

G_A_P

*Project of the archaeological pole of the Grottelline site
in Puglia. Methods and strategies of contemporary reuse.*

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1_ABSTRACT

The perception of the landscape that changes over time is at the base of the symbiosis between the work of man and the nature that surrounds it. The environment, with its resources, with its particular geological conformation, has influenced the architecture since its origins. The karstic territory of Puglia, in particular of the appulo-lucana area, represents an ideal scenario in which the combination of man and stone is the protagonist. Specifically, the Grottelline site constitutes a journey into the history of the rocky settlement dynamics; a palimpsest between the synergies of natural and anthropic structures, between the hypogean volumes and the architectural elements above ground. The manipulation of the stone material is, in this context, a fundamental element in the development of settlement prototypes both for the construction of its dwellings, tombs and places of worship. The natural consequence of this relationship has been the human research of ever more advanced techniques of appropriation of matter. The starting point of this continuous evolution is the dwelling in the natural caves, the primordial revival of hypogean volumes up to the extraction activity to build above ground. The testimony of this evolutionary path must start from the enhancement of these riches, giving a new twist to the common development between man and nature. It is not enough to talk about retraining in the traditional sense without interpreting the recovery as an opportunity for re-emissions in life of these places through the insertion of human functions and re-naturalization interventions to promote value reconnection systems environmental, historical and cultural.

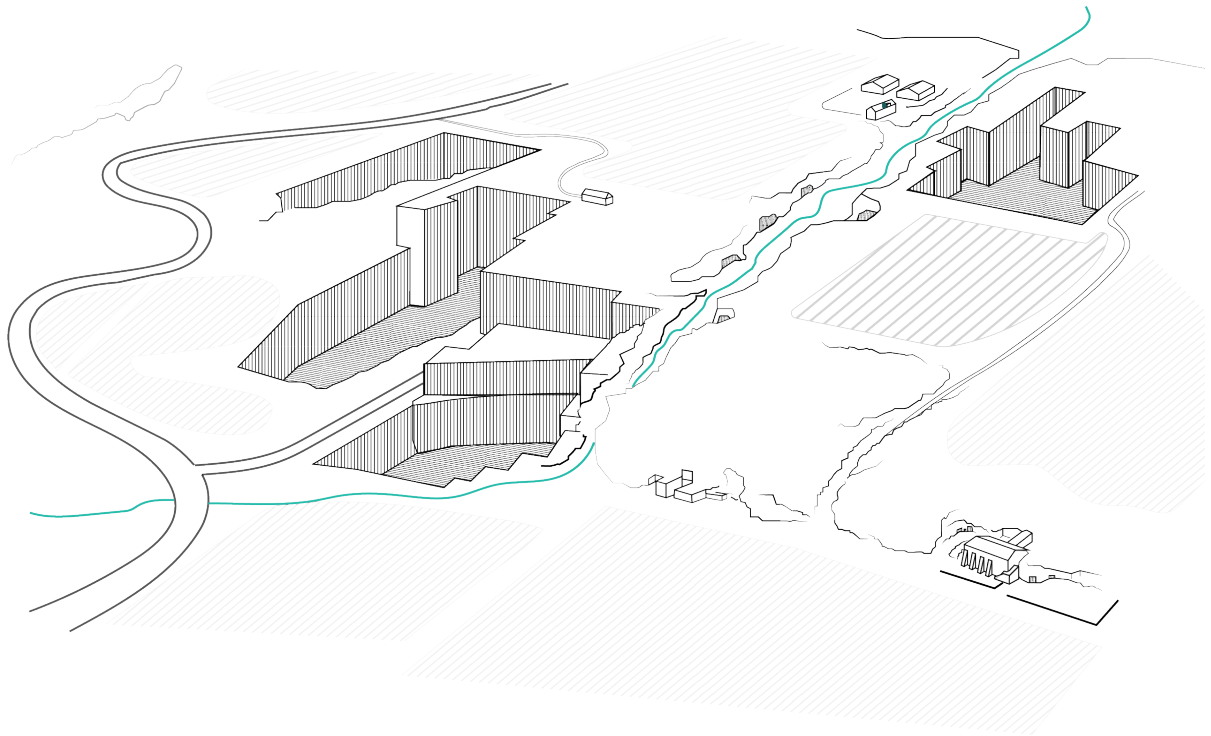
2 RECOVERY METHOD AND STRATEGIES OF GROTELLINE SITE



2.1 THE PATH FORMATION OF GROTTELLINE

During the cognitive reading of the Grottelline project area, the presence of areas and goods with a notable cultural and landscape interest was detected on the site concerned. The area is made up of a series of sloping hillsides with a slight slope from the pedemurgical plain towards the valley of the Roviniero stream, a tributary of the Basentello river. On the Grottelline site there is an articulated system of 3 disused calcarenite quarries from the 70s of the last century. The inexperienced cultivation, eliminating the rocky mass that constituted the right flank of the blade, allowed the water to overflow in the quarry placed further south in which a perennial pond was formed. This human error meant that the mining works ceased altogether. The whole extractive area is characterized by an extremely articulated morphology; the quarry basins do not have a constant depth, in fact there is a minimum depth of m. 12 to a maximum of more than 50 meters for the quarry to the southwest and a minimum depth of 20 meters and a maximum of 50 meters for the quarry to the south. The quarry positioned further north is the one with a larger surface and is strongly correlated, due to its proximity, with the Salomone masseria and the ravine. The deep engraving of the gravina, present on the site, also reveals the geological history of this area. It is therefore possible to identify different geological formations which, with the karst of the north, are welded to the

north with the karst ones of the Murge and to the south with the debris of the Fossa Bra-danica. For the Grottelline site, the numerous caves placed inside the ravine, crossed by a watercourse, attest with absolute certainty an anthropic acquaintance documented through the numerous inscriptions and images that are still visible today. The site has been the subject of study in which archaeological excavations were alternated during the years 2004-2005 by the University of Pisa. The results of the excavations have brought to light a Neolithic settlement with traces of housing structures attributed to the VI century BC. and about 1900 ceramic and Lithic finds; a discovery that led to the recognition of the archaeological interest of this area and therefore to its subjection to the protection discipline referred to in Part Two of Legislative Decree no. 42/2004. In historical times, the place was certainly a transit route, considering the close proximity to the Appian Way, but the passage of a sheep track allows to advance the hypothesis of a probable route of trans-site of raw materials already in prehistoric times. Inside the rock village there is the presence of an ancient medieval rock church to be placed in the period between the ninth and the eleventh century charged with an exceptional value both for the complexity of its plant, and due to the presence of typical elements of the maternal area (the two apses) and the Bari area (the three elliptic abises), both due to the lost wealth of the parietal decorative apparatus.



The list of cultural value components on the Grottelline site would be incomplete if we did not remember the presence of two ancient farms: Masseria Salomone, which guards the site from the north, and Masseria Grottelline, which guards it from the south-east. The latter, despite differences that distinguish them, constitute a sort of evolutionary turning point of the pre-existing rock settlement system, a moment of change during which there was an integration between the off-earth architectural structures and the hypogean volumes, constituting an effective and practical symbiotic relationship between these two opposite constructive systems. The Masseria Grottelline complex, sometimes otherwise indicated with the names of "Masseria Viti" or "Ca-sale di Grottellini", is one of the main emergencies within the area in question. Despite the first historical information of the structure date back to 1197, when with the significant name of "Curtem Templi" was referred to as "a possession of the Templars", the origins of this complex are to be sought even further back in time. In fact the structure sinks its roots in the calcareous substratum on which it rises and does so in a literal way, so much so that it can be seen as an off-earth extension of the pre-existent ru-pestri structures which, just as a 'one with them, it absorbs the long settlement history begun in the Paleolithic and continued uninterruptedly up to the present day. If the main body of the farm merges with the hypogean environments and if these are in all respects indispensable elements for the functioning of the productive structure of the farm, they in turn must be

recognized as constituting the masses same, therefore not as accessory elements. This is an architectural complex that clearly describes an organism made up of two components: a single element, the masseria, and a plural element, the 'grottellini'.

In this preliminary phase of the analysis it is difficult to date the complex of Masseria Grottellini since the natural caves around which it has developed are - as has already been mentioned several times before - been used by man since the age prehistoric and since then and until today have been continuously used by the generations that have alternated over time and that gradually adapted them to their needs, modifying them, expanding them and digging new artificial cavities; the various successive alterations prevent the attribution of a precise temporal collocation for each of these "gruttas cupertas et altas", at most we can perceive a generic antiquity and in some cases we can recognize more recent elements that, at the net of some contemporary transformations, correspond to seven- nineteenth-century interventions. Even the dating of the main body of the Masseria could hold some surprise because, if on one hand the massive seventeenth-century nucleus with its four buttresses that outwardly looks like a church is clearly recognizable, there is no evidence of primeval medieval factory, the Curtem Templi before 1197, which is known in historical documents and that could be hidden within this complex architectural organism rooted in the cliff and increased by subsequent additions.

2.2_G_A_P GROTELLINE ARCHEOLOGICAL POLE

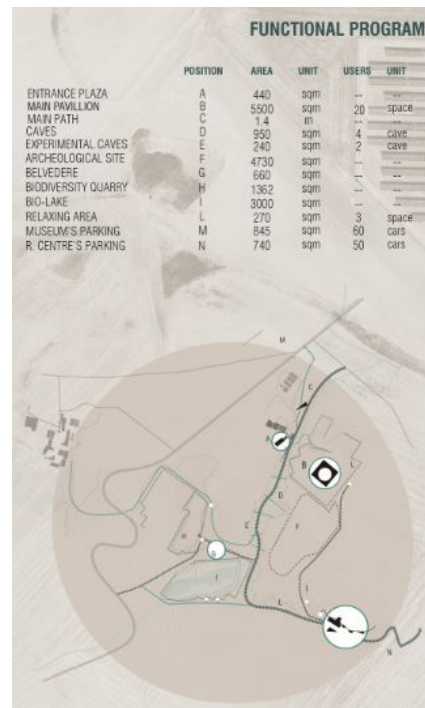
GAP as time intervals that have occurred in this place.
GAP as PASSAGE of the different stories of the man who lived in these lands.

GAP as VOID because all this landscape is characterized by the empty spaces of karst, caves and caves but also by the emptiness of the abandonment of these places.

The project focuses on the Musealisation of the Grottelline site and the relative transformation and occupation of the material itself. The creation of a system that used the ancient and modern traces present everywhere in the area was the starting point for the creation of a multi-functional pole.

The landscape-cultural riches are enhanced by a path that can accompany the visitor to discover the history of the place and the ecosystem that characterizes it. Different reflections on the changes of the landscape occurred over time but also on the practices and customs of the territory are stimulated. The visitor who arrives at Grottelline can, therefore, admire the strength of the relationship that has occurred for millennia between man and rock; from prehistory to industrialized quarrying. Moreover the testimony of the ancient caves becomes a place to host large exhibition areas capable of involving all the people and giving life back to abandoned places.

Flanked by the museum there is the an international scientific pavilion that is aiming to attract visitors and researchers by showing the connection of geology, history and art. meanwhile there is a research center but above all of experimentation where scholars, with different marks and different backgrounds, have the possibility to contribute to the research of new methods and techniques of research directly on site. The Pole, closely connected to the sites of cultural and scenic interest of Puglia and Basilicata, will become a new focal point and nerve center for direct archaeological and geological experimentation.



2.3_PROJECT ACTIONS

The theme of the recovery of the Grottelline site is a real cultural redemption of the gravine caves system and a re-appropriation of those "empty spaces", the quarries, which deeply mark their history and identity. This thesis moves from here, with the aim of enhancing and keeping alive these places of tradition, saving the abandonment and therefore degradation, both the landscape and the working techniques of the past. The real change is a new way of thinking, planning and managing the fragmentation of the single elements as the only great complex through the creation of a network of existing spaces and in order to fulfill, also, an operation to rebuild the landscape for improvement; then act with a changing global culture at a level of greater awareness of the importance on a local scale of the theme of reuse. The actions must produce, in a multidisciplinary perspective, ideas and proposals able to outline specific project processes with respect to more social issues and expectations. The proposed strategy is developed following three different actions: the consolidation of the ecosystem, the reuse of excavated spaces and the increase in connections.

As far as the consolidation of the ecosystem is concerned, the main step aims at the naturalistic recovery of the quarries, which consists in accelerating the dynamics of spontaneous development towards the

development of a valuable ecosystem, able to sustain itself in the long term, coherent with the surrounding environment and capable of improving its environmental and landscape functions. The protection of biodiversity, which is one of the main objectives of many global and local strategies inspired by the principles of sustainable development, is a cross-cutting argument to environmental recovery projects. The significant impacts related to mining and, above all, to the profound degradation of ecosystems, imply a depletion of the same on a local scale, due to the fragmentation and loss of entire populations of plant and animal species. However, the quarries, once decommissioned, have a great recycling potential for species that have become rarefied or are locally extinct. In these spaces, the recreation of natural habitats suitable for the local flora and fauna such as step-pe, meadows and wetlands, would in fact allow to increase and restore, in whole or in part, the intrinsic qualities of the landscape and environments local, compromised by mining activities. Moreover, it would allow to increase the levels of floristic and faunistic biodiversity, also by allowing the assisted diffusion of rare and / or protected wild species. In this way, the recovered habitats could, over time, take on a considerable level of naturalness. Within the Grottelline site, a different action plan is proposed on the quarries according to their singularity.

The first method represents the recovery of the quarry through the re-naturalization that is outlined in 2 main phases:

PHASE 1: modify the inclinations of the slopes of the quarry, create a substratum that is as optimal as possible for the type of vegetation that will be implanted and to obtain rapid re-naturalization (2-5 years). The added land is obtained from excavation work around the quarry.

PHASE 2: the sowing of native plants and shrubs with the aim of recreating the pseudo-steppe typical of the Alta Murgia area (*Stipa Australica*, *Koeleria lobata*, *Festuca circummediterranea*, *Phleum ambiguum*, *Prunus dulcis*). The choice of plant species must be aimed at a limited number to enrich the soil with equilibrium. Generally the seed mix should contain graminaceae, brassicaceae and legumes with the aim of optimal growth. Preparation time for sowing is between September and October or March-April depending on the level of soil moisture. Particular attention must be paid to the type of species that is to be cultivated since in many cases of re-naturalization no great results have been achieved due to the non-adaptation to the climate and to the soil conditions of the implanted species.

COMPONENT	FACTOR	IMPACT	
		BEFOR	AFTER
WATER ENVIROMENT	rainwater collection	●●●●●	●●●●●
	groundwater pollution	●●●●●	●●●●●
	surface water pollution	●●●●●	●●●●●
SOIL & UNDERGROUND SOIL	geological security	●●●●●	●●●●●
FLORA & FAUNA	effects on wild animals	●●●●●	●●●●●
	effects on birds	●●●●●	●●●●●
	effects on habitat	●●●●●	●●●●●
SOUND	reverbeation	●●●●●	●●●●●

The second method represents the recovery of the quarry through the creation of a bio-lake that is outlined in 2 main phases:

PHASE 1: modify the slopes of the quarry slopes at the basin level in order to improve the substrate that will receive the substrate. Create a drainage substrate or growth medium by referring to the soil analysis that allows to obtain more precise indications of the physical, chemical-physical and biologic properties that constitute it; with particular attention to the characteristics of hydraulic porosity and conductivity.

PHASE 2: the sowing of aquatic plants such as the elophytes, also called rooted macrophytes, which are usually found in swamps and lakes. Despite having different morphological characteristics, most of the emerging species have a wide development of aerated tissues that allows the transport of oxygen from the leaves to the roots and to the surrounding soil. The plants most used in phyto-purification systems are *Phragmites australis* or *communis*, *Typha latifolia*, *Scirpus acustris* and *Juncus* spp.

The planting of wet plants on the site will allow the continuation of the filtration process.

COMPONENT	FACTOR	IMPACT	
		BEFOR	AFTER
WATER ENVIROMENT	rainwater collection	●●●●●	●●●●●
	groundwater pollution	●●●●●	●●●●●
	surface water pollution	●●●●●	●●●●●
SOIL & UNDERGROUND SOIL	geological security	●●●●●	●●●●●
FLORA & FAUNA	effects on wild animals	●●●●●	●●●●●
	effects on birds	●●●●●	●●●●●
	effects on habitat	●●●●●	●●●●●
SOUND	reverbeation	●●●●●	●●●●●

The third method concerns the recovery of quarries through the biodiversity rehabilitation project that is outlined in 2 phases:

STEP 1: change the inclinations of the slopes of the quarry. The wetland basin should include a small layer of limestone where water is obsessed and loses speed as it descends into the wetland. The substrate in this part should consist mainly of hard ground and gravel to reduce the risk of erosion.

STEP 2: The depth and structure of the wet area should be designed in such a way that a large area of the wetland is covered with vegetation. The vegetative cover acts as one of the main structuring factors of the wetlands, influencing both its nutrient retention, the sedimentation rate and the increase in the variety of habitats. The intention is to improve the ecosystem; a fundamental principle of wildlife management is that its populations depend on the availability of an appropriate habitat.

COMPONENT	FACTOR	IMPACT	
		BEFOR	AFTER
WATER ENVIROMENT	rainwater collection	●●●●●	●●●●●
	groundwater pollution	●●●●●	●●●●●
	surface water pollution	●●●●●	●●●●●
SOIL & UNDERGROUND SOIL	geological security	●●●●●	●●●●●
FLORA & FAUNA	effects on wild animals	●●●●●	●●●●●
	effects on birds	●●●●●	●●●●●
	effects on habitat	●●●●●	●●●●●
SOUND	reverbeation	●●●●●	●●●●●

As part of the reuse of the excavated spaces and not inter-sated several elements that strongly characterize the site. Often it was a matter of identifying from within the significant characters of seemingly lifeless building organisms to grasp the essential traits of a spatial quality that can survive only through the action of the architectural and landscape project. The task was above all to learn to read these apparatuses, whose formal structure is sometimes completely erased by the progressive autonomy of the single ruined parts. The project thus deals with the functional redefinition of the solid and void relationship through the quarries that been excavated by human and of the whole natural cave system which, through the whole area, becomes a unifying element thanks to the creation of a par-co path that allows to give life to spaces that tell the history of man and in this scenario act as a binder and narrator of the whole project. the aforementioned path is established in a conscious and respectful manner following the morphology of the terrain and the elements that surround it. In these terms, the project can thus be an opportunity to establish a new relationship between the pa-esaggio and the community that lives it, to re-inhabit inhospitable spaces today. It is a question of re-contextualizing these voids, making possible new uses and compatible uses for the various users. The program includes the construction of a multi-functional center that embraces different themes, specializing in an architectural precipitate in a museum, archaeological research center and international scientific pavillion in the Masseria Grottelline complex.

the techniques of architectural re-use are articulated following the design figure in which the existing one becomes the real and conceptual new architectonic configurations generated by the necessary re-functionalizing defining a system of formal elements on which to attest architectural additions.

Last but not least, we are talking about the increase in the connections between the project site and the rich context that surrounds it. The intention is to set up the new multi-functional center of the Grottelline site with the entire Alta Murgia region. A further element of cultural and landscape value that joins the dense system of places of interest that characterize and make this area unique in Puglia. This is a large-scale proposal to interact with the territory through actions of consolidation and integration of the already existing itineraries, aimed at a generic target that wants to know the territory through the main ones. Specifically, it is a network of naturalistic, archaeological, landscape, historical, divided into paths that characterize the territory of the protected area of the Alta Murgia Park. All the routes are characterized as multi-functional, able to satisfy different users connected to nature tourism. The entire network is, due to its characteristics, that can be used with mountain bikes. Some of the routes are also passable with pedestrian and cycle paths. The project proposal of the archaeological re-search pole in Grottelline makes its way into the territory becoming a center of excellence that can attract scholars and experts from all over the world.





3

_PROPOSTA PROGETTUALE DEL POLO
MULTIFUNZIONALE



3.1 _THE DESIGN APPROACH

Let us assume the architectural project as a critical dialogue with the empirical conditions (theme, place, context, program, etc.), which must be considered as necessary data for the definition of a planning hypothesis. Through these conditions it will be the project to exert a criticism by means of the architectonic discipline. Each of these data will go to the analytical and critical screening to become material of the project. Only the modern project, capable of renewing itself during its own making, shows that it must preserve the complexity of the relations between principles, objectives and methods, while it dialogues with the existing. It becomes strong and can affirm its own autonomous possibility of modifying the existing condition thanks to the recognition of the importance of the context and to the critical evaluation of the data deriving from it. Within the project sphere, the key element is represented by the dichotomy between stereotomic architecture and tectonic architecture. By stereotomic architecture we mean the one in which gravity is transmitted continuously, in a structural system where the constructive continuity is complete. It is architecture that rests on the earth as if it were born of her, massive, stony and heavy. It is architecture that seeks light, which pierces its walls to make the light enter. It is architecture represented by caves and hypogeal spaces.

Instead, by tectonic architecture we mean that in which gravity is transmitted in a discontinuous way, it is the bony, woody, light architecture. The one that sits on the ground like on tiptoe. It is the architecture of the involu-cro. That of the abacus. It is, summarizing the architecture of the hut.

The Masseria Grottelline complex represents an extraordinary case of stereotomic architecture that has its roots in the calcarenitic substratum on which it rises and does so in a literal way, so much so that it can be seen as an off-earth extension of the pre-existing rock structures becoming one with them. In deliberate contrast, the project interfaces with the existing as a tectonic architecture project, that of the light and suspended envelope, in an idea of architecture that does not isolate itself from its surroundings and from those who use. An architecture design that evokes clarity, balance, emotional tension, problem solving and order. It starts from the concept of simple design, which makes space for different interpretations, which finds reference in the formal aspects, in the characters of distribution, in the functionality up to the materials used and the structure. Often some of these aspects come into symbiosis with each other, where the result is a simple form that summarizes complex technical concepts and elaborations. A simple project is a silent-so project, that does not make noise, that does not destroy the place but modifies it, that connects and does not isolate.

It gently inserts itself into the place, imposing itself as a figure and does not seek stylistic mimesis. It does not surprise but it makes you love.

The space in Architecture is a container of meanings, of identity, such as to determine a place of permanence and relative freedom of movement that man needs. In the old treatises, theories of space were more concerned with the physical elements of architecture and not with what they delimit, but the voids resulting from the solid masses are equally important. Architecture is an object of use represented by its form, but compared to other objects of use, we penetrate it with our body. Architecture thus becomes the art of digging and is composed at the same time from the inside and from the outside, thus modeling the space. Space is related to volume and volume to the envelope. An envelope intended as an autonomous element and distanced from the structure, which assumes the function of the first separator element between the exterior and the interior, a filter or diaphragm without thickness and consistency. It is the distance and the relationship between the internal parts that determine each time different configurations in the interior of the building and its external surface. It is a state of creation the void inside a filled volume, by removing or subtracting from the solid making the void active, the penetration of the space can be regarded as empty space entering into a solid form. Carving is an example of a subtractive process where sections of simple mass are removed to create a more complex mass as its naturally working in the site.

Subtractions should create distinctively shaped voids that interact visually with the mass to create strong positive relationships and open up the space of a form, a cube constructed from six surfaces will read as a solid even though it is an empty volume. This process is reflecting the human trace when he started to use the nature by curving the caves as a shelter or by digging the ground to extract stones; always been a process of creating voids in the solid. The design approach reflects an envision of a complete and entire mass, then by subtracting voids in order to open visual connections, physical accessibilities and functional spaces. The circle has the most important function that brings together the people into the nucleus of the square.



3.2 THE VOID PAVILLION

The proposed project is an inter-scale project that fills the idea of working at different scales to reach the architectural scale of the Pavilion, bio-lake and archaeological research center with the ultimate aim of including it within a system that goes through the connection of the different quarries and caves that characterize the Grottelline site. On a functional level, the proposal provides for the construction of an international scientific pavilion that is to be placed in the north quarry which is the biggest and deepest quarry. The articulated planning system foresees in the initial path the realization of long stairs and ramps going down for an average 20 meters, which allow the user to move in the external spaces and to lead them to the quarry ground level. These environments with very different dimensions and shapes are the first areas that make the visitor prepared for something different to see, void in a solid mass within the void. Arriving to the mass which is a huge square sculpture represents the flat origin land before digging the quarry, the circle in the mass is representing the void of the quarry itself. The mass is elevated from the ground level giving the visitors the sense of entering the void from another void, it's reflecting the same sense when you are inside the quarry but in reality you are not inside any space.

by arriving to the main space of the mass which is the outdoor pavilion space, some solid parts start to appear to lead the people for the upper floor and the main element is the spiral ramp, that giving you all the scenes of the inside volume while going up. Once entering the solid mass itself; it's another spatial experience, the scale inside is huge and brutal and it was designed like this because of the same feeling while you are inside the quarry and looking up, the scale is huge, and so the scale of the mass is also compatible with the quarry. Each massive block has a void inside with a functional space, at the beginning you start with an welcoming space which has the utilities and its totally opened on the central void to bring a high amount of light then journey starts with lighten paths and dark spaces so the first space is a workshop for the artists for preparing their work inside the pavilion, this space has some windows providing light as the space needed. Then the second hall is the indoor gallery which has a natural circular spot light in which all the artificial lighting art is held there a corridor allowing the light to pass from the roof till the ground. It's a language that links between internal and external spaces; a continuity generated by actions of inclusion and extension of spaces that create a single system able to put this site in a new life cycle. At the end space can be full or empty, it's just a matter of the perception.

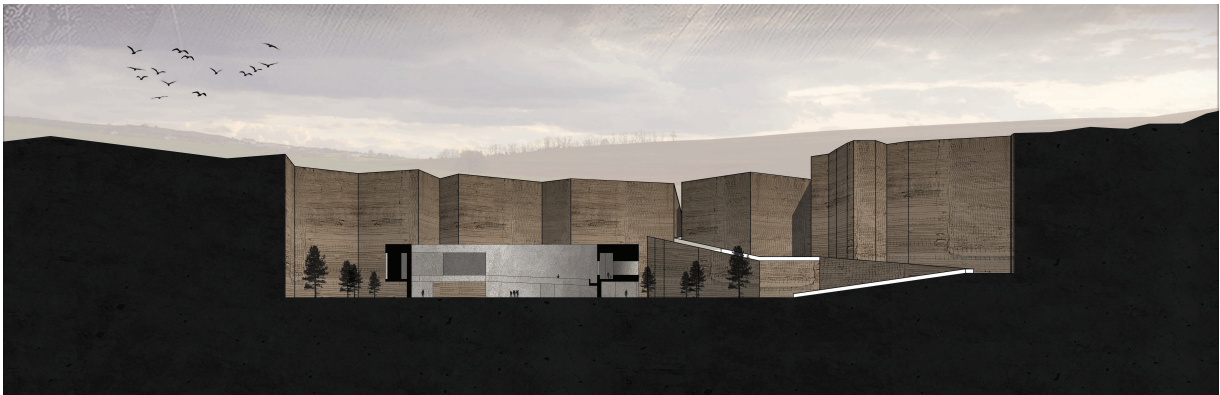
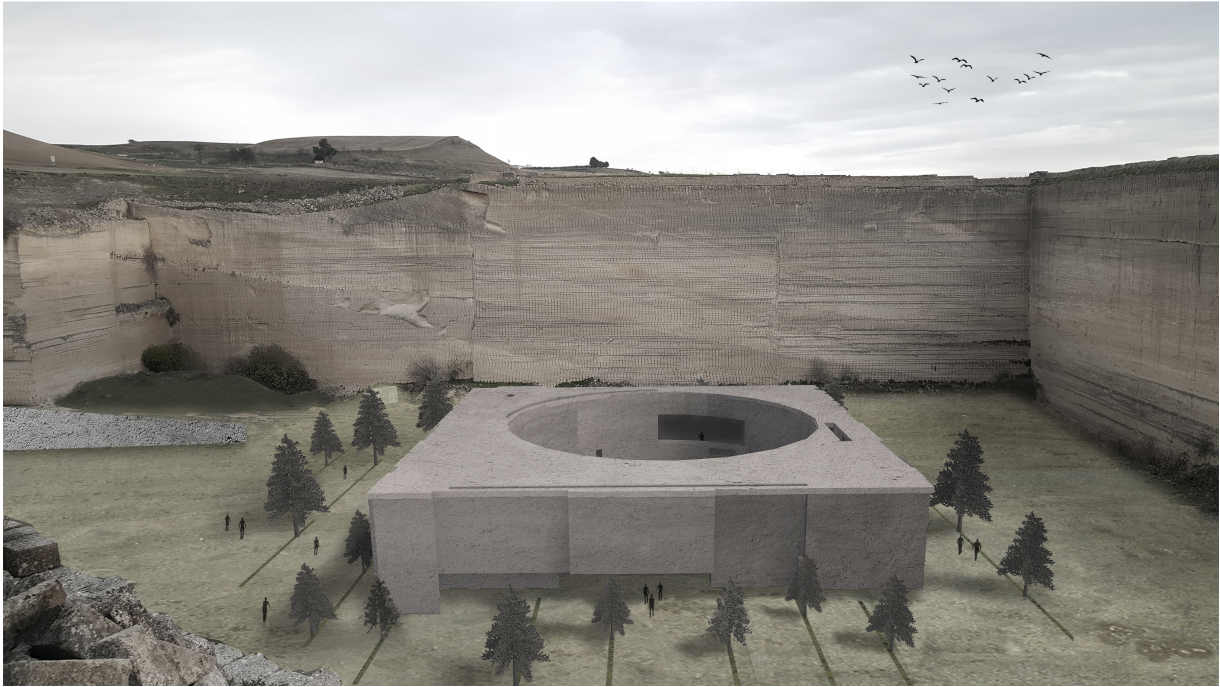


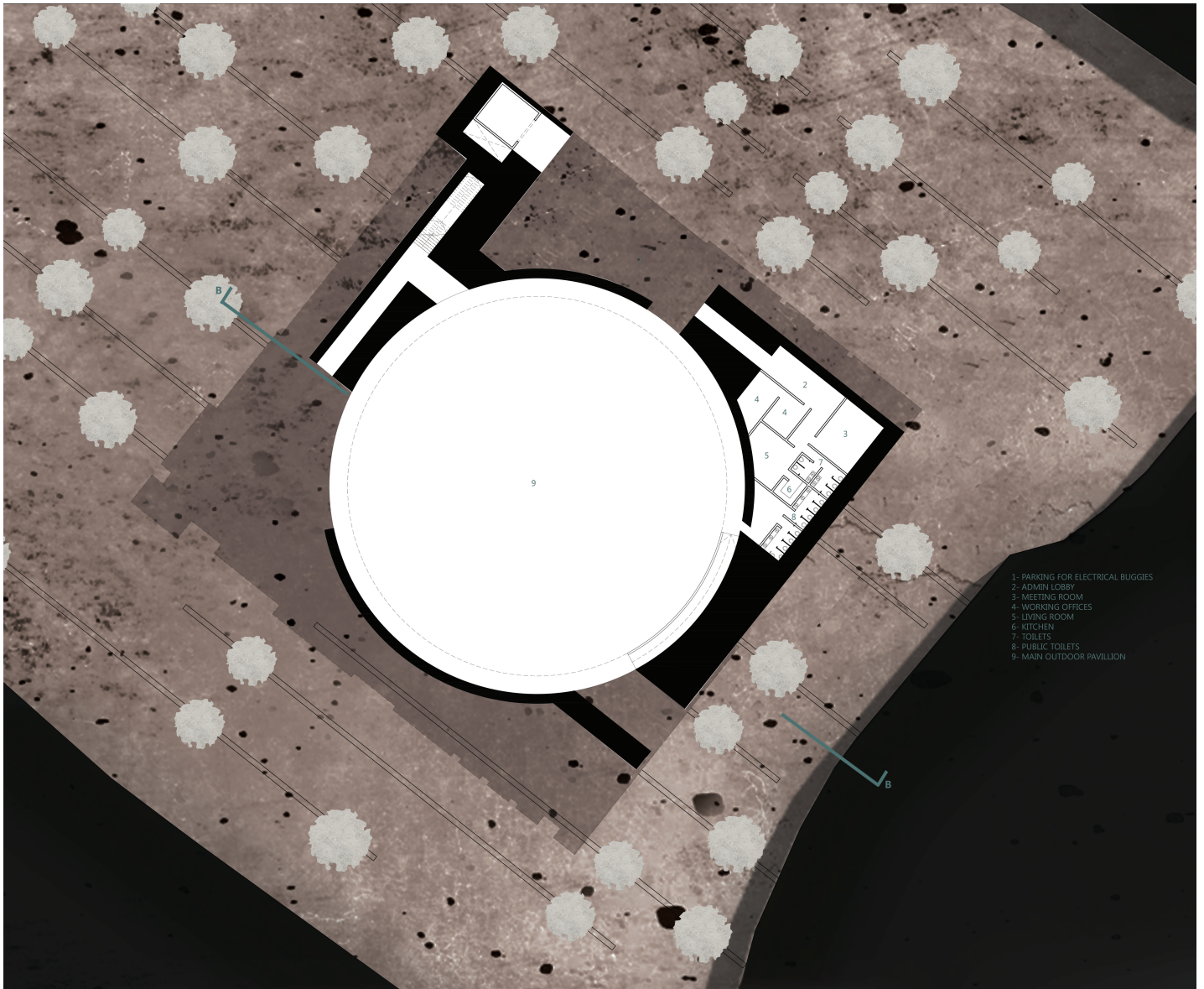


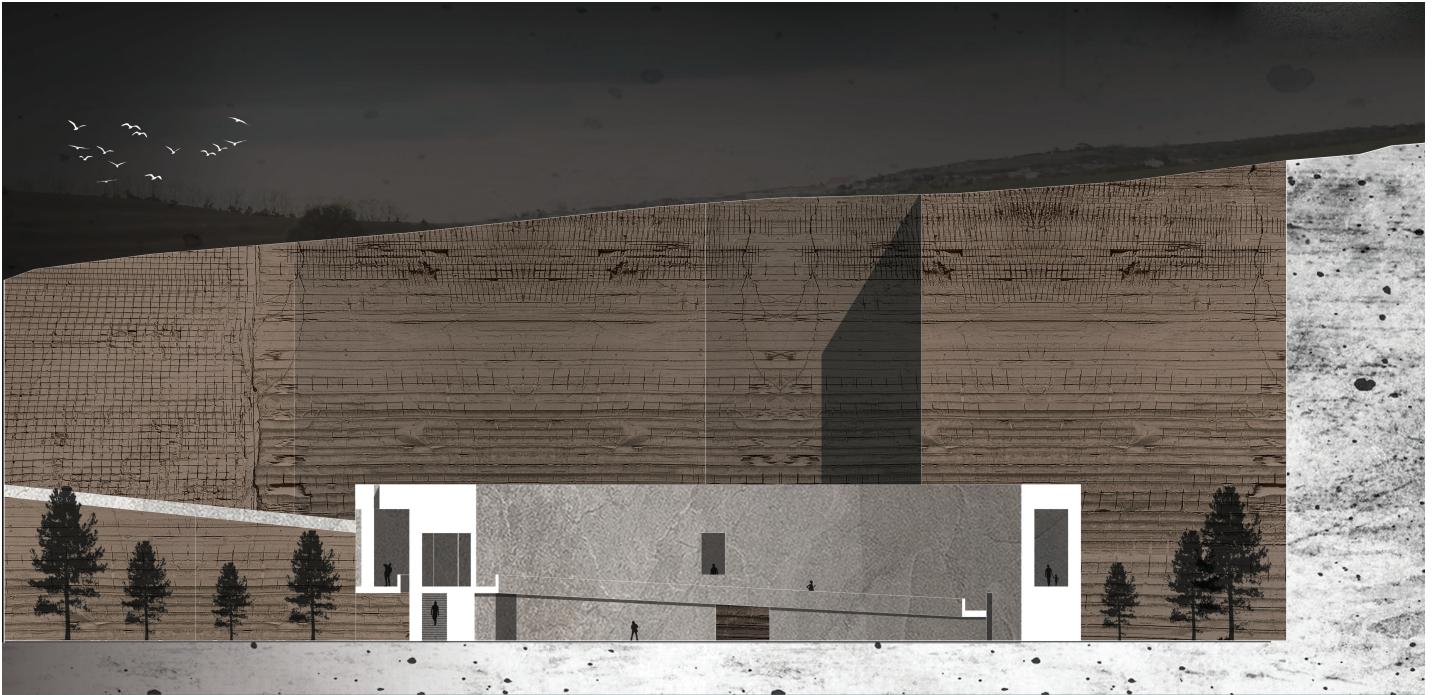
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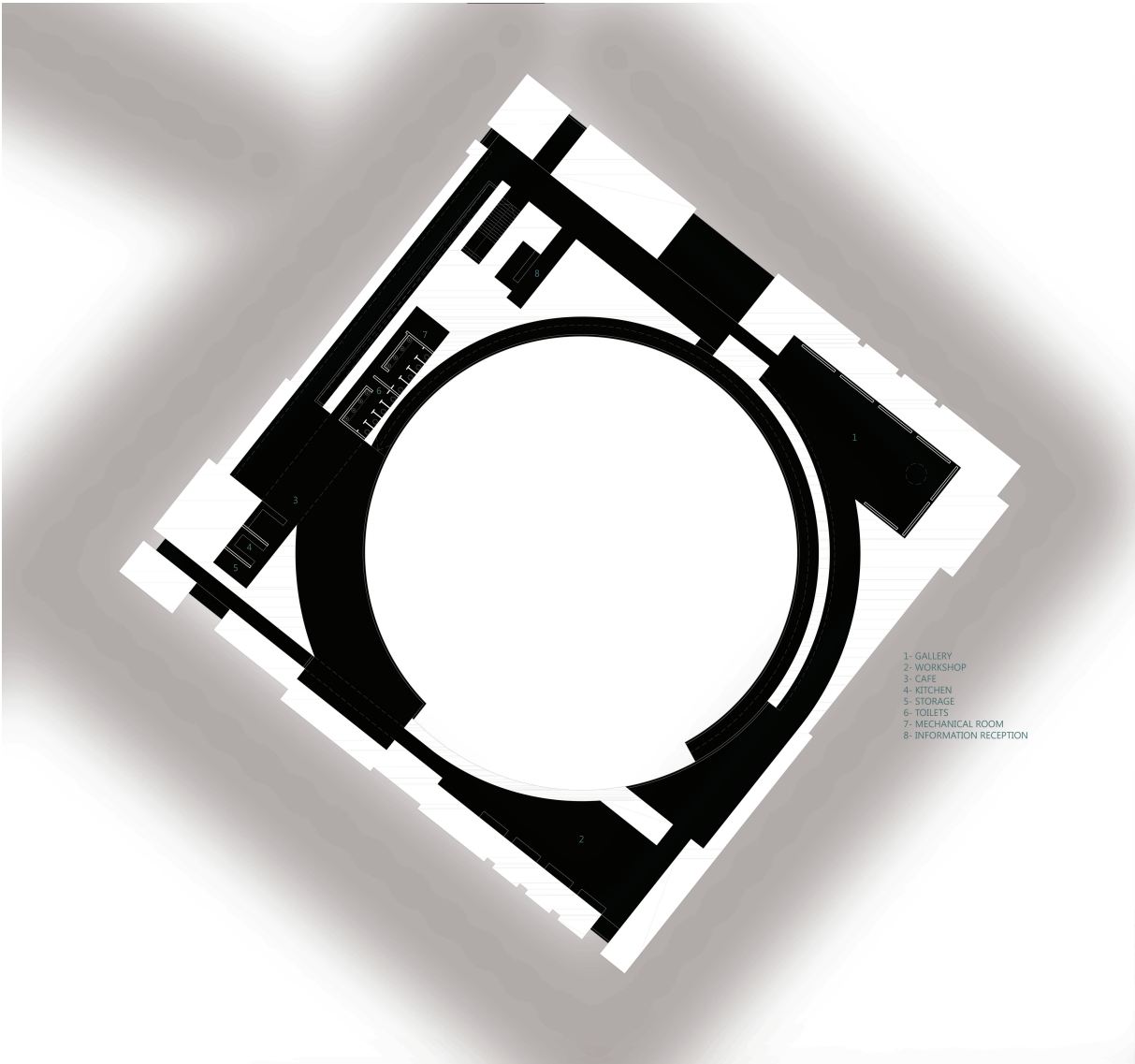


















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