particularly on in situ information panels and ex-situ museums/interpretation centers located within their territories.

Information panels come in different shapes, sizes and contents. They often present geological or geomorphological phenomena. Beyond this scientific approach based on diagrams that are sometimes difficult for visitors to understand, they can also be based on a more "inclusive" vision of scientific mediation, dealing with the formation of landscapes through didactic drawings or diagrams, to promote easier understanding for the visitors. In addition to geological aspects, these panels can also address the socio-economic and socio-cultural dimensions of certain phenomena, dealing with cultures, ways of living, but also local legends (that is intangible cultural heritage) that explain geological forms in oral traditional cultures, well in line with the UNESCO concept of geoheritage. This perspective is reflected in one of the first interpretive panels installed in the Tremp Basin-Montsec Geopark project in Catalonia (future Origins Geopark) as part of its application process to present to the general public and to the UNESCO experts the type of interpretation considered for the future geopark (Fig. 1).

Figure 1. Les Morreres geosite interpretation panel in the Origins Geopark (Catalonia-Spain). Author's photograph, May 2018. This panel shows how the Geopark's interpretation of the landscape is conceived on two levels. The first one (visible on the right of the panel) is based on a pedagogical approach to scientific phenomena, intended to be accessible to as many people as possible through the use of educational drawings. The second level is based on an "ethnographic" approach, explaining the rock formations on the basis of local folklore (associating in this case the shape of the Collegats Gorge with a sleeping giantess).

Many of the museums/interpretation centers within geoparks in France and Spain, and more generally in Western Europe, were inaugurated before the creation of the geoparks, mainly as natural parks interpretation centers (many geoparks were in fact created on the basis of previous natural parks) or as local museums, linked to the discovery and presentation of traces of Earth history, but also of paleontological, archaeological, and even ethnographic artifacts. Following the creation of geoparks, the collections and interpretations in these pre-existing institutions have been rebadged as geoheritage, even if this term is not mentioned in their texts and displays. In the Central Catalonia UNESCO Geopark, the first geopark created in Catalonia, this is the case in the Valentí Masachs Geological Museum. Founded in Manresa in 1980 and attached to the Higher Engineering School of the Polytechnic University of Catalonia (UPC), this museum aimed to display the geological and mining resources of central Catalonia. Renamed Geomuseum after the recognition of the geopark by UNESCO in 2012 (although this did not involve any changes in the museum displays), it encourages visitors to discover the geoheritage of the territory through the exhibition of rich mineralogical collections.

Located 100 km further north, the various museums integrated into the Tremp Basin-Montsec Geopark project were also built before its recognition by UNESCO in 2018. Without involving a restructuring of their exhibitions, the narratives

Figure 2. Entrance to the Museum of Gerri de la Sal, in the Origins Geopark (Catalonia-Spain). Author's photograph, May 2018. Like all the museums located in this Catalan Geopark area (then in its planning stage), a panel presenting the Geopark project was erected in front of the entrance to the Museum of Gerri de la Sal, dedicated to the interpretation of the village's saline history in order to inform visitors and residents alike of what a geopark is, as well as the area's geoheritage wealth, such as the presence of salt.

presented in these institutions (whether it is the production of salt at the Museum of Gerri de la Sal or the presence of dinosaurs at the Museum of the Conca Dellà in Isona) are expressed through geoheritage, although this concept does not appear in their texts and labels. Despite this, geoheritage is presented through information brochures on the geopark and the cultural spaces it encompasses, and geopark logos prominently displayed at the museum entrances, explaining what a geopark is (Fig. 2). Geoproducts are also on sale in the museum shops, such as hiking maps, animal observation guides, souvenirs, or even local products whose marketing strategy is based on the history of the Earth. Following the logic of the Geofood program initially set up in Norway's geoparks (Geofood: Geoparks, People, Nature and Food 2021), visitors can buy bottles of wine, whose names and labels refer to the geological history of the territory, which is said to condition its taste and color. This is also the case in France in the Normandy-Maine Geopark where visitors can buy chocolate worked in the shape of the fossils that can be found in the geopark.

This rebadging of territories and their heritage as geoheritage is made more explicit in some of the visitor centers created later, as part of a drive to develop tourism. This is the case in the Epicenter-Pallars Jussà Visitor Center located in the city of Tremp. This was built in 2013 at the heart of the Origins Geopark to introduce visitors to the tourist attractions of the Pallars Jussà comarca . Its riches, whether cultural, natural, intangible, geological or paleontological, each with its own dedicated room, are included in the narrative created around the memory of the Earth. This was reinforced in recognition of the Geopark by UNESCO in 2018 through new interpretive panels presenting the geopark, its specific features and its objectives to connect and bring together the various heritages present in the comarca.

The way in which these geoheritage narratives are articulated is undoubted because this institution is closer to the interpretation centers model than to museums strictly speaking. Rather than places dedicated to a given heritage that needs to be preserved and displayed in their exhibitions, the approach taken by these institutions is more one of communicating with the public about a given heritage outside the center, be it a natural space, an archaeological site, a town, or an area (Chaumier & Jacobi 2009). The sense of narrative and discourse is therefore more important than the display of collections (Mairesse 2022) - even if the latter are not completely absent from these centers. Display

fossils, minerals, and paleontological traces often favor those with the greatest visual impact, making particular use of didactic devices, panels with texts and photos, and even dioramas to provide visitors with a few keys to understand and appreciate what they will discover in the geopark. In this respect, it is particularly interesting to note that the Tremp Epicenter uses a number of immersive digital devices, which, rather than offering a scientific account of the region, highlight the beauty of its landscapes and the richness of its heritage. Along with this storytelling perspective, these types of spaces can also present other approaches to the history of the Earth, describing the particular use that can be made of rocks and sediments.

The challenges induced by their specific geology can also be the subject of some panels, showcases or devices, aimed at showing the fragility of this natural space, but also the impacts that must be considered in its development, as could be seen for example in 2020 in the exhibition "Catastrophe! Natural hazards in the Chablais" at the J. Hallemans Museum of Prehistory and Geology in Sciez-sur-Léman, located in the Chablais Geopark in the French Alps. Following the same logic, some of these centers present artefacts, audiovisual projections, testimonies, and even contemporary artistic collections that bear witness to the ways in which the history of the Earth in these geoparks has influenced nature, its landscapes and the culture of its inhabitants. This is for example the case in the Digne-les-Bains Promenade Museum in France which exhibits contemporary works of art inspired by the geological details of the Haute-Provence Geopark.

Interpretations of Geoheritage outside Geoparks

As mentioned earlier, the concept of geoheritage that influences geopark museums and interpretation centers seems to be less present in exhibition spaces located outside geoparks, where most of the geoheritage is preserved. In France for example, according to the National Museum of Natural History, there are no fewer than 296 spaces open to the public that showcase geological or prehistoric collections (Egoroff 2012), without including university collections, most of which are closed to the public.

Much of this can be explained by the compartmentalization in many museums, and especially natural history museums, between the departments, with little dialogue between their respective exhibitions and interpretation principles, unlike the interpretation centers that are smaller and have less staff. In some cases, geology and paleontology departments may use different exhibition methods, with the latter making extensive use of the "wow effect" of dinosaurs among young visitors, which is more effective than using the term geoheritage. In short, the logic at work in these museums appears to be opposed to that governing the interpretation displayed in geoparks whose aim is to bring together different disciplinary approaches around geoheritage.

As far as geology is concerned, another explanation lies in the fact that many of the visible exhibits during our research are quite old, some dating from well before the 1990s, i.e. before the popularity of geoheritage and the creation of interpretation initiatives within the geoparks. In France and Spain for instance, geology galleries seem to be of rather secondary importance to the authorities, especially as they are not much visited by the public. While geology is still an "unloved discipline" (Gohau 2001), and unattractive to the public, the universities, engineering schools and research centers that have traditionally managed a good number of these institutions have seen deep separations between these museums and research. Further, the research conducted in these institutions may have diminishing relevance to local geological questions and so diminishing connection to the

artifacts preserved in the museum collections.

Many of these institutional galleries appear to be out of step with the latest museological trends. As an example, we could note the poor state of the showcases, the collections, the interpretation devices, and, more generally, the architecture of the top floor of the Paleontology and Comparative Anatomy Gallery of the Paris National Museum of Natural History, for which a major renovation has been announced from time to time since 1998. Other (local) museums can operate in slow motion (or even close their doors), sometimes only thanks to the interest shown by some of their employees, and especially volunteers and museum friends, without renovating their exhibitions in line with the "revolution in science museology" over the last decades (Koster & Schiele 1998). This is particularly true in the Anglo-Saxon world where the educational, social and community role of museums is traditionally much more pronounced than in France and Spain (and more generally in Latin Europe). In North America, the Hall of Geology, Gems and Minerals at the Smithsonian National Museum of Natural History is a big hit with visitors, thanks to its modern and interactive museography. In Great Britain, the Natural History Museum in London presents a highly interactive presentation of geological phenomena notably in the Volcanoes and Earthquakes Gallery inaugurated in 1996.

Since the 1980s, some natural history museums in France (and in Spanish Catalonia to a lesser extent where natural history museums are less numerous) have tried to break away from a vision of the science museum as a space where knowledge is celebrated, by placing the visitor at the heart of the process (Eidelman & Van Praët 2000). To connect with their audiences, some have tried to rearrange their collection displays according to at least three main approaches. These are not mutually exclusive, and are often found together within the same institution, especially around the end of the 2010s:

Firstly, a number of museums, following some ethnographic and contemporary art museums, try to establish links between their collections and the interests of contemporary society (Van Geert & Viau-Courville 2022). The presence of geological materials in a territory, their influence on the appearance of its landscapes, but also their cultural uses for the creation of jewelry and many everyday products are often present in museums, as the Confluences Museum in Lyon, France (Fig. 3). Some institutions have also opted to redesign their collection displays on the basis of media or popular culture with which visitors are familiar. This is the case, for example, with meteorites, and more broadly with cosmology, whose representations are numerous in literature and movies and that can serve as a starting point for an exhibition. This is the case at the Pierre and Marie Curie University in Paris, whose meteorites and lunar items are surrounded by press extracts and photographs that evoke the world of science fiction and disaster films.

On a wider scale, the environmental crisis prompted natural history museums to reinvent themselves as biodiversity museums or sustainable development museums following the 1992 Rio Summit (Davallon *et al.* 1992). Some exhibit together different types of natural science collections to present a more holistic narrative about the Earth, its history, its biotic and abiotic factors and its inhabitants, in line with the US and UK natural history museums mentioned above. In Catalonia for example, this is the case for the "Planet Life" permanent exhibition at Barcelona's Natural Science Museum, inaugurated in 2011 in the institution's new headquarters. Some geological collections have also been presented through the prism of resources and sustainability issues, by attempting to promote in the museum a social and political debate on the rational exploitation and good man-

Figure 3. Display of the "Societies. The Theatre of Men" a permanent exhibition of the Confluences Museum (Lyon, France). Author's photograph, February 2018. The aim of the Confluences Museum opened in 2014, is to combine natural history and anthropology, through the exhibition of collections formerly housed in various museums in the city of Lyon. As such, this exhibition presents ethnographic and geological collections together to explore human creation through the transformation of natural resources.

agement of these natural resources to preserve the environment and ensure the sustainable development of our societies. This is the case in the Valentí Masachs Geological Museum in Manresa where a room entitled "Minerals and the people" was created at the end of the exhibition around questions such as "Is a miner child a child?" or "Minerals at the cost of blood".

In some institutions, these kinds of questions introduce the concept of decolonization, now in vogue in museums, by questioning the "neo-colonial" aspects of the extraction of these resources by the major Western mining or oil companies and its often dramatic economic, social and environmental consequences on the local populations. An example is the Africa Museum in Tervuren (Belgium), which reopened in 2018 after a five years' renovation and which now presents its mineral collections on the basis of mining extraction and its effects, especially in the Democratic Republic of the Congo, a former Belgian colony the source of many of their collections. In France and Spanish Catalonia, where no museum of colonization exists, this logic is not explicit in the conservation of specimens collected in former colonies. But we can be sure that this will soon be the case, as the decolonial perspective, developed firstly in museums of ethnography, history and contemporary art, is gaining momentum in science museums (Sera-Shriar 2023).

A second approach consists of an aesthetic display of the collections, especially the minerals and gems, following the principles of art history, which have strongly marked the collective imagination of how society perceives museums, particularly in France, Spain, and the whole Mediterranean area (Gómez Martínez 2006). This presentation is easily understandable by the public as it is not based on scientific content but rath-

Figure 4. Display in the "Treasures of the Earth" permanent exhibition of the National Museum of Natural History (Paris, France). Author's photograph, March 2019. This shows that the selection of specimens exhibited in the display case is based on aesthetic criteria, favoring those whose colors and shapes are most likely to appeal to visitors, regardless of their knowledge of geology.

er on an aesthetic appreciation of the shapes and colors of the specimens. The objects are presented as works of art, sometimes focusing on their contours, materials, or their brilliance. The concepts of "treasures", "wonders" or even "masterpieces" of the Earth often guide these exhibitions, as is the case at the National Museum of Natural History in Paris whose permanent exhibition on minerals reopened in 2014 under the name "Treasures of the Earth" (Fig. 4). In 2020–2021, the same institution also staged a temporary exhibition "Precious Stones", in partnership with the French luxury jewelry, watchmaking and perfume company Van Cleef & Arpels, during which dialogue was established between 500 minerals, gems and art objects of the museum and 200 jewelry pieces from the company. Such an aesthetic display can also be a starting point for a scientific interpretation which attempts to explain the reasons for these shapes and colors through geological, chemical and physical phenomena. In the Paris Museum, digital devices enable visitors to find out more about these processes in the permanent exhibition.

Finally, the third approach is based on the creation of a heritage narrative. In some museum exhibitions, the collections but also the scientific texts and treatises that deal with them can be presented as illustrations of the progress of the geosciences and the interests of researchers at different points in history, that is "scientific heritage". This perspective also often makes it possible to give a new meaning to the old displays in the galleries. These can be "musealized" for the occasion, as well as parts of the exhibition rooms, following a "museum of the museum" perspective, whose displays allow a historical and heritage narrative. This is, for example, the case of the Mines ParisTech Mineralogy Museum, one of France's oldest university geology museums, inaugurated in 1794, and which has long served for the training of engineers

from the École Nationale Supérieure des Mines de Paris, and whose old museography is a reminder of this long history (Fig. 5). According to this logic, the museum emphasizes the importance of certain historical figures in the acquisition of its collections (via donors in particular) but also in the creation of the museum and its management (often insisting on the importance of certain directors and their visions for the museum and science). In 2023–2024, with the temporary exhibition "Minerals: collectors' items", the museum offered an overview of its history, looking back at the different approaches to collection acquisition that have prevailed since its creation, very much in line with the underlying trend in museums today to deal with their histories in their exhibition spaces and activities.

Figure 5. Display at the entrance of the Mines ParisTech Mineralogy Museum (Paris, France). Author's photograph, March 2019. The first room of the museum, which retains many of its historic display cases, honors some of its founders, donors and directors (one of whom is depicted in the painting visible in the photograph), while also offering a selection of its most prestigious and impressive collections from an aesthetic point of view.

Although many museologists share the need to rebadge geological collections, these trends are not always to everyone's taste. In some cases, scientists within museums may be reluctant to adopt these approaches, insisting that the scientific aspect of the collections must take precedence over these other perspectives. This "conflict" bears witness to the persistence within geology galleries, undoubtedly more than in other departments of natural history museums, of what Davallon defines as a "museology of ideas" centered on vertical transmission of scientific knowledge through exhibitions (more or less didactic), as opposed to a "museology of points of view", as evidenced by trends towards the rebadging of collections described above, centered on visitors rather than objects and knowledge, where the latter "is used as material for the construction of a hyper-media environment in which the visitor is invited to move around, offering one or more points of view on the subject dealt with by the exhibition" (Davallon 1992). It is not surprising then to note that the renovation of certain museographic displays within these museums sometimes extends this "museology of ideas", even though it is increasingly challenged by younger generations who are convinced of the value of scientific mediation and the need for a more interpretative and societal approach to the collections, based on visitors' daily lives, their experiences and their questions, rather than on their (usually very limited) knowledge of geology.

Concluding Remarks

If I compare both interpretation practices within and outside geoparks, mainly in natural history museums, it appears that the logic at work in each context is different, bearing witness to the divide referred to in the introduction. However, beyond these apparent differences, the examples I discussed demonstrate some convergence.

While the updating of natural history museum exhibits does not seem to be linked explicitly to geoheritage thinking, the resulting exhibitions and displays are not so far away from it, even if the term geoheritage is rarely mentioned. There are indeed similarities with the interpretation in geoparks, such as the aesthetic treatment of geosites, landscapes and collections, the heritage narrative or the presentation of issues linked to geology, such as the exploitation and use of resources, or its impact on ways of inhabiting the territory. In short, even if the term 'geoheritage' is absent in the museum galleries, its gist is present as a result of the Zeitgeist focusing on the social role and history of collections, and focusing on our relationship with the Earth. To put it another way, these two types of institutions each attempt, in their own way and according to different thoughtys, to explore and rebuild the relationship between Nature and Culture.

This social construction, structural to our society and our way of thinking about the world, has long been a part of Western literature (Latour 1993; Descola 2013) and was probably felt much earlier in colonized countries where this modern perception of the world was imported from the 16th century to the detriment of local ontologies. Since then, it has been the subject of temporary exhibitions and displays in major natural history museums and before them in local Ecomuseums (particularly in France and Spain since the 1980s) whose main objective is to present together the natural and cultural heritage of a territory (Davis 1999). This social construction is in fact now being challenged, partly because of the growing influence of decolonial thinking, but also because of the current context of climate collapse, which urgently requires us to rethink our relationship with the Earth (Janes 2023). In short, both geoheritage and the various strategies for rebadging natural history museum collections merge into the will to rethink our categories of Nature and Culture. At the same time, they question other forms of distinction, such as the division between "Museology," emerging largely from the practices of museums exhibiting cultural heritage, and "Science Museology,", or between "Heritage Studies" and "Museum Studies" that some authors sought to merge into "Heritology" (Šola 2015) as a more holistic academic field that covers all activities linked to the conservation and protection of heritage, whether or not it is preserved in museums.

This process requires that we recreate links, not only between the different departments of natural history museums but also between these institutions and ethnographic, fine art and contemporary art museums. All these museums (as well as interpretation centers) are simply ways of looking at geoheritage, since all human cultures and creations are intrinsically related and conditioned by the history of the Earth and the resources that make life on it possible. All museums are thus a specific version of the museum of humans on Earth. In any case, it is one of the basic premises that museums need to start from if they want to give meaning to their institutions and our heritage in a common future that implies profound conceptual changes if our species is to survive.

Conflict of interest

Authors declared no competing interest

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