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# From nature conservation to geotourism development: Examining ambivalent attitudes towards UNESCO directives with the global geopark network

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**Abstract:** We will begin by showing how Geoparks have not been created ex nihilo, but are rather the result of a trend towards the increased granting of heritage status to nature and natural features (the creation of National Parks in the US, the Man & Biosphere programme, the World Heritage Trust, etc.) combined with a desire to boost economic development in rural regions, primarily driven by the promotion of tourism. Their development has required Geoparks to conform to international standards, principally the creation of the European Geopark Network (EGN) in 2000, followed by the Global Geopark Network (GGN) in 2004, the Arouca Declaration (2011) and the creation UNESCO Global Geoparks (UGG) in 2015. The introduction of international governance has sparked an explosion in the granting of heritage status alongside Geopark creation in many countries, but has also led to the emergence of conflicts over this heritage attribution, as well as how geotourism and its aims are interpreted. The ambivalent reception within the Global Geoparks Network towards "top-down" directives from UNESCO strikes us as an interesting prism through which to examine how the presence of different stakeholders (managers, scientists) and their differing conceptions of geotourism reveal divergent views of heritage status and its interpretation within the territories concerned.

**Keywords: geotourism, geoheritage, geoparks, conflict of representations, patrimonialization, scientific literacy, territory identity**

## 1 Introduction

Although various branches of social science, such as Cultural Studies, Heritage Studies or Material Culture Studies[1] have highlighted the multiple possible interpretations of the term "heritage", there appears to have been little interest in them or the appli-

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[1] For example, the material culture movement encompasses the development of historical societies, museums, and popular exhibitions such as world's fairs; it has offshoots in the entertainment, recreational, and publishing industries; it also nourishes and is nurtured by a multitude of hobbyists, collectors, archivists, regionalists, antique dealers, craftsmen, artists, civil servants, and festival promoters. (Schlereth,1979).

cation of their conclusions from the Geopark community of researchers and other professionals[2]. Our team is interested in analysing the processes of behind the granting of heritage status, with a specific focus on local perceptions of heritage[3]. Our previous studies have already shown *"that heritage is not only a construction revealing the contemporary social dynamics and the power struggles it generates. It also acts as a gateway for encounters between stakeholders and institutions, scientists across various disciplines, and for partnerships between developed and developing countries."* (Juhé-Beaulaton & Girault, 2016). Within this framework, the approach we have chosen for our analysis of Geoparks and their evolution focuses on the ambivalence surrounding the notion of heritage, a term whose signification and interpretation depends on the stakeholders involved and their point of view.

We will begin by showing how Geoparks have not been created *ex nihilo*, but are rather the result of a trend towards the increased granting of heritage status to nature and natural features (the creation of National Parks in the US, the Man & Biosphere programme, the World Heritage Trust, etc.) combined with a desire to boost economic development in rural regions, primarily driven by the promotion of tourism.

Their ongoing development has required Geoparks to conform to new international standards, principally the creation of the European Geopark Network (EGN) in 2000, followed by the Global Geopark Network (GGN) in 2004, the Arouca Declaration (2011) and the creation UNESCO Global Geoparks (UGG) in 2015. These standards in their turn have modified some of the Geoparks' original objectives, notably with regard to the development of geotourism. The introduction of international governance has sparked an explosion in the granting of heritage status alongside geopark creation in many countries, but has also led to the emergence of conflicts over this heritage attribution, as well as how geotourism and its aims are interpreted – an area ripe for more study[4].

The ambivalent reception within the Global Geoparks Network towards "top-down" directives from UNESCO strikes us as an interesting prism through which to examine how the presence of different stakeholders (managers, scientists) and their differing conceptions of geotourism reveal divergent views of heritage status and its interpretation within the territories concerned.

### 1.1 Some background to the creation of geoparks

From the first descriptions of the US National Parks such as Yellowstone and Yosemite, their geologically *"splendid"* characteristics were highlighted as a justifying their preservation for the *"benefit and enjoyment of people"*, specified in the Act of March 1, 1872 that established Yellowstone National Park in the Territories of Montana and

[2] A recent open access publication of UNESCO defines UNESCO Global Geoparks as such: UNESCO Global Geoparks are single, unified geographical areas where sites and landscapes of international geological significance are managed with a holistic concept of protection, education and sustainable development. (UNESCO, 2016,p.1).

[3] These questions have previously been analysed during a research seminar organized by the Department of Local Heritage and Governance (UMR208 IRD/MNHN). The seminar focused on the attribution of local heritage status in developing countries, and drew on four previous studies published by IRD Editions (Guillaud & Juhé-Beaulaton, 2016).

[4] For example, the geographical pattern of geotourism research has been examined by Ruban (2015) through a bibliographical survey of 165 journal articles which were selected on geotourism published by 417 specialists from 45 countries during the 2012-2014.

Wyoming.

Gates (2006) notes that *"The more famous parks, like Yellowstone in Wyoming, Grand Canyon in Arizona, Devil's Tower in Wyoming, and Crater Lake in Oregon, are preserved for their splendour but recognized as of geological origin by most visitors (...). These features have been widely regarded as destinations for vacationers, but just for their beauty or curiosity rather than their geological significance."* (Gates, 2006, 158). Horace M. Albright, director of the US National Parks Service in 1933, highlighted this interest in geological features, notably in Yosemite National Park: *"Thus the Yosemite, paradise beauty, also is a geologist's paradise"* (Albright, 1983, p.39).

Nearly a century later, following suggestions by delegations from Poland and Belgium (UNESCO, 1961), the *"Recommendation concerning the Safeguarding of Beauty and Character of Landscapes and Sites"* (UNESCO, 1962, 1)[5] was adopted. The value of these sites as sources of revenue had already been highlighted: *"the ecological balance is inseparable from the economy of a region (...) tourism has become an important source of income for many countries (...) their landscapes and sites of interest are for some states the most precious sources of income from foreign tourism"* (UNESCO, 1961). This Recommendation, made at state-level, and concerned with safeguarding the beauty and character of landscapes and sites, was the spiritual forerunner of the "World Heritage Convention" and would pave the way for the creation of a UNESCO label for a specially defined conservation area. At the same time, it would establish UNESCO as a legitimate player confronting the challenges of heritage designation and conservation.

UNESCO was born from a desire to *"create a certain global stability based on peace between nations"* (Pemberton, 2005, cited in Brianso & Girault, 2014), and with its *"'nature-culture' flagships"* (Brianso & Girault, 2014): the "World Heritage" and "Man and Biosphere" programmes, it assumed a central, diplomatic role within the international community concerning heritage conservation. The "Man and Biosphere (MAB)" programme, launched in 1971, introduced a *"new approach to nature conservation"* (International Biosphere Reserve Congress et UNESCO/UNEP, 1984), *"which would differentiate itself from the traditional concept of National Parks"* (Jardin, 1996), *"(...) a mechanism for establishing the equivalent of 'World National Parks', but in a manner very different from the Yellowstone model"* (Van, 2008) or *"a tool for Environmental Conservation and Management"* (Batisse, 1982). At the same time, the creation of these biosphere reserves launched a principle of multiple heritage designations for protected areas. This consisted principally of the superimposition of biosphere reserves' limits over those of existing national parks (Delibes & Mateo, 1983), and/or the joint management of both entities[6].

Numerous criticisms have been made concerning the relationships "Man-Nature"

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[5] UNESCO had appealed for a collaboration between representatives of several organisations to help launch this project. They included the IUCN, the International Committee on Monuments and Sites, the International Council of Museums, the International Association of Art, as well as the *Alliance Internationale de Tourisme*, the Belgian Aesthetic League, and the US National Parks Service.

[6] The USA, where national parks originated, also created several of the first biosphere reserves in 1976 (27 of the 52 created that year). These reserves were created within the bounds of existing National Parks, such as the spectacular Yellowstone.

within these biosphere reserves, notably with regard to property rights and conflicts over the use of land or resources. There have also been questions about a lack of detail concerning the specificity of biosphere reserves in relation to pre-existing national parks (Batisse, 1996). These criticisms have led to the modification of the MAB programme, which has evolved in line with international environmental discussions, favouring the development and participation of local populations. In the decade following their conception, participation was already an important element within the biosphere reserves, as stipulated in the 1984 "Action Plan for Biosphere Reserves":

*"Key ingredients in the MAB Program are the involvement of decision-makers and local people in research projects, training and demonstration in the field and the pooling of disciplines from the social, biological and physical sciences in addressing complex environmental problems (...) to promote local participation in the management of biosphere Reserves"* (UNESCO, 1984), but it was during sustainable development discussions at the Rio Earth Summit in 1992, and specifically following the Convention on Biological Diversity, that the participation of local populations in the dynamics of conservation would become *"crucial"* (UNESCO, 2002). All the same, several authors have highlighted the negative consequences of a "top-down" approach within biosphere reserves, notably due to misunderstandings about both the local environment and the roles of local inhabitants (Fasskaoui, 2009).

Biosphere reserves were therefore potentially suitable for *"the implementation of the results of the United Nations Conference on Environment and Development, notably the Convention on Biological Diversity"* (UNESCO, 1996), where the *"'natural' contract and the social contract could be reconciled"* (Laserre, 1999). And *"little by little, however, as a function of realities on the ground and of the local populations, the human dimension of biosphere reserves (implicit in the framework of the MAB program) became increasingly important, particular when faced with the difficulty of protecting biological diversity areas subjected to strong human pressure"* (Batisse, 1996)[7].

As we have already noted, it was the idea of reconciling the conservation of both cultural and natural sites that was behind the administrative structure of the American National Parks Service. The bedrock of an ethical consideration of natural heritage can also be found within the American ecological tradition, most notably the writings of John Muir and Enos Mills (1920) and of Freeman Tilden (1957). Building on the work of these pioneers, it was in 1965, during a White House conference on international cooperation in Washingon DC, that the idea first emerged for a "World Heritage Trust" that would associate natural and cultural values (Brianso & Girault, 2014). The intention was *"to create a Foundation for world heritage which would be responsible vis-à-vis the global community for the stimulation of international cooperation in order to identify, establish, develop, and manage the magnificent natural and landscaped spaces and historic sites around the world for the current and future enjoyment its entire population*" (Russel, 2002).

These early deliberations, as well as the considerable work that followed, had an impact on the Convention concerning the Protection of the World Cultural and Natu-

[7] A biosphere reserve must accomplish three functions: conservation, development and logistical support, within the boundaries of a territory. The territory must be organized into three zones: one or more undisturbed natural sites, a buffer zone allowing limited activity, and a transitional zone where some economic development is permitted (UNESCO, 1996, 4; Van Dyke, 2008, p.22).

ral Heritage (1972), whose most innovative characteristic was to *"it links together in a single document the concepts of nature conservation and the preservation of cultural properties. The Convention recognizes the way in which people interact with nature, and the fundamental need to preserve the balance between the two"* (UNESCO, 2017). The Convention was adopted on the November 1972 at the UNESCO General Conference in Paris (Batisse & Bolla, 2003)[8]. While the environmental and heritage normative texts emphasize on the scientific measures to conserve heritage, it is not the same concerning the participation of the population in this process (Brianso & Girault, 2014).

The recognition of intangible cultural heritage with the Convention for the Safeguarding of the Intangible Cultural Heritage in 2003, had, in principle, modified the bases of heritage recognition. Where inventories of built and scientific heritage were compiled exclusively by experts, the inventories of intangible cultural heritage were based on the knowledge of local populations. Despite this, it seems that the effective participation of local communities in the granting of heritage status to cultural properties was very rare.

In the nineties, with the creation of Geopark initiative, what were the main lessons that could be extracted from the diverse politics driving the transformation of nature into heritage?

- Since the first descriptions of the US National Parks such as Yellowstone and Yosemite, their geologically "splendid" characteristics were highlighted as a means of preserving of those parks for the "benefit and enjoyment of people".
- The creation of Man and Biosphere reserves had led to the increasing use of multiple designations for protected areas.
- The link between the protection of nature and the preservation of cultural property had been accepted since 1972.
- To take into consideration the participation of the population in the heritage process.

As we will describe, the responsibility for the creation and evolution of Geoparks around the world has been almost entirely borne by geologists. Although Geoparks would evolve within a framework of shifting ideas about the protection of nature as heritage, they would do so without the numerous articles on the subject ever making reference to it. More precisely, it appears to us that the four elements noted above have been progressively integrated into the Geoparks discourse without taking sufficient advantage of what could be learnt from them.

## 2 Creation and evolution of geoparks

Towards the end of the 1970s, the local councillor for culture in the town of Digne, was looking at ways to boost tourism. This councillor, Bernard Della-Casagrande, wished to develop some activities based around the recent discovery of fossils in the area, so he asked Claude Rousset, a Professor of Geological History and Applied Geology at the University of Provence, to take a preliminary inventory of the site. When this study, performed by a young student named Guy Martini, revealed tremendous

[8] This intention, linked to the natural and cultural heritage of populations does not appear to have filtered down to local level. It seems that few studies have examined the effective participation of local communities in applications for World Heritage status for natural or cultural sites.

geological treasures, Della-Casagrande argued for the creation of a geological nature reserve within the region of Haute-Provence[9]. This was finally created in 1984, after a ministerial decree, with the aim of protecting a certain number of geological (essentially fossil) sites. It wasn't until 1989 that a prefectural order would throw a protective cordon around the site that would allow the preservation of the geological heritage but without prohibiting its commercial exploitation. The first international meeting on geoconservation was held in Netherlands in 1988, in the presence of seven European countries. One of the results of this meeting was the establishment of the European Working Group on Earth Science Conservation, which evolved in 1993 into ProGEO (The European Association for the Conservation of the Geological Heritage).

At the end of the 90's, following the "international symposium on the protection of geological heritage" (held in 1991 in the Haute-Provence geological nature reserve), four European protected areas of natural beauty decided to work together in order to benefit from the Leader II programme. The objective of this programme was to support innovative local development projects in deprived rural areas. In this way, the Vulkaneifel Natural Park in Germany, the Maestrazgo - Aliaga Geologic Park in Spain, the Haute-Provence Geological Reserve and the Petrified Forest of Lesbos in Greece came to establish a system of transnational cooperation based around geotourism (McKeever & Zouros, 2005). This cooperative programme would highlight the geological heritage of the different territories, whilst also serving as a support for economic activity within them. In effect, the four territories that constituted the first Geoparks around 2000 were *"rural areas (...) facing problems of slow economic development, unemployment and a high level of emigration"* and they saw the possibility of *"enhancing the general image"* of the territory by linking geological heritage and development through tourism, variously called geo-tourism (Zouros, 2004, 165), geological tourism (Zouros & Valiakos, 2010) or geotourism (article 3 « The EGN Charter », 2000).

These four territories, in four different countries (Spain, Germany, Greece, France) *"(...) had been working on individual programs, promoting geological heritage and sustainable development"* (Jones, 2008). So they came together, using their geological heritage as a lever for sustainable development: the *"main objective of the cooperation between Geoparks is the protection of geological heritage and the promotion of sustainable development of their territories"* (EGN, 2017). Eder & Patzak (2004) have highlighted the promotion of Earth heritage sites as tools *"for educating the general public in environmental matters (...) for demonstrating sustainable development and for illustrating methods of site conservation (...)."*

In 2000, these four partners would become founder members of the European Geopark Network (EGN), which was opened to other European countries and received the support of UNESCO in 2001. Around the same time, China created its own National Geopark Network (Jones, 2008), citing requests from *"geological institutions and geoscientists and non-governmental organizations, (which) reflected the rising need for a global initiative to promote those geological heritage areas, which are at present recognized only nationally or not recognized at all"* (Eder & Patzak, 2004). Eventually, these two networks, under the auspices of UNESCO, would give birth to the Global Geopark Network (GGN) in 2004, with 17 European Geoparks and 8 Chinese Geoparks represented at the First Global Geopark Conference in Beijing,

[9] Rousset (2016), personal interview with Yves Girault.

China. Most recently, the International Geoscience and Geoparks Programme (IGGP) was approved during the 38th UNESCO General Conference in 2015, leading to the creation of the "UNESCO Global Geoparks" (UGG) designation.

**Landmarks in the creation and evolution of geoparks**

- ProGEO 1991: Signature of International declaration of the rights of the memory of the Earth at the First International Symposium on the Conservation of our Geological Heritage in Digne (France).
- JNCC 1993: Publication of the Malvern Resolution at the International Conference on Geological and Landscape Conservation in Malvern (UK).
- IUGS 1996: Proposition of Geopark initiative at the 30th International Geological Congress in Beijing (China).
- ENRD 1996: "Development of geotourism in Europe" Project financed by LEADER II.
- UNESCO 1999: First proposition of UNESCO Geoparks Programme.
- EGN 2000: Creation of European Geopark Label.
- CHINA 2000: Nomination of National Geoparks.
- UNESCO 2000-2001: Feasibility studies on developing a UNESCO Geosites/Geoparks Programme deciding not to pursuit the UNESCO Geosites/Geoparks programme but to support ad hoc efforts with individual Member States.
- UNESCO, EGN 2001: Signature of Convention of Cooperation between UNESCO and the EGN.
- GGN 2004: Establishment of the Global Geopark Network (GGN) including 17 European Geoparks and 8 Chinese Geoparks at the First Global Geopark Conference in Beijing (China).
- APGN 2007: Creation of the Asia-Pacific Geoparks Network (APGN).
- AGN 2009: Creation of the African Geoparks Network (AGN) by African Association of Women in Geosciences (AAWG) in Abidjan (Ivory Coast) in cooperation with IUGS and UNESCO.
- UNESCO 2012: The UNESCO Global Geoparks initiative proposed during the 37th UNESCO General Conference.
- GGN 2014: Establishment of legal statute of GGN as non-profit organisation subject to French legislation.
- UNESCO 2015: The International Geoscience and Geoparks Programme (IGGP) approved during the 38th UNESCO General Conference.

## 2.1 The specific features of geoparks

As we have already described, the recognition of Geoparks by UNESCO is part of the ongoing process of granting heritage status to nature. Therefore, it seems important to begin by trying to identify some of their specific characteristics. According to Patrick McKeever, Secretary of UNESCO's International Geoscience Programme[10], the Geopark is an holistic concept that combines three main objectives: protection of geoheritage, education and sustainable local development. He also points out, how-

[10] From notes taken during a presentation by Mr McKeever during a symposium in Toulouse (2015). He has assisted Member States in formalising the relationship between the Global Geoparks Network and UNESCO through the creation of the new International Geoscience and Geoparks Programme and the creation of the new designation of UNESCO Global Geopark which happened in November 2015.

ever, that while Geoparks are not protected areas *per se*, the majority benefit from other protective frameworks already in place within their territories (National Parks, Biosphere Reserves, etc.) which tend to allow the preventive conservation of geological and paleontological sites. This status is reiterated by the UGG network. As Dingwall (2000) has said, the promotion of geological features is *"(...) usually implicit only, and subsumed under terms such as natural features, scenery and ecosystems. In most countries concerns for conservation of biological diversity remain paramount, and in a legal sense nature conservation is essentially synonymous with biological conservation. Thus, geological phenomena have tended to be protected incidentally to the protection of biological, aesthetic and cultural values, rather than given recognition for their inherent scientific merit."*

Nevertheless, Tim Badman, Director of the UICN World Heritage Programme, points out that this is the sole programme to consider protection and a plan for the maintenance of this protection as the defining criteria for obtaining classification[11]. In his view, there is an essential difference between this and the "development" of Geoparks, whose objectives should be based on more scientific criteria if they are to be granted GGN status. In effect, Geoparks should associate sites of geological interest with "Geological Heritage" as it was defined in Article 8 of the International Declaration of the Rights of the Memory of the Earth, signed in Digne-les-Bains in France in 1991: *"common heritage"* of both humans and the planet, founded on memory beyond that of Man (Venzal, 2012). The term most frequently used today is "geoheritage". According to de Wever *et al* (2014), this term groups together *"geological events of local, national or global importance, and geological sites that represent different phenomena (volcanism, magmatic separation, metamorphism and alteration, sedimentation, etc.) or illustrate the Earth's history (palaeontology, global tectonics, climate, sea-levels, etc.)"*. Such sites of geological significance and heritage are known as geosites, geological sites of importance, places/points of geological interest, georesources or geotopes: *"Geotopes are abiotic formations illustrating the planet's past and revealing different aspects of the evolution of the Earth or life"* (Wuttke, 2001). *Other authors prefer a broader, more global approach to geoheritage which considers geotopes as "any geological feature or object that displays a certain value, be it scientific, cultural and historical, aesthetic or socio-economic.* (Panizza & Piacente, 2003)." (Duval & Gauchon, 2010, p.4). Many of these sites have an aesthetic or exceptional cultural value, which has led to them becoming essential tourist destinations, in much the same way as the National Parks in the USA have been for more than a century. Thus it may be said that:

"*a Geopark stimulates economic activity and sustainable development through geotourism. By attracting increasing numbers of visitors, a Geopark stimulates local socio-economic development through the promotion of a quality label linked with the local natural heritage. It encourages the creation of local enterprises and cottage*

[11] The intergovernmental World Heritage Committee is responsible for the implementation of the World Heritage Convention, defines the use of the World Heritage Fund and allocates financial assistance upon requests from States Parties. (…) Ahead of the annual session of the Committee, IUCN submits its recommendations regarding the inscription of new sites following a rigorous evaluation process through which it works with members on the ground, scientific experts, independent feedback and desk reviews. IUCN also submits state of conservation reports for sites under threat, including sites inscribed on the List of World Heritage in Danger or that it considers should be. https://www.iucn.org/theme/world-heritage/about/world-heritage-committee

*industries involved in geotourism and geoproducts."* (GGN, 2006, p.2).

This much is acknowledged by Tim Badman[12], who points out that the financial investment required to become a Geopark is much lower than is needed to become a natural or mixed World Heritage List site, and a Geopark is therefore a much better investment in terms of profitability.

Nevertheless, in order to respect the objectives, set by the GGN, the administrators and scientists in charge of Geoparks are tasked with solving an almost impossible problem: based on a scientific inventory prepared by expert geologists, they must promote this geological heritage whilst at the same time developing geotouristic activities that will stimulate local development and provide employment opportunities for the local population who will in turn become *"ambassadors for their territory"*. This objective, fixed by McKeever[13], is even more difficult to reach when considering that in many cases local people don't realise that they live in a Geopark. For example, even twenty years after its creation, only around 10% of the inhabitants of the Dignes Geopark in France are aware of its existence. How then, can they be expected to act as its ambassadors?[14]

Whilst the keyword for Geoparks is geotourism, there is another problem. The term is not exclusive to Geoparks, having its origins in the creation of US National Parks more than a century ago. Since then it has evolved, depending on its use, and by whom, into a term deployed towards sometimes quite opposite ends. As Hose (2000) has said: *"geotourism" and "geotourist" are rapidly passing into a common message (...) without widely accepted definition" (*p.135*)*. Most often, a bibliography will make reference to two opposing approaches to the term, one coming from geographers and the other from geologists. What exactly is "geotourism" therefore, and how has the term been appropriated by Geoparks?

## 3 Different uses of the term "geotourism"

According to Frey (1998) "*Geotourism' has been recognized as a discipline within the German geoscientific community since the late 1990s"*. She defined geotourism as *"interdisciplinary cooperation within an economic success-oriented and fast-moving discipline that speaks its own language*" (Frey et al., 2006, p.96). This approach, favoured by geologists, strongly resembles the *"deficit model"* or public instruction model advocated by John Miller (Miller, 1983) which is based on the notion that the public will only become interested in science and its applications if they understand it better and that scientists must assume an active role in their education. Frey (1998) states that "*The main tasks of geotourism are the transfer and communication of geoscientific knowledge and ideas to the general public*" (cited in Frey et al., 2006, 98). This point of view is shared by numerous other authors (Nowlan, Bobrowsky, & Clague, 2004; Dowling & Newsome, 2006; Zhao & Wang, 2002; Prosser et al., 2011) for whom the emergence of geotourism, and more specifically Geoparks, over the last

[12] Oral intervention of Tim Badman at the International Conference "Geoheritage Inventories: Challenges, Achievements and Perspectives" p.20-22 September 2015, Toulouse, France.

[13] Oral intervention of P. McKeever at the International Conference "Geoheritage Inventories: Challenges, Achievements and Perspectives" 20-22 September 2015, Toulouse, France.

[14] After the results of several studies undertaken by students from the Dignes Institute of Technology, under the direction of Angela Barthes.

20 years, has given an unprecedented opportunity for Earth scientists to engage with the public. McKeever *et al*. (2006) state that *"By 1993, the Geological Survey of Ireland (GSI) committed to formalizing these largely ad hoc 'geotourism' actions as a corporate 'public outreach' activity – a commitment that continues to this day* (p.188)".

What are the reasons behind geologists' sudden appetite for public instruction? According to Hose (2006), the question of how best to present geological sites and features to the general public has long preoccupied geologists. Considered to be concerned only with "static" and "unchanging" elements by the general public, Earth sciences are often perceived as poor cousins to more "dynamic" sciences dealing with biotic processes (Berrebi & Reynard, 2006; Larwood, Badman & McKeever, 2013). Authors such as Berrebi and Reynard (2008) and Zouros (2008) believe that the protection of geoheritage is dependent on the public's perception that it needs preserving, and therefore "connecting" the public to their geoheritage is the best way to conserve it. This aim is clearly identified in the definition of geotourism proposed by Hose (2000) as *"the provision of interpretative facilities and services to promote the value and societal benefit of geologic and geomorphologic sites and their materials, and ensure their conservation, for the use of students, tourists and other recreationalists"* (Hose, 2000, p.136).

For other authors, it is important to focus on the "geo" in geotourism, which *"pertains to geology and geomorphology and the natural resources of landscape, landforms, fossil beds, rocks and minerals, with an emphasis on appreciating the processes that are creating and created such features"* (Dowling & Newsome, 2006, p.3). The same authors revisited this definition several years later, adding that *"Geotourism promotes tourism to geosites and the conservation of geo-diversity and an understanding of earth sciences through appreciation and learning."* (Dowling & Newsome, 2010, p.3).

In summary, we can see that these various definitions of geotourism, not uniquely linked to Geoparks, created a rather restrictive association between geological tourism and a sort of non-formal *in-situ* education:

*"It is our view that the bulk of geotourism takes place in the natural environment. Geotourism may thus be considered to be a part of natural area tourism and ecotourism, but is a specialized form of tourism in that the focus of attention is the geosite."* (Dowling & Newsome, 2006, p.6).

This representation, still prevalent amongst certain Geopark professionals, centres on the role of education as a means of engaging the public in the protection of geoheritage and revealing its economic potential (geotourism development, including redevelopment of mines and quarries, etc.). Nevertheless, it doesn't entirely correspond with the objectives of Global Geoparks as defined in the introduction of the operational guidelines for UNESCO Global Geoparks (UGG), which are to *"promote the links between geological heritage and all other aspects of the area's natural and cultural heritage"* (UNESCO Global Geoparks, 2015, p.7). In fact, these objectives bear a far closer resemblance to the definition proposed by Stueve, Cook & Drew sponsored by National Geographic Society, for whom geotourism:

*"is concerned with preserving a destination's geographic character —the entire combination of natural and human attributes that make one place distinct from another. Geotourism encompasses both cultural and environmental concerns regarding*

*travel, as well as the local impact tourism has upon communities and their individual economies and lifestyles."* (Stueve, Cook, & Drew, 2002, p.1). Their approach favours the promotion of all forms of heritage within a territory, where geotourism "*is a compilation of all aspects of a territory (natural and cultural) and the people in it. "Tourism that sustains or enhances the geographical character of a place – its environment, heritage, aesthetics, culture, and the well-being of its residents.*" (Stueve, Cook & Drew, 2003, p.1).

The first European Geoparks seemed to use "geo-tourism", "geological tourism" and "geotourism" interchangeably. In fact, the terms lacked a shared common basis, although the desire for a participatory approach had been discussed since the creation of the *"European Geopark trademark"* (Zouros, 2004, p.165) and was included within its charter[15]: *"A European Geopark has an active role in the economic development of its territory through enhancement of a general image linked to the geological heritage and the development of Geotourism (...) The objective is to enable the inhabitants to re-appropriate the values of the territory's heritage and actively participate in the territory's cultural revitalization as a whole"* (Article 3 "the EGN charter", 2000). Opening geotourism in Geoparks to more than just geological heritage was also part of the discussions, according to Martini:

*"we also have to learn to stop isolating this heritage (geological) so dear to our hearts from the other types of heritage within any given territory. All types of heritage must unite to prepare a real and coherent policy. (...) we also have to learn that our geological sites do not – and must not - belong to us geologists"* (Martini, 2000, p.155−156).

The views of these authors (Hose, 1995; Hose, 2000; Stueve, Cook & Drew, 2002; Dowling & Newsome, 2006), as well as the results of discussions held during the International Congress of Geotourism in Arouca, Portugal in 2011 which aimed to *"clarify the geotourism concept through a plenary session with international key speakers"* (Arouca Geopark Association, 2011, p.3), were incorporated into Article 1 of the Arouca Declaration[16], which stated that:

*"geotourism should be defined as tourism which sustains and enhances the identity of a territory, taking into consideration its geology, environment, culture, aesthetics, heritage and the well-being of its residents. Geological tourism is one of the multiple components of geotourism"*

As well as expanding the concept of geotourism beyond the National Geographic definition by better incorporating the notion of geological tourism, the Arouca Declaration also introduced a new aspect. This was an emphasis on a collective process of collaboration and adherence to a set of shared values, manifested through people's identification with specific features within a territory. In this way, these values could

[15] Officially accepted on June 5, 2000 in Lesvos, Greece and signed by the four founder members of the European Geoparks Network. (EGN, 2000)

[16] Arrived at during the International Congress of Geotourism organized in the Arouca Geopark, Portugal, under the auspices of UNESCO, this definition is coherent with those established by the "Centre for Sustainable destinations – National Geographic Society" (Arouca Geopark Association, 2011, p.3)

then be considered to constitute the territory's identity.

As Girault and Barthes (2016) have previously noted when asking questions about the epistemological foundations of such concepts as the "relation to territories" and the "social construction of territories", the linking of the identity of a territory to its role in the lives of its inhabitants favours the application of various currents of interpretation within an overarching eco-centric approach. In contrast, references to the resources of a territory, such as those that refer to the geology of a territory, tend to more specifically echo the emergence of a more sociocentric approach to sustainable development education (Girault & Barthes, 2016).

With the creation of the European Geoparks Network and the (recently re-labelled) UNESCO Global Geoparks Network, these definitions have evolved and have effectively combined geographic and geologic definitions of geotourism (Farsani et al., 2014). This latest definition is anchored by a bottom-up, holistic and multidisciplinary approach that considers not only geological heritage, but also the material and cultural heritage of the communities living there. But it seems that the adoption of a common basis for defining tourism in Geoparks is still lacking. For example, on the UNESCO's own website for UGG they refer to "geotourism"[17] but in the latest Operational Guidelines they refer to only to "responsible tourism"[18].

In the table 1, we offer a summary of different representations of geotourism and how each relates to the themes of Heritage, Territory and Interpretation, in order to construct a typology incorporating those relationships that could be then used as a basis for analysing different Geoparks cases.

**Table 1** Summary of different representations of geotourism and how each relates to the themes of Heritage, Territory and Interpretation

| **Geotourism = geological tourism** (Hose, 1995; Hose, 2000; McKeever et al., 2006; Dowling & Newsome, 2006) | **Geotourism = compilation of all aspects of a territory, its heritage and the people in it** (Stueve, Cooks, & Drew, 2002; 2003) | **Geotourism = promotion of a territory identity combining all aspects of the territory** (Arouca, 2011) |
|---|---|---|
| • The lack of interest in geological heritage | • The need for a holistic approach to territorial heritage | • The need to co-construct a territorial identity |
| • Geological scientific literacy Deficit Model | • Heritage education | • Territorial education |
| • Connecting people to their geological heritage | • Valorisation of the natural and cultural heritage of the territory | • Connecting people to the history of the earth |
| • Integrating geological heritage into local development through Tourism | • Associating territorial heritage with the wellbeing of its residents through tourism | • Promoting the empowerment of people with territorial development through tourism |
| • Geo = Geology | • Geo = Geography | • Geo = Mother Earth |

Table 2: Typology of principal approaches of geotourism

[17] *"UNESCO Global Geoparks give local people a sense of pride in their region and strengthen their identification with the area. The creation of innovative local enterprises, new jobs and high quality training courses is stimulated as new sources of revenue are generated through geotourism, while the geological resources of the area are protected"* (UNESCO, 2017).

[18] *"From the outset, Geoparks adopted a "bottom-up" or community-led approach to ensure that an area's geological significance could be conserved and promoted for science, education and culture, in addition to being used as a sustainable economic asset such as through the development of responsible tourism."* (UNESCO Global Geoparks, 2015, p.7).

## 4 Ambivalent attitudes towards geopark objectives

Even though, as we have already shown, a wealth of literature about geotourism exists, there still appears to be very little research focusing on the visitors and inhabitants of Geopark territories. It therefore appears that research could be developed into what the word "public" actually refers to in the Geoparks context, that is to say: who is this public, what are they visiting, and when (Girault & Le Marec 2016)?

For example, the pilgrimage site, Benedictine Santa Maria de Monserrat abbey, located on the mountain of Montserrat in the Catalonia region of Spain, established in the Middle-Ages as the first Marian shrine in Catalonia, today welcomes around a million visitors and pilgrims a year. Bearing in mind that the site is also one of the most remarkable Geoparks in central Catalonia, could visitors to the abbey also be considered visitors to the Geopark? Is it geotourism, even though few visitors are only interested in the beauty of the landscape? Another example concerns those Geoparks which, thanks to a multiplication of their labels (Biosphere Reserve, World Heritage Site, UNESCO Global Geopark, etc.), receive visitors to these sites as well. Within the 53 Geoparks which benefit from a double designation (Figure1), or the 9 which have a triple designation (Figure 2), it becomes extremely difficult to establish whether visitors have been drawn there by the geopark label, another label, or simply by the prospect of geotourism. How many tourists cross these territories unaware of these different designations? Unfortunately, very little data exists that seriously examines the economic impact of a Geopark or geotourism on a region. The situation is quite different in countries like China where entry to Geoparks is charged and data from ticket sales allows the number of visitors to be accurately calculated for each park.

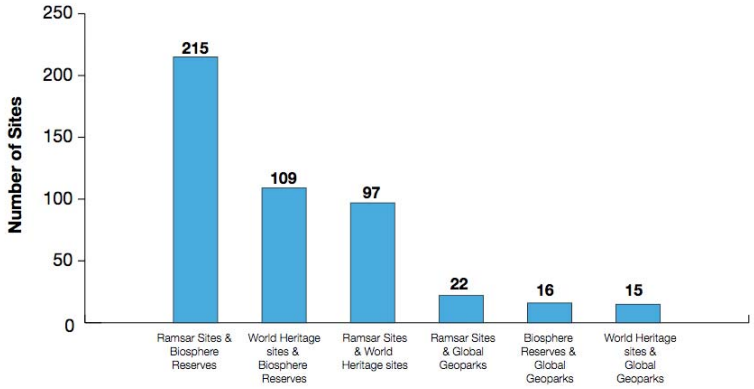


**Figure 1** Frequency of double designated sites (Adopted from Schaaf & Clamonte, 2016, p.4).

A further question concerns the different types of mediation associated with Geoparks, which may include interpretation of geoheritage, as well as education about geoscience, the environment, or the territory (Girault & Le Marec 2016). The forms of mediation proposed, as well as opportunities for informal learning, are undeniably linked to the Geopark's management and their interpretation of geotourism. Thus, geotourism may be understood as "geological tourism" in Geoparks managed by trained geologists who wish to advance a form of "geological literacy" based on their own scientific inventories (and subsequent selection) of the sites concerned. Without explicitly referencing it, this approach echoes the "deficit model" of public

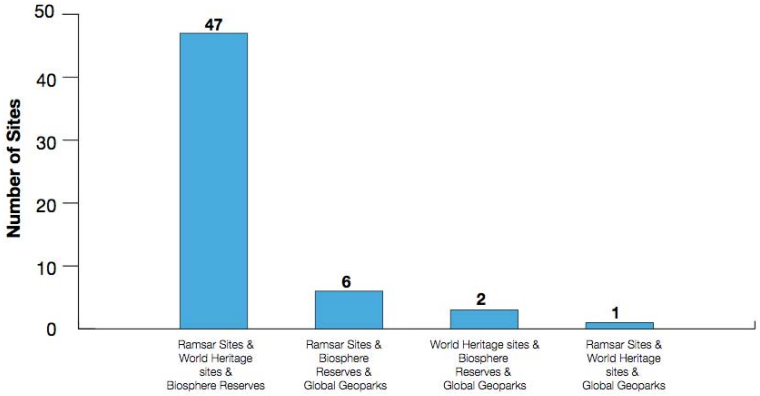


**Figure 2** Frequency of triple designated sites (Adopted from Schaaf & Clamonte, 2016, p.5)

instruction proposed by Miller (1983) in which he suggested that negative public attitudes towards science were due to a lack of scientific literacy on their part. Geologists believe that the protection of geoheritage depends on a scientific appreciation of it. For them, "connecting" the public to their geoheritage in this manner is perceived as the best way of conserving it.

This application of the "deficit model", along with later iterations developed in the 1990s (Levy-Leblond, 1992; Wynne, 1992)[19], has been criticised by researchers and within Geoparks (even though it persists today, see Mansur da Silva, 2011) because it fails make use of visitor studies. Outside of school visits, how can we know what the public have learnt after visiting a Geopark? Is it possible to observe any measurable change in their attitudes *vis-à-vis* geological heritage? Put in another way "*how can interpretative materials reach out to a public that often visits Geoparks for their aesthetic qualities rather than education, and for whom the geological aspect is an "afterthought*"? (Gates, 2006; Partin, Robinson & Meade, 2006). Museums already have a very well-established visitor assessment culture from which Geopark management could draw inspiration, with Cameron, Chandler, Screven, Shettel, Miles and Bitgood among the pioneers who have advocated the importance of visitor studies and public feedback (Le Marec, 2007).

Visitor studies are also common in National Parks, notably in the USA and Canada (Pease, 2011), as well as in South America. To give just one example of the benefits of public feedback, a study into the effectiveness of a particular (and highly technical) interpretative panel at Iguassu Falls National Park in Brazil found that a majority of visitors (51.6%) claimed not to have even seen it (although the author felt that this was a pretext), and the next highest proportion (20%) stated that they didn't have time to read it, which was perhaps unsurprising considering the amount of information the panel contained (Moreira, 2012).

Wei (2012) has proposed a case study to evaluate the current state of environmental interpretation in Geoparks based on three forms of assessment: self-evaluation, visitor evaluation, and peer and expert evaluation, in order to create a set of recommendations to improve the quality of their interpretative materials. Within this study, Wei also suggests a review of the current bibliography concerning interpretation and

[19] For a review of this literature, see Girault and Lhoste (2010)

evaluation in Geoparks, and presents the results of a case study on visitor perceptions of environmental interpretation in the Yuntaishan Global Geopark in China.

The second definition of geotourism, described by National Geographic as *"a compilation of all aspects of a territory's heritage and the people in it",* has attracted much criticism. Duval and Gauchon (2010) state that according to this definition "*geotourism becomes confused with regional aspirations towards 'living together better'",* within which *"virtually any tourist activity that is presented as highlighting a site's geographic character could qualify as geotourism*" (Duval & Gauchon, 2010, p.4*)*. It is not difficult to see how this view could leave geologists feeling uncomfortable, given that its objectives and the means to achieve them are quite different from those of "geological tourism" as understood by scientists, whose own definition is dependent on a strictly scientific appraisal and selection of geological heritage.

The National Geographic definition, with its emphasis on intangible heritage, also upsets the traditional eurocentric view of the primacy of built heritage (Bortolotto, 2011; Turgeon, 2010), as well as leading to experts ceding the process of heritage selection, via a form of *"participatory democracy" or "a citizen science"*[20], to local populations (Bortolotto, 2011). This has led to recurrent questions about how local communities can meaningfully contribute to interpretation in-situ (guides, demonstrations, boat-trips, etc.) and ex-situ (museums, pedagogic materials, etc.)? (Halim et al., 2011; Farsani et al., 2011).

A third definition of geotourism, issued through the Declaration of Arouca (2011), is much more specific regarding the importance of Geoparks to local populations. Geotourism is the *"promotion of a territory's identity compiling all aspects of a territory",* a definition that would later be incorporated into the objectives fixed by UNESCO for the development of Global Geoparks:

*"UNESCO Global Geoparks are single, unified geographical areas where sites and landscapes of international geological significance are managed with a holistic concept of protection, education and sustainable development. A UNESCO Global Geopark uses its geological heritage, in connection with all other aspects of the area's natural and cultural heritage, to enhance awareness and understanding of key issues facing society, such as using our earth's resources sustainably, mitigating the effects of climate change and reducing natural disaster-related risks. By raising awareness of the importance of the area's geological heritage in history and society today, UNESCO Global Geoparks give local people a sense of pride in their region and strengthen their identification with the area."*

This third definition of geotourism, which has also drawn criticism, seems to us to include something of the concept of the ecomuseum: *"An ecomuseum is an instrument conceived, fashioned and operated jointly by a public authority and a local population (...)It is a mirror in which the local population views itself to discover its own image, in which it seeks an explanation of the territory to which it is attached*

[20] Citizen science is defined as organised research in which the balance between scientific, educational, societal and policy goals varies across projects. (…) Through collaboration with scientists in organised research projects citizens can contribute valuable information that can be used to develop and deliver policies, improve understanding and respond to many of the challenges facing society today.( European Citizen Science Association (ECSA) http://ecsa.citizen-science.net/about-us

*(...)It is a mirror that the local population holds up to its visitors so that it may be better understood and so that its industry, customs and identity may command respect."* (Rivière, 1985, p.183).

The ecomuseum is a manifestation of heritage as chosen by the population. Mayrand splits the process through which a population becomes aware of and develops this heritage into three phases - interpretation, territory, and finally ecomuseum – in order to create a collective view amongst the population of what should constitute a regional museum, or ecomuseum, in their particular case.

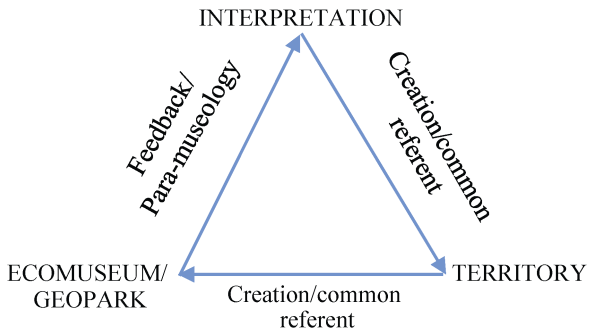


**Figure 3** Mayrand's Triangulation Model applied to geoparks (Adopted from Mayrand, 1989, p.13; Mayrand, 2000, p.227)

The process begins with the presence of interpretative activities within a territory which help raise the population's awareness of the territory informs their identity. The next phase is the demand for an ecomuseum from the local community which is based on sharing and the creation of common points of reference. The final, and most complex, phase involves what Mayrand calls "para-museology" where the community itself becomes involved in the creation of interpretative material. This perhaps begins to approach McKeever's wish for local populations within Geoparks to become *"ambassadors for their territory"*, engaged in defending their territories' identity and uniqueness.

The final definition of Geoparks noted above, also introduces a new element concerning (for the scientific literacy) *"the effects of climate change and reducing natural disaster-related risks"*.

The frequent evolution of the objectives assigned to both European and Global Geoparks, and their continued co-existence with various national geoparks in some countries (Germany, China, South Korea) can make the correct interpretation of, and respect for, these directives particularly difficult for the various Geopark administrations. In future studies we propose to analyse, on the basis of UNESCO's recommendations, the actors from different countries (China, Spain, France) who set the objectives of geotourism and under what types of conditions they are implemented (conflicts linked to multiple-designations, difficulties older Geoparks face in adapting to current regulations, consideration for local populations, etc.). Through a comparative analysis across several fields of research, we also wish to examine the educational issues related to Geoparks depending on their various priorities: scientific literacy, knowledge and valorisation of cultural and natural heritage, as well as taking into account their preservation and the results of shared management with local populations.

A comparative analysis could be performed on the basis of criteria ratified by UNESCO concerning educational material about geoheritage. This study would be based on theoretical work in the field of Public Understanding of Science (PUS) (see bibliography in Girault & Lhoste, 2010), on current trends in environmental education as it applies to territories (Girault & Barthes, 2016), and finally on the three principle interpretations of geotourism that we have analysed in this article.

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