Philosophy of the City

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Preserving Destruction: Philosophical Issues of Urban Geosites

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Abstract: This article examines the philosophical issues that arise when preserving urban geological sites or urban geosites. These are preserved not only because of their geological value but also because of aesthetic, cultural, and economic reasons. To do so, it examines the geosite constituted by Olot and its surroundings, a city in Spain that extends amid four dormant volcanoes. It explores the metaphysical paradox that these geosites have become what they are due to the preservation of destruction: human-caused interventions, mostly extraction of materials and exploitation of the land, are precisely what made these geosites visible as sites worth preserving and determining their metaphysical status. It further explores the preservation criteria and shows how they have determined the status of the geosite. Second, it shows how in such urban geosites the collapse of two diametrically opposed conceptions of time – the geological eon and the lived human time – occurs. Lastly, it discusses aesthetic aspects of such geosites by considering aesthetic experience as a primarily cognitive endeavor and shows how metaphysical, epistemological, and aesthetic issues of preservation of geosites are inextricably linked.

Keywords: philosophy of preservation, aesthetics of preservation, environmental aesthetics, intergenerational aesthetics, urban geosites, urban geoheritage, volcanic geosites

1 Introduction

Preservation of urban geological sites or urban geosites entails philosophical aspects that go beyond the physical features of a site. These philosophical issues, and specifically aesthetic concerns, are examined by discussing the case of Olot and its surrounding area. Olot is a city in the northeast of Spain, in the autonomous community of Catalonia, that extends amid four dormant volcanoes that are part of a 15-hectare Holocene volcanic field that includes forty volcanic cones and around twenty basalt lava flows. This area is currently the Natural Volcanic Park of La Garrotxa. Olot is shaped by these urban volcanoes and, conversely, the volcanoes are shaped by the city: houses and vegetable gardens populate the volcanic slopes, basalt cobblestones pave the streets, and the volcanic orography determines neighborhoods and streets. Both the life and the aesthetics of the city depend on this symbiotic relationship.

To frame the present philosophical discussion and the underaddressed role of aesthetics when experiencing urban geosites, Section 2 of this essay provides a definition of geosites and relevant contributions from the field of heritage studies; it then offers a succinct description of its philosophical approach. Urban geosites are not only preserved because of their geological value – what is called geoheritage – but also because of aesthetic, cultural, and economic reasons – geotourism has greatly influenced the preservation of geosites. Section 3 briefly describes the city of Olot, its physical and geographical features as well as the historical facts relevant to its current status as a geosite. Section 4

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explores three philosophical issues concerning geosites: time, place, and aesthetic aspects. In such urban geosites, the collapse of two diametrically opposed conceptions of time occurs: geosites that followed the pace of geological eons, whose change is imperceptible during a human's lifespan, have accelerated their inner clock to an almost human rhythm, depending on human-made erosion and preservation. In terms of place, these geosites have become what they are due to human intervention, mostly through extraction of materials and exploitation of the land, and these processes are precisely what made them visible as sites worth preserving and visiting. Their metaphysical status as geosites, thus, is dependent on cultural, historical, and conceptual contexts. It is also dependent on the preservationist interventions undertaken and the criteria followed to determine such interventions. These issues are reflected aesthetically as well and consequently have an impact on the way we perceive, understand, and live the place, especially if one considers aesthetic experience not just as concerning perception, feelings, and emotions, but takes it as a primarily cognitive endeavor. Preserving destruction is thus not just an undertaking part of geoheritage but has relevant metaphysical, epistemological, and aesthetic outcomes.

2 Geosites and philosophical context

Geosites are places of geological interest. The criteria to determine their geological significance and value vary and range from uniqueness, representativeness, relevancy, place, time, or context.[1] Geoheritage focuses on the preservation of geosites not only because of geological or scientific reasons but also because of aesthetic, cultural, pedagogical, and economic ones.[2] Within geoheritage, there are several subspecialties, including that of volcanic geoheritage, which focuses on the specificities of volcanic areas, be they extinct, dormant, or active.[3] Geotourism, the "knowledge-based type of tourism" that integrates "tourism industry with the conservation and interpretation of geological heritage," has greatly influenced the preservation of geosites and promoted the sustainable economic and social development of the communities living there.[4] The intertwinement between geological and lived environment is even more striking in urban geosites, which are those sites of geological interest placed within an urban environment or, the other way around, cities with relevant geological features that deserve being preserved. Because of their location, they are more influenced by human activity, in particular urbanization; some scholars speak of anthropogenic pressure to describe the urgency and necessity of preservation.[5] Urban geoheritage entails specifically the preservation of geological assets in such urban geosites.[6]

The criteria to determine what counts as a geosite or an urban geosite and, in general, what counts as worthy of being preserved and considered as heritage, be it natural, cultural, or mixed,[7] are not straightforward. Current discussions within the field of critical heritage studies question established understandings, definitions, and practical applications: they question the distinction between natural and cultural heritage; they criticize the approach to heritage by global organizations as Western-centric, noninclusive, and overlooking values significant for the local communities; they offer new ways to rethink loss, decay, and destruction; they theorize our present relationship to the past and how we experience heritage; and they explore novel ways of writing about heritage by emphasizing the importance of creating

1 For a general context see UNESCO's *International Geoscience and Geoparks Programme* (*IGGP*) and for criteria see the Global Geosites Project by the Instituto Geológico y Minero de España.

2 For a brief definition of "geosite, geoheritage," and related terms see Habibi et al., "Urban Geoheritage Complexity," 86.

3 See the special issue of the journal *Geoheritage*: Nemeth et al., "Volcanic Geoheritage."

4 Planagumà and Martí, "Geotourism," 1.

5 See AbdelMaksoud et al., "Geological heritage."

6 For a brief introduction to the literature on urban geoheritage see Habibi et al., "Urban Geoheritage Complexity," 85–7.

7 UNESCO lists several world heritage sites as "mixed sites" or "mixed properties," which "derive their outstanding universal value from a particularly significant combination of cultural and natural features." UNESCO, *Glossary of World Heritage Terms*.

stories relevant to a site. In sum, recent scholarship proposes new ways to contemporaneously engage with the world's heritage, challenge and improve heritage policies, and propose new theoretical and conceptual frameworks.[8]

Urban geosites, thus, are constituted by both urban and natural environments; even more, they are inextricably linked and cannot be conceived one without the other; they are mixed sites.[9] This characteristic is at odds with the distinction made in traditional philosophical aesthetics, where aesthetic appreciation of art is separated from that of nature, where human and nonhuman environments are discussed separately, and where aesthetic reflection is mostly devoted to art. It is not until the emergence of environmental aesthetics and of aesthetics of everyday life as academic disciplines at the end of the 20th century that this dichotomy has begun to break at a theoretical level – a move parallel to that occurring in heritage studies.[10] Environmental aesthetics focuses on natural environments, including those influenced by humans; aesthetics of everyday life expands the scope of environmental aesthetics to examine any kind of objects and activities in everyday life that take place in such nonartistic environments. Urban geosites challenge the clear-cut distinctions between the urban and the nonurban prompt to think the city within a geological frame and geology as an urban milieu.

In the case of Olot, it is precisely the destruction triggered by urbanization which created awareness of the site's geological features and caused the place to become a geosite. This metaphysical change, from being merely an inhabited place to being a site of geological value, is epistemically accessible through aesthetic perception, especially if one considers – as is done in this essay – that aesthetics has a primary cognitive role and that the objects of aesthetic appreciation are symbols that convey meaning and need to be interpreted. Through the aesthetic experience of our surroundings, we do not just experience beauty or have an emotional response to them but engage in a cognitive endeavor of interpreting and creating meanings. This does not mean that aesthetic experience cannot be pleasurable or that it does not involve feelings and emotions, but that these are already cognitive. Together with the senses and any other understanding we have, we discern the symbolic functioning of our surroundings and create and interpret the meaning.[11] Preservationist interventions in the urban geosite, thus, have an effect not only on the metaphysical status of the site, i.e., what the site is, but also on how the site looks like and what it means.

3 Olot: geology and history. A sketch

Olot is the biggest urban center in the Natural Volcanic Park of La Garrotxa, the only area in the Iberian Peninsula with volcanoes (Figure 1).[12] The Park was founded in 1982 to protect the unique geological environment and landscape of the area. It is a 15-hectare Holocene[13] volcanic field that includes forty volcanic cones ranging from 5,000–7,000 to 700,000 years old. The Park includes 28 natural reserves and

8 For a general overview see Harrison, *Heritage: Critical Approaches*; for the most current debates in heritage studies see the *International Journal of Heritage Studies*, in particular the issue edited by DeSilvey and Harrison "Anticipating Loss;" for explorations on how to engage with decay and destruction see, for example, Rico, *Constructing Destruction* and DeSilvey, *Curated Decay*, who also explores forms of writing about heritage; for a critical discussion on natural and cultural heritages see Harrison, "Beyond 'Natural' and 'Cultural' Heritage."

9 See footnote 7.

10 For an overview of environmental aesthetics see Carlson, "Environmental Aesthetics," Carlson, *Aesthetics and the Environment*; for an overview of aesthetics of everyday life see Saito, "Aesthetics of the Everyday," Saito, *Everyday Aesthetics*, Saito, *Aesthetics of the Familiar*.

11 I take here as my main philosophical framework Nelson Goodman's conception of aesthetics as an essential part of epistemology that contributes to understanding in a unique way not completely translatable to propositional knowledge. See, among others, Goodman, *Languages of Art* and *Ways of Worldmaking*. See also Goodman and Elgin, *Reconceptions in Philosophy*, Elgin, *True Enough*, Capdevila-Werning, *Goodman for Architects*.

12 For more information about de Park see the Park's official website.

13 Holocene refers to our current geological epoch that began around 11,650 years ago, after the last glacial period.

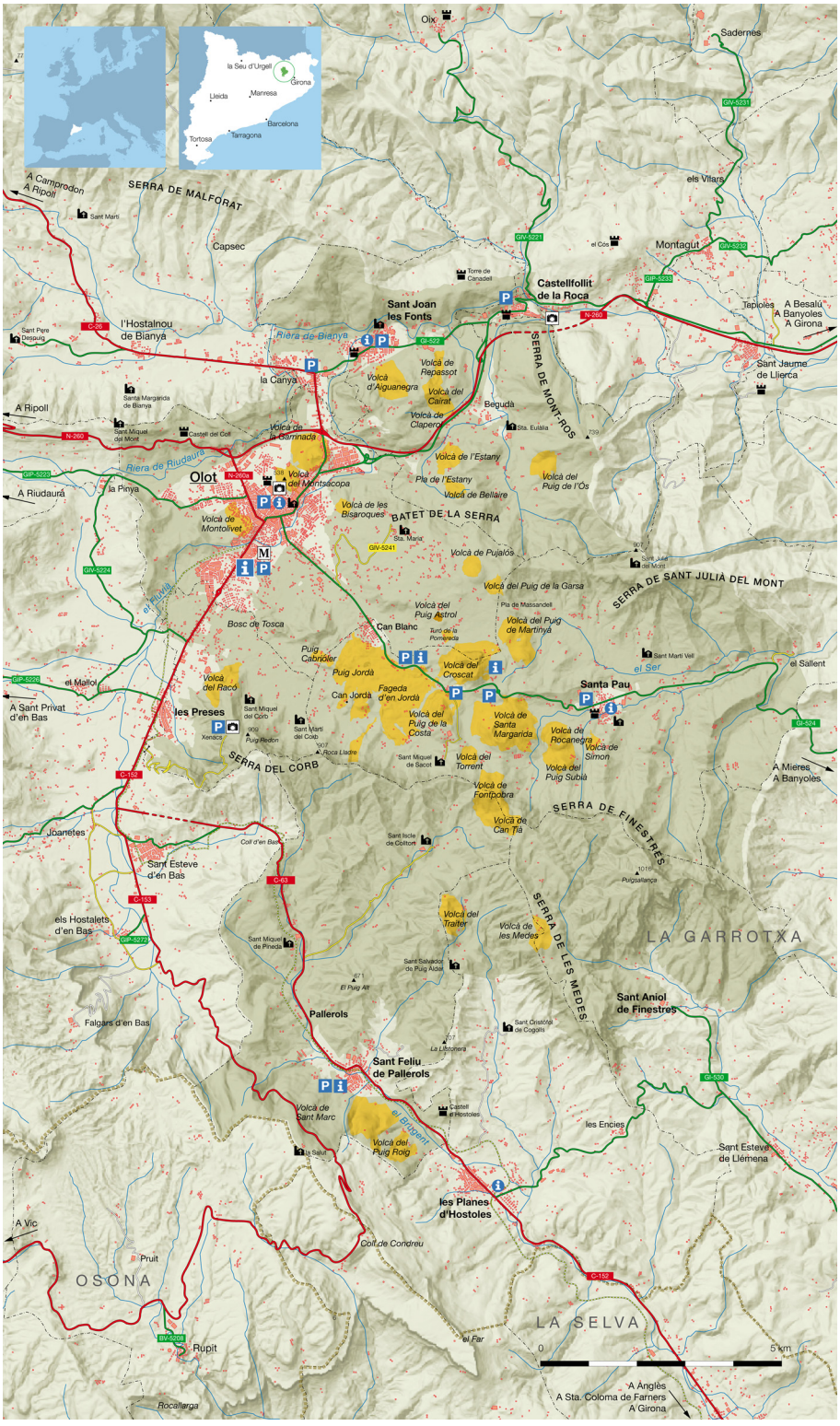

Figure 1: Map of the Natural Volcanic Park of la Garrotxa. Source: Parc Natural de la Zona Volcànica de la Garrotxa, *Plànol del Parc Natural*. UTM fus 31N, European Datum 1950. Institut Cartogràfic i Geològic de Catalunya.

11 municipalities with a total population of ca. 40,000, with Olot as the most populated urban area with around 35,000 inhabitants. Olot, at an altitude of approximately 400 m above sea level, extends amid four

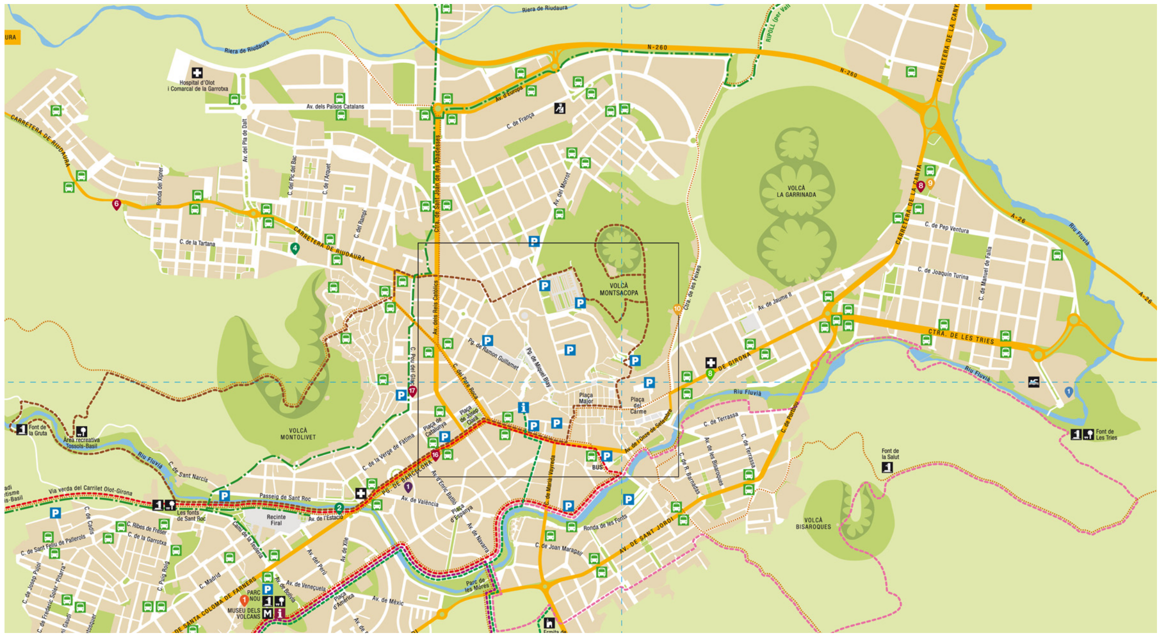

Figure 2: Map of Olot. Source: Associació la Garrotxa Terra d'Acollliment Turístic, *Mapa Garrotxa*, 2018.

dormant volcanoes: Montsacopa or Sant Francesc, Garrinada, Montolivet, and Bisaroques (Figure 2). These volcanoes, as most of the ones from the area, consist mainly of a volcanic rock known as "greda," or lapilli, little stones ejected by a volcano during eruption. Each displays particular features. The Montsacopa or Sant Francesc volcano is the most central of all four, and its southern slope being the limit of the historical downtown. It features a chapel devoted to Saint Francis (that is why the volcano is called also after the saint's name), fortification towers from the late 19th century circling the volcano's crater, and houses and vegetable gardens all around the lower extents of its slopes. The Garrinada, just east of Montsacopa, has three craters, and its slopes include agricultural fields and housing (Figure 3). The Montolivet volcano, south-west of the city, is the most urbanized; a neighborhood of more than three hundred free-standing houses was built on its northern slope in the 1950s as a social housing project promoted during General Francisco Franco's dictatorship (1939–1975). These three volcanoes are aligned on the same fracture in the earth's surface. Finally, Bisaroques is the smallest of the four and has horseshoe-shaped crater due to two different explosions and used to have a defensive tower from the 19th century but no longer extant.[14]

Olot is shaped by these urban volcanoes while, conversely, the volcanoes are also shaped by the city: houses and vegetable gardens populate the volcano slopes, basalt cobblestones pave the streets, and the volcanic orography determines neighborhoods and the street grid. Both the life and the aesthetics of the city depend on this symbiotic relationship, and this relationship can be traced back to the origins of the current city of Olot.[15] Documentation on a settlement named Olot dates back to 872; documents specifying the consecration of the main church date 1116. It was in 1427 and 1428 that the town (then around 300 homes) was entirely reshaped due to two earthquakes. The village was completely destroyed and rebuilt not on the existing grounds but just nearby. This decision carried an important consequence: the resettlement entailed a change of jurisdiction, from the nearby Monastery of Ripoll to the Counts of Besalú, which provided more political independence for Olot and which determined the fate of the city

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14 For more information about these volcanoes and the geological characteristics of the area see Martí et al., *Volcanoes: A Field Guide*.

15 For a detailed history of Olot see Puigvert, *Una història d'Olot en 10 moments*; Canal, *Olot;* Gutiérrez, *Història de la Garrotxa*; VV.AA., *Quaderns d'Història d'Olot*.

Figure 3: Montsacopa (front) and Garrinada (back) volcanoes, around 2018. Source: Photo courtesy of Eduard Masdeu Jordà.

until today. So a geological event shaped not only the form of the city but also its history. The city continued to benefit from the volcanic resources, from providing fertile soil for cultivation to construction materials. In fact, the Montsacopa volcano was the local quarry from the 16th century until the 1960s, when the site was abandoned because it was no longer profitable to extract volcanic materials from there.[16]

It was also in the 1960s when the symbiotic relationship between volcanic and urban environments in Olot was irreparably transformed due to an essential change that has had ongoing consequences for the place, the way it is being lived, and its understanding. As discussed in Section 4, this change has also enabled a metaphysical change. At that moment, though, this transformation was not caused by a geological event but rather by human intervention. The industrialization of the area, with the indiscriminate urbanization of rural, agricultural, and previously untouched grounds, the paving of many roads, and especially the exponential increase of extraction of volcanic material for commercial purposes transformed the environment irreversibly. This increase in extraction was due to the introduction of heavyweight machinery and due to the fact that the extraction was monopolized by a single company with connections to both local and state politicians (Spain was a fascist dictatorship at that time). In addition, the extraction took place at the heart of the volcanic area, thus destroying one of the area's most important volcanic specimens: the Croscat volcano (Figure 4). Rising 160 m above the surrounding land, the Croscat is the tallest volcano in the Iberian Peninsula, and, at 11,500 years old, it was the latest to erupt in the area. It erupted three times, with the last creating its characteristic horseshoe-shaped crater and emanating a 6 km lava flow that was later covered by one of the only beech forests in Catalonia – La Fageda d'en Jordà.[17] This is not strictly an urban area, but its orography was affected by human

16 Gil, "Ciència i medi ambient," 20.
17 Martí et al., *Volcanoes: A Field Guide*, 74.

Figure 4: Extractions at the Croscat volcano, around 1980. Source: Lluís Pallí Buxó. Universitat de Girona. Biblioteca. Fons Lluís Pallí: register 644.

intervention, not just because of the extraction of volcanic materials but also because the empty space left by the extractions was filled with garbage from Olot and the nearby town of Santa Pau, thus creating an open-air dump that contaminated soil and water (Figure 5).

The destruction of the Croscat was the tipping point that caused the uproar of the civil population who mobilized and created the "Comissió Promotora per a la Protecció de la Zona Volcànica" ("Commission Promoting the Protection of the Volcanic Area") in 1976. This movement, popularly known as "Salvem els volcans" ("Save the Volcanoes") culminated in 1977, when the closing event for the "Campanya per a la Salvaguarda del Patrimoni Natural" ("Campaign for the Protection of Catalan Natural Heritage") – a campaign organized by the foundation "Congrés de Cultura Catalana" ("Congress of Catalan Culture") to protect natural landscapes – took place in Olot.[18] In addition to the programmed events, some of the activist acts included occupying the volcano and sabotaging the machinery. Eventually a law at the regional jurisdictional level (Catalan government) was passed in 1982, which declared the space to be a Natural Site of National Interest and the Natural Volcanic Park of La Garrotxa was established. However, it took seven more years to close the dump in 1989, and it was not until 1991 that the extractions of volcanic rocks ceased after long negotiations with the owners of the quarry. The protected area has been extended throughout the years; and its current limits were set in 2010.

18 For more information see website of the Congrés de Cultura Catalana.

Figure 5: Dump at the Croscat volcano, around 1980. Source: Lluís Pallí Buxó. Universitat de Girona. Biblioteca. Fons Lluís Pallí: register 646.

The year 1982 marked another turning point. While the first change happened in the 1960s when the symbiotic relationship between city and environment was broken due to the exploitation of natural resources, twenty years later the area moved away from destruction and started a gradual process of preservation that is still ongoing. The area started being considered a geosite, and precisely the preservation of destruction is what made the area attractive and conveyed it the status of geosite, that is, an area whose value is not only geological but also aesthetic, cultural, and economic. The first preservation works at the Croscat volcano took place between 1994 and 1995, with the purpose of recovering the morphology at the basis of the volcano, replanting the slopes, and sealing the dump. The landscape intervention received the FAD award in 1994 (the most prestigious design award in Catalonia), praising its aesthetic value (Figure 6). A similar process happened in the Montsacopa volcano in Olot. The city undertook measures to preserve the volcanic slopes (known as "grederes," very porous and unstable due to the fact that they are made out of "greda" or lapilli), regulated the traditional urban vegetable fields, banned motorized access to the top of the volcano, created new walking paths and signage, and as recently as October 2017 opened a café and restaurant next to the chapel. By the end of summer 2021, it is planned that the "Espai Cràter," a Volcanology Interpretative Center, will open its doors at the base of the Montsacopa, right next to the cemetery as an underground room that is literally placed inside the volcano and that one will access through a "fissure" – not one created with the volcanoes' eruption but an artificial one.[19]

19 For updated information on the "Espai Cràter" visit the site by Ajuntament d'Olot. For detailed information on the history of the Natural Park see Bassols, "Parc Natural" and "Els volcans salvats," Gil, "Ciència i medi ambient," Martí and Planagumà, *La Garrotxa Volcanic Field*. See also the documentary Planagumà, "Salvem els volcans."

Figure 6: Croscat volcano, before and after preservationist intervention. Source: Parc Natural de la Zona Volcànica de la Garrotxa.

4 Philosophical issues of geosites: time, space, and aesthetic qualities

The transformations that Olot and its surrounding area have undergone throughout time have had not only physical but also metaphysical consequences. This section focuses on the philosophical issues that were triggered by the extraction of natural resources and the further movements of preservation, namely, time, space, and aesthetic qualities. It also shows how metaphysical, epistemological, and aesthetic concerns go hand in hand.

The first aspect concerns time. In urban geosites such as the one composed of Olot and its surroundings, two diametrically opposed conceptions of time collapse: on the one hand, the geological time, which is measured in eons and where change is imperceptible during a human's lifespan, and, on the other, the human time, which is much more accelerated and where change is certainly perceptible by us. Human-paced time has affected geological time by accelerating the pace of erosion and change to a speed never experienced before.[20] Extraction has uncovered areas that had never been exposed to weather and human presence, and this has caused an unprecedented erosion and acceleration of its deterioration, no matter how many preservationist measures are taken. In a sense, the awareness of the value of such sites produces another rhythm and pace in which matter transforms. This awareness further contributes to

20 For an excellent analysis of geological and human time see Szerszynski, "The Anthropocene Monument." For an outstanding examination of the liveliness of stones and our engagement with the most inert matter see Cohen, *Stone*.

the perdurance of this collapsing of two times, as the promotion of the site through education and tourism perpetuates both destruction and protection. Tourism or, more specifically geotourism, plays a key role in the creation of a geosite, because most of the interventions in such areas are precisely to allow access and visibility while protecting the site from such access. Geoheritage consists of preserving such areas. To preserve them entails that they are made public, which means both granting cultural value and open access. The more value of a site, be it aesthetic, pedagogic, historical, social, or cultural, the more public awareness there is and the more geotourism is generated, which means that the geosite is more prone to being damaged. That is to say, the more awareness of and understanding about the geosite there is, the more potential destruction is created and more protection is needed. All these present considerations about how to preserve the site concern also the future, as they affect how the geosite will endure and how it will be lived and experienced. In this sense, geosites are intrinsically intergenerational entities, as they are preserved not only for us today but mainly also for the future generations. From the moment in which the future is taken into account, which is the very moment in which geosites are preserved, the geosites lose their geological temporality and enter a human one.[21]

The second aspect concerns space or, better, place. The changes that happened in the last fifty years (described in the previous section) transformed Olot and its surroundings into the so-called geosite, specifically an urban geosite. There is an underlying paradox at the root of the preservation of geological urban sites, which is that these geosites have become what they are due to the radical human intervention. That is, without human intervention these places would probably not be in need of preservation; their current geological value and rationale for being preserved is a consequence of unprecedented human destruction and exploitation. Humans have always exploited their surroundings for survival purposes (from hunting and gathering to agriculture and herding), and the case of Olot is not an exception: people would build houses, farm fences, and huts and would make cobblestones using volcanic rocks directly extracted from the area by manual means. But the quantitative change in exploitation has brought about a qualitative change in the metaphysical status of the place, as it ceases to be an urbanized place within volcanoes where both coexist in a symbiotic relationship and become a geosite whose status – and its spatiotemporal features – is dependent on cultural, historical, and conceptual contexts.

A geosite, thus, emerges when destruction is preserved. This preservation of destruction creates something new, but it is not trying to recreate how the landscape looked like before human intervention (which would be very difficult to determine as human presence entails already a modification to the place). In this case, the purpose of geoheritage is not to return to an ideal and untouched state of nature but rather to embrace the most recent transformations. Even more, the geological history becomes only explicit through such human instances of destruction of the site. In Olot, the awareness of such history and of the inherent value of the local environment did not begin until the industrial exploitation of the volcanic sites in the 1960s. The campaign to save the volcanoes in the 1970s entailed the active participation of schoolteachers to promote the understanding and appreciation of one's own homescape, which quickly moved from students to their families and the general population. The history of the place as geologically relevant did not emerge until the destruction had already been made. So the geological ground of the geosite is in a sense a human product as well, which is precisely the crux of the first paradox, namely, that these geosites have become what they are due to radical human intervention. Note that while the first intervention entailed physical destruction, the second one, i.e., preservation, entails both a physical and a conceptual aspect, since without the value conveyed to the geological features of the sites, there would have been no reason to preserve it, nor it would have further become a geosite. This is why the metaphysical status of geosites is dependent on cultural, historical, legal, and conceptual contexts. It is also dependent on what criteria are applied when preserving the site. A comparison of this preservationist approach with some of those used in historic preservation, that is, preservation of monuments and architectural sites, may be helpful at this point.

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21 For more information on intergenerational ethics see Meyer, "Intergenerational Justice" and on intergenerational aesthetics see Lehtinen, "Buildings as Objects of Care."

Preservationist interventions in architecture can be classified from less to more invasive, beginning with cleaning and maintenance, continuing with rehabilitations and adaptive uses, restoration, stabilization and repairs at a major degree and finishing with integral restorations and total reconstructions.[22] The preservation of the geosite of Olot and surroundings runs parallel to that of stabilization and repairs at a major degree and integral restorations in architecture. Specifically, some aspects follow what is termed a purist or archaeological restoration, where substitutions or additions have to be visible to avoid any pretense of authenticity, and others follow the criteria of integral restorations, whose purpose is to repair an architectural work so that it looks like a whole that has not undergone any repair. The first case can be exemplified by the intervention at the Romanesque Monastery of Sant Pere de Rodes (in the north-east of Spain, about 75 km east of Olot). Built mainly during the tenth and eleventh centuries, the monastery was abandoned at the end of the eighteenth century and restored between 1989 and 1999.[23] As a purist intervention, the missing elements (arches, columns, and capitals) were rebuilt with concrete, thus showing that they were prostheses to an extant work and making such later interventions visible and showing the time gap or décalage between original work and intervention. Other cases of such purist or archaeological restorations take another approach, which can be called palimpsestic; and instead of just showing a time gap, their purpose is to show all possible layers of matter to try to make visible the passing of time and the different phases that a building or a site has experienced. This is the case of the Neues Museum in Berlin. Originally built between 1843 and 1855, the building was bombed during World War II and left a ruin for almost fifty years. Some basic maintenance prevented the building from collapsing and, in 1997, architect David Chipperfield and preservationist Julian Harrap were commissioned the reconstruction, which ended in 2009. The project's guiding principle was, according to the architect, "to create a new building from the remains of the old, a new building that neither celebrates nor hides its history but includes it. A new building that was made of fragments or parts of the old, but once again conspiring to a completeness."[24] While archaeological or purist interventions aim at truthfulness, they are not unproblematic. The case in Sant Pere the Rodes shows the décalage between initial construction and intervention but does not include the history of the place. The intervention at the Neues Museum, with the layers of matter aimed at showing the passing of time and the history of the place, shows more than had ever been shown (by exposing the brickwork without any cladding, for example) and, more questionably, other extant parts, such as the prefabricated doors added in certain thresholds in GDR times, were eliminated, thus enabling visible access to a certain period of history not possible. There has thus been a selective process of the layers that are shown which leaves parts of the site's history untold while simultaneously claiming that it is a truthful intervention, which creates a situation of deception.[25]

The second case, that of integral restorations, entails bringing the initial appearance of a building as though no time had passed. The patina of time is erased and the buildings are presented in their permanent youth. Such would be the case of the Guggenheim Museum in New York City, whose restoration between 2005 and 2008 brought the 1959 appearance back. In another icon of modern architecture, Le Corbusier's Villa Savoye, the integral restoration finished in 1997, not only entailed to bring the building back to its original 1931 appearance but made the house livable for the first time, as the original building had so many leaks that it was actually raining inside and hence inhabitable. Paradoxically, thus, the Villa Savoye was suited to fulfill its primary function of housing when it ceased being a house and became a world heritage site that can only be visited. A final type of integral restorations could be called inventive or hypothetical and is exemplified by the projects of Viollet-le-Duc, the 19th-century French architect, who among others restored the Cathedral of Notre-Dame in Paris was responsible for its look until the past fire in 2019. According to him, restoration consisted of "reinstat[ing]

22 For an extended analysis of the philosophical consequences of such interventions see Capdevila-Werning "Constructing the Absent."

23 For more information on the Monastery see Lorés, *El monestir de Sant Pere de Rodes*.

24 Chipperfield, "Neues Museum Berlin," 11.

25 For an extended discussion of the intervention at the Neues Museum see Capdevila-Werning, "Palimpseste in der Architektur."

[a building] in a condition of completeness which could never have existed at any given time." So restoration is an act of creative imagination based on some sort of historical evidence, yet in the end a fantastical enterprise. In Notre-Dame, for instance, the spire, the gargoyles, the gallery of Kings of France, and the rose window were added or modified according to an image of what Gothic should look like but that had never been. Restoration is for Viollet a process of perfecting an existing building to bring it to its so far inexistent ideal state. From today's perspective, these restorations are materialized nineteenth-century interpretations of medieval architecture.[26]

Parallel processes occur in the case of geosites. In Olot and surroundings, the aim is to preserve what has been done (and also destroyed) by humans: what had already been built, the "grederes" or volcanic slopes that were created due to extraction as well as the continuation of the economic and traditional activities characteristic of an urban environment (real estate, vegetable gardens, and nowadays especially tourism). To do so, regulations for sustainable use have been developed. The purpose is, thus, to maintain a livable and inhabitable space, while preserving it as well. It is not what happened at the Villa Savoye, for instance, where the house ceased being a house and became a museum. Rather, it seems that the prevailing criterion resembles that of a palimpsestic preservations, given that the several layers of materials show the history of the place, both human and geological. At the Montsacopa, the empty space left by the first extractions at the southern slope of the volcano remains uncovered, with minor signaling forbidding access, some spontaneous vegetation growing and displaying several kinds of geological specimens, from volcanic rocks to soil. Most of the recent interventions, willingly or not, are also clearly visible: electric poles, water drainage channels made out of concrete, retaining walls to enable the construction of houses on the slope, or rudimentary water deposits to collect water for the vegetable gardens. At the Croscat, the massive cut that sliced the northern slope of the volcano from top to bottom has been left as is, showing the bare volcanic rocks. The only additions have been inconspicuous access roads and corten-steel fences to prevent further erosion and delimit accessible areas.

Other interventions run parallel to other cases in historic preservation. The Pedra Tosca Park, for instance, a protected area since 1985 and whose name literally means "rough stone park," is an area that was formed from a lava flow from the Croscat. There, the abandoned fields have been restored to reintroduce traditional agricultural and architectural techniques used about a century and a half ago, all of them related to the volcanic orography of the site. While volcanic soil is very fertile, it is also very rocky. In order to create small fields for crops, called "artigues," people moved volcanic rocks one by one and created dry-stone walls to delimit the fields; they also built stone huts made out of volcanic materials to store farming tools. The Park has also recuperated and planted traditional crops such as buckwheat, turnips, corn, and rapeseed.[27] This intervention is similar to those that bring back a building to a specific point in time, freezing it there without showing its passing, such as the case of the Guggenheim Museum in New York City. Finally, there is the intervention at the dump created to fill the empty space caused by the extractions at the Croscat. Here, the dump was sealed and covered with grass, so that it is no longer visible nor detectable, thus erasing one layer of the history of the place. Even more, it seems as though one of the worst episodes of the history of the place, the clearest testimony of the fatal consequences of the Anthropocene is being erased and, instead, the geological layers seemingly not caused by humans are shown. This intervention at the dump would be parallel to Viollet's projects, as the final result is not recreating how the place looked before – a volcanic slope – but rather recreating it and bringing it to an ideal site that had never existed before – a field of green grass. Since this intervention is placed within a context where the majority of interventions are visible and the traces of destruction and preservation are acknowledged, there is the danger of taking the place where the dump was as being what it is now.

Finally, the third philosophical issue concerns aesthetic aspects. Specifically, the geosite's appearance and its consequences. How the site looks has an impact on its perdurance and its understanding.

26 For a parallel example of an intervention *à la* Viollet see, Capdevila-Werning, "From Berliner Stadtschloss to Humboldt-Box."

27 For more information see Fairs, "Pedra Tosca Park."

Aesthetically beautiful landscapes that show the geology of the site draw more visitors and, consequently, simultaneously destroy it, as the mere presence alters the site. This is especially true in the case of the volcanoes in La Garrotxa, where the "grederes" are highly sensitive to foreign presence: just walking on or touching them disintegrates them. Vegetation was what usually prevented the erosion of the site, but replanting everything and going "back to nature" as though human presence had never been there is no longer an option for the whole site, nor it would be an option to completely close off the area and recreate the site somewhere else (as happened with the paleolithic cave of Altamira, in Cantabria, north of Spain, World Heritage Site since 1985[28]), as it is an urban and lived environment.

The alternative is thus an attempt of a well-balanced preservation and sustainable usage of the urban geosite, which entails a plea of being true to the site and, like palimpsests, use matter and the tectonics of the place to both preserve and tell the history of the site. Specifically, the layers of "greda," soil, vegetable gardens; the built environment – from the cobblestones to the volcanic rocks used in several buildings or dry walls; the voids left by extraction; as well as all the preservationist interventions aimed at making visible this history, all these and more have the capacity of creating and conveying meaning. In this sense, as mentioned in Section 2, they can be taken as symbols that convey meaning and that are open to interpretation. Take the "greda." We perceive its size, the little holes that traverse them, and its color variations: from dark brown to dark grey. We may relate these features to how the "greda" originated: the holes were created by the pockets of air captured within the lava from the volcanic eruption and its size is also determined by the rapid solidification of the erupting particles. By stepping on to the "greda" or gently touching it, we hear the sound of the moving grounds and experience its fragility. We understand why the soil is permeable and thus so fertile and, at the same time, why it is so difficult to use as a building foundation. When we see small pieces of "greda" embedded in walls and buildings, we get why so much cement and other materials were needed to hold structures. By comparing the "greda" with the cobblestones made out of basalt, we learn about the differences in qualities and origins of other volcanic rocks and recognize the rationale of using them in different circumstances. We perceive and experience the symbiotic relationship between city and volcanoes, and we may further get an awareness of the complexities and fragility of preserving this environment and maintain its livability at the same time.

The history of the urban geosite can thus be extracted from the matter that conforms it by aesthetically experiencing the place. In terms of matter, this history can be understood also in terms of transplanted geologies. In Olot, matter is transplanted from volcano to city: the main churches include volcanic stones, there are many drywalls separating fields and other walls throughout Olot that are made out of "greda" and basalt, and the traditional cobblestones paving the streets are made of basalt as well. The other way around, matter is transplanted also from city to volcano: in the Montascopa, there are benches throughout the crater, concrete paves the access road, bricks and steel are used for the fortification tower and the chapel of Sant Francesc, and electricity poles travers the slopes. There is thus a geological migration of elements that further intertwines urban and nonurban. Geoheritage and the measures put in place to preserve and protect the area aim at being true to the site by respecting the matter and aiming at authenticity. In terms of aesthetic experience, the aim is to grant cognitive access and enable truthful interpretations in order to avoid deception and misunderstandings. This, however, is not as easy as it might seem, which adds another layer to what constitutes an urban geosite. Currently, most of the cobblestones used in Olot are imported from China because the cost of local extraction is too high and because some volcanic materials are no longer allowed to be extracted in the area. In addition, also because of costs, cobblestones are no longer used and reused as they were when developed, that is, replaced individually when damaged or provisionally removed to fix sewage or other buried infrastructures and then put back again. Rather, they are destroyed, brought to the (now regulated) local waste treatment facility, and replaced by new ones. The initial transplantation of matter from volcano to city and *vice versa* has reached a global scale and the authenticity of the geosite is preserved by

28 For more information on Altamira see the UNESCO's site on the cave.

the inauthenticity, at least inauthenticity in terms of matter, not of perceived appearance.[29] Matter, the tectonic element that constitutes the site, its literal ground and foundation, is replaced by a phantasmagoria, as Walter Benjamin would say,[30] a phantasmagoria that veils the networks of commodity exchange, drawing the hard materiality of geology into the immaterialities of global capital. This might as well be the phantasmagoric fate of any geosite, where the global demands of preservation transform the matter of the site at its core. Aesthetic aspects, thus, do not just concern perception but have metaphysical and epistemological outcomes.

5 Conclusion

Urban geosites are complex and ever-evolving entities. Preservationist interventions aim at preserving and promoting geological assets without hindering the habitability of the site. Geoheritage and geotourism have to balance between preserving sites and granting access to them, which puts them in further danger of destruction. The more known these sites are, the more visitors and economic revenue they generate, and the bigger the risk of damage. All these practical aspects have their philosophical counterpart. In geosites, time is accelerated – from a geological to a human pace, as happens with the erosion caused by exploitation; collapsed – human and geological time coexist and intertwine, as they influence each other; concurrent – diachronic events become simultaneous when moments in time are brought back to the present, as happens with the Pedra Tosca Park; and erased (as when events are no longer perceivable, such as the covering of the destruction caused by the dump). In addition, current interventions in the present regarding the past of the site also have future consequences, and this is why intergenerational concerns should be taken into account. In terms of place, geosites emerge due to human intervention – destruction and preservation, not just because of their geological features. Place is created by preserving it, and this entails a balance between authenticity and artificiality (consider the imported cobblestones). The criteria for preservation – from purist or archaeological interventions that entail visible prosthesis or palimpsestic layers of matter to integral restorations that delete the patina of time or even reinvent the past – all these determine the metaphysical status of the place and how it will be lived and understood. Finally, aesthetic aspects of the geosite are central as they bring together spatiotemporal and epistemological features. They are the access to experiencing, interpreting, and understanding the site. Since interpretation is open-ended, it is crucial to develop interpretative centers (consider the planned "Espai Cràter" and all the pedagogical guides and resources created by the Natural Park) that can guide visitors toward ways in which to understand and engage with the site, as construing the geosite is also constructing it. Preserving destruction is much more than mere preservation: it brings about geosites.[31]

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29 For a discussion on the notion of authenticity as it relates to pastness see Holtorf, "On Pastness." Holtorf's approach is problematic as it seems to refrain from any conception of truth when experiencing the past.

30 See Benjamin, "Paris," 14–26.

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