

QUARRY GUIDE VOL. 1

ANALYSIS OF QUARRY PROJECTS



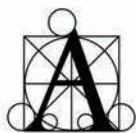
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Universitatea
de Arhitectură și Urbanism
„Ion Mincu”

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QUARRY GUIDE VOL. 1: ANALYSIS OF QUARRY PROJECTS

"ION MINCU" UNIVERSITY OF ARCHITECTURE AND URBANISM

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5TH YEAR - ENGLISH STUDIO

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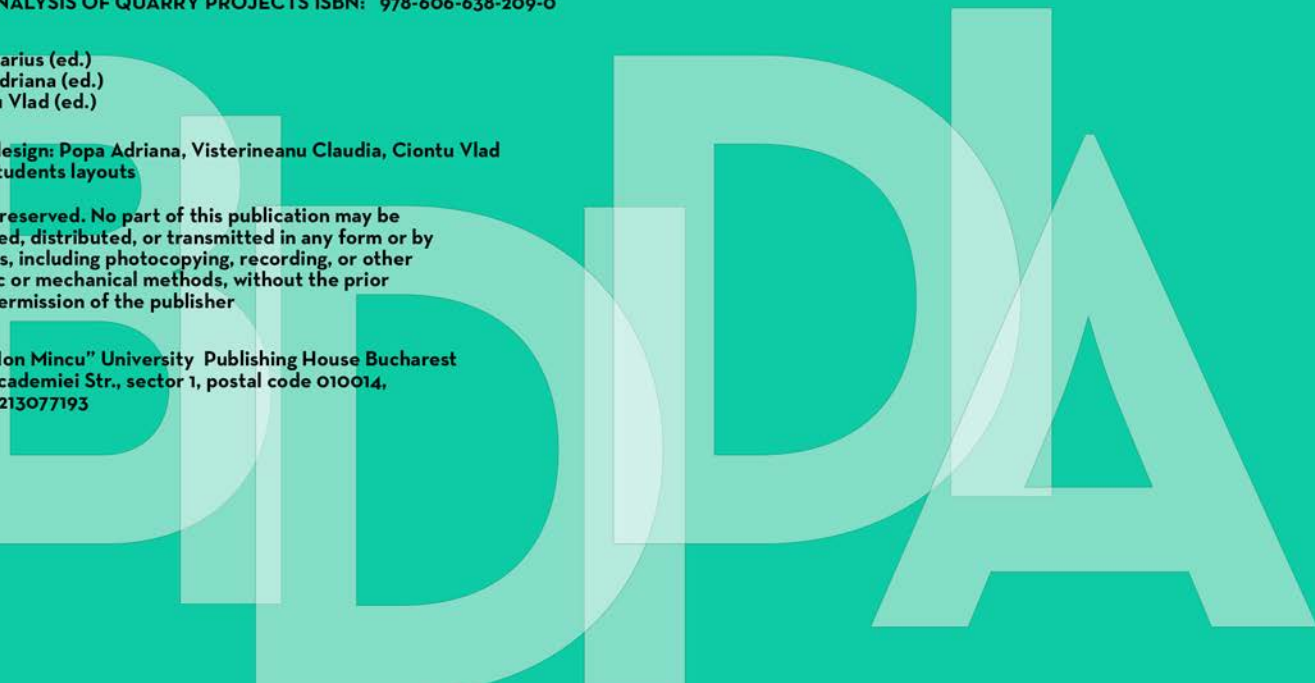
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The background of the page is a topographic map with contour lines. The map is rendered in a light grey color against a white background. The contour lines are more densely packed in some areas, indicating steeper slopes, and more widely spaced in others, indicating flatter terrain. The map covers the entire page, with a solid teal gradient at the bottom.

ABSTRACT

THE SUBJECT OF STOPPING OR LIMITING THE AGGRESSION ON THE NATURAL ENVIRONMENT IS CURRENT TOPIC. ABANDONED QUARRIES ARE REAL "WOUNDS" IN THE LANDSCAPE, RESULTING FROM THE EXPLOITATION OF MINERAL RESOURCES. ARE THERE SOLUTIONS TO HEAL THESE "WOUNDS"? CAN THEY BE REINTEGRATED INTO THE NATURAL LANDSCAPE OR CAN THEIR FUNCTIONAL CONVERSION BECOME A SOLUTION FOR THE FUTURE? THIS BOOKLET BRINGS TOGETHER EXAMPLES OF

QUARRY REHABILITATION/REFURBISHMENT FROM AROUND THE WORLD, AT THE LEVEL OF PROJECTS OR MATERIALIZED INTERVENTIONS. THE DOCUMENTATION WAS MADE TOGETHER WITH THE STUDENTS OF THE 5TH YEAR, THE INTERNATIONAL GROUP OF UAUIM, AND WAS A RESEARCH TOPIC AS AN INTRODUCTION TO THE PROJECT OF THE 2/2020 SEMESTER, HAVING AS LOCATION THE BIDIDIA QUARRY IN TULCEA.

THE FOLLOWING VOLUMES WILL CONTINUE WITH THE STUDY OF THE CONTEXT OF THE BIDIDIA QUARRY AND OF THE CONCEPTS OF INTERVENTIONS (VOL. 2) AND WITH THE ARCHITECTURAL PROPOSALS OF THE STUDENTS (VOL. 3).

QUARRY GUIDE



AMERICA

1. Quarry Park Adventures, Rocklin, California

ASIA

1. Be'er Sheva Quarry Park, Be'er Sheva, Israel
2. Anderson Road Quarry, Hong Kong
3. Royal Academy for Nature Conservation, Ajlun, Jordan
4. Eco-City 2020, Mirny, Sakha Republic, Russia
5. Revitalization of Abandoned Quarry, diploma project, Chennai, India
6. Stone Nest Amphitheater, Weihai, China

AUSTRALIA

1. Lilydale quarry redevelopment, Melbourne, Australia










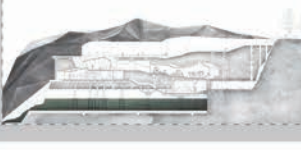
EUROPE

1. Cave Sequences, Manteigas, Portugal
2. Stone Hell, Gross-Rosen, Poland
3. Yorkshire Geo Center, Yorkshire, UK
4. ROM: Roman Quarry Redesign, St. Margarethen, Austria
5. Quarry landscape rehabilitation, Hellín, Spain
6. Mt. Olympus Regeneration Project, Greece
7. Recovery of the ENCI Quarry, Maastricht, Netherlands
8. Jewels of Salzburg, Salzburg, Austria
9. Quarry Infrastructure in Marco de Canaveses, Marco de Canaveses, Portugal
10. European Center for Geological Education, Checiny, Poland
11. Devon Quarry Eco Holiday Village, Devon, UK
12. MAHABHARATA - NALACHARITAM, Avignon, France
13. Cave Bianche Hotel, Favignana Island, Italy
14. La Palomba Sculpture Park, Matera, Italy
15. Theater in the Fabriano Quarry, Grottaglie, Italy

01. CASE STUDIES











ARCHITECTURAL PROGRAMME + BUDGET + SITE SURFACE EXTRACTION TYPE + USED MATERIALS + LANDSCAPE INTERVENTIONS









01					
<p>CAVE SEQUENCES ■ 2017</p> <p>Zezere Valley, Manteigas, Portugal</p> <p>Serena Comi, Gino Baldi, Politecnico di Milano</p>		<p>Thermal Baths N/A</p>	<p>N/A Stone Quarry</p>	<p>- Stone - Vegetation Mix - Flora & Fauna Conservation</p>	<p>Yes The rehabilitation project contains terracing development</p>
<p>STONE HELL ■ 2016</p> <p>Gross-Rosen, Poland</p> <p>Nizio Design International</p>		<p>Museum Complex N/A</p>	<p>N/A Stone Quarry</p>	<p>- RCC - CorTen Panels - Water</p>	<p>The use of simple means of expression which carry a deep symbolic meaning, creates a universal place</p>
<p>BE'ER SHEVA QUARRY PARK ■ 2018</p> <p>Be'er Sheva, Israel</p> <p>SCAPE Studio</p>		<p>Park N/A</p>	<p>N/A Limestone Quarry</p>	<p>- Stone - Vegetation Mix - Water - Flora & Fauna Conservation</p>	<p>Yes Addition of water for fueling the vegetation, park and gardens to provide shading in the desert</p>
<p>CRYSTAL PARK - ANDERSON ROAD ■ 2012</p> <p>Honk Kong, China</p> <p>Ove Arup and Partners</p>		<p>Park for the local community N/A</p>	<p>17 ha Stone Quarry</p>	<p>- Stone - Metal - Water - Vegetation</p>	<p>Yes An example of architecture in landscape. According to the architect, more scenarios were taken into account, such as piazzas, forest trails leisure and working areas</p>
<p>YORKSHIRE GEO CENTER ■ 2007</p> <p>Yorkshire, England</p> <p>Emma Fairhurst</p>		<p>Geology Exhibition with Research Facility N/A</p>	<p>N/A Limestone Quarry</p>	<p>- Stone - Concrete</p>	<p>No landscape project present, only the existing topography</p>
<p>ROM: ROMAN DESIGN QUARRY ■ 2008</p> <p>St. Margarethen, Austria</p> <p>AllesWirdGut Architektur</p>		<p>Cultural Center-Visitor Center € 10M</p>	<p>0.44ha (terrain) 0.49ha (built) Sandstone Quarry</p>	<p>- Stone - Metal - Glass - Vegetation - CorTen</p>	<p>Yes The project has minor landscaping interventions</p>
<p>QUARRY LANDSCAPE REHABILITATION ■ 2016</p> <p>Helin, Spain</p> <p>SSS Architects</p>		<p>Public Garden N/A</p>	<p>N/A Andesite Quarry</p>	<p>- Stone - Concrete - Glass - Water - Vegetation</p>	<p>Yes The project is inspired by the labyrinth motif</p>
<p>MT. OLYMPUS REGENERATION PROJECT ■ 2014</p> <p>Greece</p> <p>Christos Kakkouris</p>		<p>Agricultural Facility N/A</p>	<p>15 ha (total) hotel h-100m Quarry and Cement Lake Extraction</p>	<p>- Concrete - Metal - Glass - Water - Vegetation</p>	<p>Yes The aim is to generate new flora and fauna through myco-restoration, using fungi roots to re-mineralize the soil in order to create a new healthy environment for agricultural activities</p>

FUNCTIONAL ZONING	DEFINING ELEMENTS	WON PRIZES	IMPACT	CONCLUSION
	<p>It is the terracing that best represents the artificial work of a natural territory as primordial act of architecture: modify the land with a wall. Just these walls in the project inhabit and dig in the spaces of life (grotto or cavity). According the massive elements, light is in the center of attention, which is either zenithal or lateral. It solidifies in light cones and pierces the interior of the baths.</p>	<p>Highest rating by the Master Diploma Board in Politecnico di Milano</p>	<p>Rehabilitating the quarry with a minimum of intervention, catering to the needs of the locals and providing a detailed formal analysis of different possible outcomes in the carved spaces.</p>	<p>Rebouncing of the rural and local identities through orography combined with a gentle, non-invasive intervention</p>
	<p>Segregation of the journey inside the complex, employing the discovery of truth, crossing the border between life and death, dividing into theme sequences. The idea is to expose the quarry and the historical part of it to the visitor, as a remainder of the past, when the concentration camp was still functioning</p>	<p>N/A</p>	<p>Scar-like intervention, heavy, trying to emulate a different atmosphere, in a more volitional approach</p>	<p>No reactivation of the ensemble, only a mere witness that recreates or reminds the user of the KL Gross-Rosen camp. Past-oriented, with a more symbolic approach rather than a sustainable, future-oriented one.</p>
	<p>Revegetation was possible through a landscape project which transformed the limestone quarry into a lush area, acting as an oasis inside the Negev Desert. The deep cuts from the quarry were utilized in order to connect a civic promenade underneath the shaded streets.</p>	<p>N/A</p>	<p>The intervention was done with the input of the local communities, in order to maximize the sustainability of the project and process of intervention.</p>	<p>Bringing water and vegetation in a scarce terrain, as an old limestone quarry acts as a natural catalyst, similar to an oasis that reactivates the local communities in generating a new nucleus of activity.</p>
	<p>Assimilating the local culture and communities made possible the introduction of new ideas inside the site. The main principles used were condensation and eco-friendliness, generating new nucleus of activity within different scenarios, while providing a new landmark for the city.</p>	<p>N/A</p>	<p>The desired impact was to create a new landmark that would fit Hong Kong and change the attitude of its inhabitants regarding a sustainable future</p>	<p>Flora and Fauna revival are possible even in denser urban environments, such as Hong Kong, with a fresh, future orientated and sustainable approach</p>
	<p>The project is concerned with resolving practical imperatives; how new and sustainable uses can be found to repair a fractured brown field site in a remote rural setting can generate an industrial monument which capture the sublime setting.</p>	<p>N/A</p>	<p>The richness of the geological landscape provided not only the function of the project, but also made possible the showcasing of the assets of the quarry: the natural and the anthropic</p>	<p>Another approach to such a transformation is the one focused on the hosted function. In this case, all the particularities of the site are used to support the architectural program, so that the landscaping and the principles of sustainability do not represent the goal.</p>
	<p>The project goal was to maximize the outdoor potential of a classical music arena that would also embed mixing spatial functions in order to generate one of the most impressive open-air arenas in Austria. The unique character of the area is given by the stone sculptures done by local artists</p>	<p>N/A</p>	<p>The impact was in generating an open-air music arena in a sublime setting, a 17th century quarry.</p>	<p>Generous location gathers during summer time a large number of visitors, taking advantage of the open-air arena with multiple facilities, with an annual number of 250,000 people visiting it.</p>
	<p>The concept was to integrate and generate a labyrinth of infinite spatial models sitting, perched inside the topography, creating a mythical setting which belongs to the imaginary, similar to Escher's universe.</p>	<p>N/A</p>	<p>The maze of horizontal planes is balanced by the terraced site, generating a non-invasive and a low regime intervention that blends well with the landscape</p>	<p>Both projects have the goal of a sensible intervention in the landscape with a low height regime that would not affect the landscape from a formal point of view, and have in mind local community integration as a whole part of the development process.</p>
	<p>The aim was to restore the abandoned landscape, mixing the myco-restoration with new topsoil, and changing the type of landscape at macro scale. The proposed buildings act as educational areas, and also as laboratory, research centers, as well as leisure centers for visitors and employees to enjoy the serenity of the healed Mt. Olympus.</p>	<p>N/A</p>	<p>The project investigates both the process of cultivation as a facilitator of knowledge, and architecture's role in enhancing the transformative and regenerative role of nature.</p>	<p>N/A</p>

01. CASE STUDIES



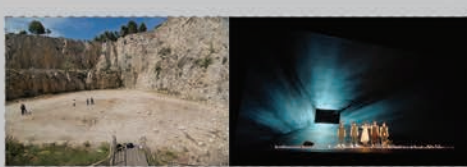




ARCHITECTURAL PROGRAMME + BUDGET + SITE SURFACE EXTRACTION TYPE + USED MATERIALS + LANDSCAPE INTERVENTIONS



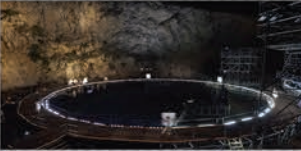




09	<p>RECOVERY OF THE ENCI QUARRY 2015-2020</p> <p>Maastricht, Netherlands</p> <p>Rademacher de Vries Architects</p>	 	<p>Wetlands Eco-system Campus € 5M</p>	<p>70ha (quarry) 33ha (built) Limestone Quarry</p>	<p>- Stone - Concrete - Metal - Vegetation Mix - Flora & Fauna</p>	<p>Yes The rehabilitation project contains a non-intrusive approach for the quarry</p>	
10	<p>JEWELS OF SALZBURG 2014</p> <p>Salzburg, Austria</p> <p>Hariri & Hariri Architecture</p>	 	<p>Housing N/A</p>	<p>8850sqm Stone Quarry</p>	<p>- Stone - RCC - Water</p>	<p>No</p>	
11	<p>QUARRY INFRASTRUCTURE IN MARCO DE CANAVESES 2016</p> <p>Marco de Canaveses, Portugal</p> <p>BETA Architecture (Ana Pinheiro)</p>		<p>Park N/A</p>	<p>13ha Granite Quarry</p>	<p>- Stone - Metal</p>	<p>No</p>	
12	<p>QUARRY PARK ADVENTURES 2019</p> <p>Rocklin, USA</p> <p>Adventure Operations LLC</p>		<p>Adventure Park N/A</p>	<p>N/A N/A</p>	<p>- Metal - Wood - Cables - Vegetation</p>	<p>Yes The whole project is a landscape intervention</p>	
13	<p>EUROPEAN CENTER FOR GEOLOGICAL STUDIES 2015</p> <p>Chechny, Poland</p> <p>WXCA Studio</p>		<p>Educational Center 30M PLN</p>	<p>35,600sqm (quarry) 8450 (built) Limestone Quarry</p>	<p>- Stone - Concrete</p>	<p>No landscape project present, only the existing topography, minimal intervention for accessing the site</p>	
14	<p>ROYAL ACADEMY FOR NATURE CONSERVATION 2014</p> <p>Ajlun, Jordan</p> <p>Khammash Architects</p>		<p>Educational Center \$ 4.4M</p>	<p>15.6ha (terrain) 3600sqm (built) Limestone Quarry</p>	<p>- Stone - Metal - Glass - Vegetation - CorTen</p>	<p>No landscape project present</p>	
15	<p>ECO-CITY 2020 2004</p> <p>Mirny, Sakha Republic, Russia</p> <p>Studio AB Elis Ltd</p>		<p>City N/A</p>	<p>115ha (quarry and built) Diamond Quarry</p>	<p>- Stone - Concrete - Metal - Glass - Water - Vegetation</p>	<p>Yes The city proposal contains landscape projects as well</p>	
16	<p>REVITALIZATION OF ABANDONED QUARRY 2017</p> <p>Chennai, India</p> <p>Preetika Balasubramanian</p>		<p>Urban Park N/A</p>	<p>15ha (quarry) Gravel Quarry</p>	<p>- Stone - Concrete - Metal - Glass - Water - Vegetation</p>	<p>Yes The quarry, ski lane and ice World take about 170m until the cliffs, generating a new loisir functional space containing islands, water, rocks and gardens, which bound the built to the natural heritage</p>	

FUNCTIONAL ZONING	DEFINING ELEMENTS	WON PRIZES	IMPACT	CONCLUSION
	The project was developed in 3 stages: the quarry, the transitional area and the business park. The reasoning behind converting it into a public space was the industrial landscape with great potential, mixed with the biological diversity of its surroundings, thus creating a micro-topography which blends the intensive use of the business park with the quietness of the quarry.	N/A	Regenerating the area and generating a new nucleus of activity and functions, ranging from public to private and segregating the fluxes by establishing different stages of development	Relaunching of the quarry in a modern and sustainable future with prospective approaches regarding landscape, architecture and material technology
 GROUND FLOOR ↕	Generating a dialogue and personal meditative experience between the built environment and the natural creek, mitigating boundaries between rock, water and intervention, combined with the segregation of specific functions and traffic fluxes. The building itself is a formal inspiration from the rock, with clear defined boundaries which extend and generate different corridors in the creek.	N/A	Strong, recognizable intervention which is in contrast with the serene landscape	Formal and object-oriented approach, the aim of the project was to generate as many connections and/or voids with the surrounding landscape, in order to establish new connections between the invasive intervention and the creek.
	The goal was to create a composition of industrial complex, generated by a series of temporary light metal structures that would fit the needs of the different activities that take place inside the quarry, thus the design was a result of economical constraints	N/A	The intervention is light, with reversible character, strongly functional, with no compromises	Functional and economical oriented proposal, aimed at creating a formal composition inside the quarry, with great consideration regarding the functional capabilities and problem solving of the quarry itself
	Utilising the terrain in order to create leisure activities and areas, generating a large adventure park with a mix of functions and activity areas.	N/A	Revisiting the quarry through light interventions, profit oriented through low-cost equipments, oriented towards the experience inside the quarry	Economical growth potential through tourism and visitor potential with a great mix of activities.
	Scattered pavilion, each housing different functions, ranging from educational centers, laboratories and auditorium, all connected by a common street.	N/A	Many passive elements were used in the project, such as heat pumps with ground heat exchanger, solar installation, green roofs, which combined with the small imprint create a good balance.	The challenge was to find a balance between energy efficiency, use of renewable energy and respecting the unbuild environment.
	The project goal was in creating a sensible and thoughtful relationship between the intervention and the natural reserve, combined with the aim of constructing an international-standard academy and centre of excellence	N/A	Utilising local workforce and traditional techniques and materials had a great sustainable impact upon the intervention, mixed with passive elements such as geothermal heat, natural ventilation	Generous location gathers during summer time a large number of visitors, taking advantage of the open-air arena with multiple facilities, with an annual number of 220,000 people visiting it.
	The concept was to create a garden city typology inside the harsh Siberian environmental conditions characterized by long and severe winters and short and hot summers.	N/A	N/A	Both project offer a sensible approach to a sustainable future with regards to the impact on the local community, which serves as a main component in the project's system. Having both the same starting ground, the premise of turbulent manufacturing and industrial economy, both proposals offer
	Unforeseeable consequences of harsh mining and environmental conditions needed a new redeveloping scheme for the abandoned wastelands, so that a prospective intervention would acknowledge a surrounding context defined by its past	The project had the quest to redevelop and reimagine the definition of public space and green infrastructure by reclaiming and restoring the quarry as a recreational community center	N/A	

01. CASE STUDIES

ARCHITECTURAL PROGRAMME + BUDGET + SITE SURFACE : EXTRACTION TYPE + USED MATERIALS + LANDSCAPE INTERVENTIONS

17		ARCHITECTURAL PROGRAMME + BUDGET	SITE SURFACE : EXTRACTION TYPE	USED MATERIALS	LANDSCAPE INTERVENTIONS
<p>LILYDALE QUARRY REDEVELOPMENT ■ 2015-2017</p> <p>Melbourne, Australia 📍 Intrapac Property, Brencorp Properties (A)</p>		Housing and mixed use \$100M to cover the quarry pit	25ha Stone Quarry	- Stone - RCC - Vegetation Mix - Flora & Fauna	Yes The rehabilitation project contains terracing development on the cap of the quarry
<p>DEVON QUARRY ECO-HOLIDAY VILLAGE ■ 2016</p> <p>Devon, UK 📍 Habitat First Group (A)</p>		Accommodation N/A	63ha (quarry) Stone Quarry	- Stone - RCC - Vegetation Mix - Flora & Fauna	The use vegetation as an integral part of the project from the beginning
<p>MAHABHARATA - NALACHARITAM ■ 2014</p> <p>Carriere de Boulbon, Avignon, France 📍 KIZ ARCHITECTS (A)</p>		Theater N/A	37,000sqm (quarry) 670sqm (built) Stone Quarry	- Stone - RCC	No
<p>STONE NEST AMPHITHEATRE ■ 2019</p> <p>Weihai, China 📍 Sandwich Design / He Wei Studio (A)</p>		Amphitheatre N/A	382sqm (quarry) 280sqm (built) Stone Quarry	- Stone - Metal - RCC	Yes Minor intervention at the level of the access terrace, in the form of green, planted surfaces with low vegetation.
<p>CAVE BIANCA HOTEL ■ 2015</p> <p>Isola Favignana, Sicily, Italy 📍 CUSENZA + SALVO STUDIO (A)</p>		Hotel Facility N/A	13,000sqm (quarry) 3,500sqm (built) Limestone Quarry	- Stone - Concrete	Yes The whole project is a landscape intervention
<p>LA PALOMBA SCULPTURE PARK ■ 2013</p> <p>Matera, Basilicata, Italy 📍 Antonio Paradiso (A)</p>		Museum N/A	65,000sqm (quarry) 14,800sqm (built) Stone Quarry	- Stone - Metal - CorTen	Yes The project itself is a landscape intervention
<p>THEATER IN THE FABRIANO QUARRY ■ 2006</p> <p>Grottaglie, Italy 📍 Donati D'Elia Associati (A)</p>		Theater N/A	950.800sqm (quarry) 80.000sqm (built) Andesite Quarry	- Stone - Concrete - Metal	Yes The project has minor landscape interventions in the form of low height vegetation

FUNCTIONAL ZONING	DEFINING ELEMENTS	WON PRIZES	IMPACT	CONCLUSION
	<p>The quarry cap is used as a real estate developing area for a housing with mixed-use complementary functions for a large scale housing project, with green areas and water mirrors in order to create a formal composition.</p>	N/A	N/A	Waste of resources for capping the quarry in order to create a flat, generic ground for a real-estate development with no consideration towards the unbuild environment
	<p>The aim was generating a thriving habitat for local wildlife, working together with the local councils and authorities of nearby counties in order to ensure a positive and prospective approach for tourists, local and local fauna alike. Compositionally, the projects revolves around clusters of sustainable houses around bodies of water, aimed at restoring the area into a natural reserve</p>	N/A	Thoughtful interventions, which combines landscaping with high-end technological materials for a sustainable prospective.	Reactivation of a desolate area with the council and help of local authorities, and communities, mixed with care and attention to architectural intervention and building engagements, solved many of the issues proposed initially by the site.
	<p>Revegetation was possible through a landscape project which transformed the limestone quarry into a lush area, acting as an oasis inside the Negev Desert. The deep cuts from the quarry were utilized in order to connect a civic promenade underneath the shaded streets.</p>	N/A	The intervention was done with the input of the local communities, in order to maximize the sustainability of the project and process of intervention.	Bringing water and vegetation in a scarce terrain, use as an old limestone quarry acts as a natural catalyst, similar to an oasis that reactivates the local communities in generating a new nucleus of activity.
	<p>Architecture in the landscape approach, with a low height regime that would not affect the unbuild environment, using the natural topography as a backdrop for the amphitheater, using its excelent acoustics.</p>	N/A	Low height with a low environmental impact, using as much landscape as possible	Excellent use of landscape topography in sound design, with great care taken into account, together with the local materials.
	<p>The project is concerned with resolving the recovery of the disused quarry, divided into several stages, the first one being oriented towards structural safety and consolidation. The latter stages were concerned with the technical and architectural issues.</p>	N/A	Very careful intervention, first of all aimed at restoring the quarry itself first, both from structural and infra-structural point of view.	The natural landscape acts as a natural barrier against wind corrosion, and coupled together with a landscape oriented approach, results in a sensible project
	<p>A former paleolithic site, covered by a neolithic village, combined with the anthropological sculptures of Antonio Paradi so is what makes this intervention unique a contemporary art gallery in a stone and tuff quarry.</p>	N/A	The quarries, as a testament to human evolution and technological advancements, crowned by the vast open-air, are still used today by artists for work-shops and plein-air exhibitions.	N/A
	<p>The recovery process had taken into account integral redevelopment and an enhancement, which involved also principles of eco-sustainability and passive design, the mix of functional areas according to each season helped in reclaiming the environment</p>	N/A	The guiding idea of the project was to generate an overall image with a strong symbolic and representative values from an architectural, landscape and environmental point of view.	The result of the design choices is the creation of a place characterized by the alternation of full and empty, and high environmental value and articulated in a complex network of multi-purpose and multi-functional services, spaces and activities.

CAVE SEQUENCES

location: Zezere valley, Manteigas, Portugal

function: Thermal Baths

year of rehabilitation: 2017 (designed)

architects: Serena Comi, Gino Baldi from School of Architecture Urban Planning Construction Engineering, Politecnico di Milano, Italy

Tutored by: Massimiliano Roca

quarry surface: N/A

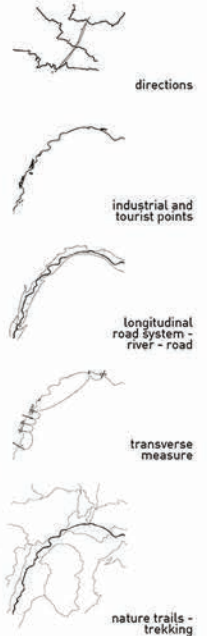
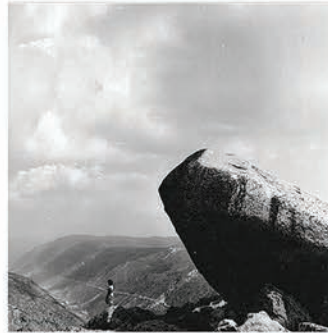
built surface: N/A

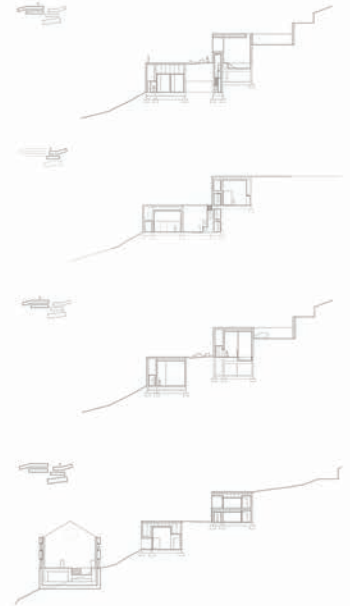
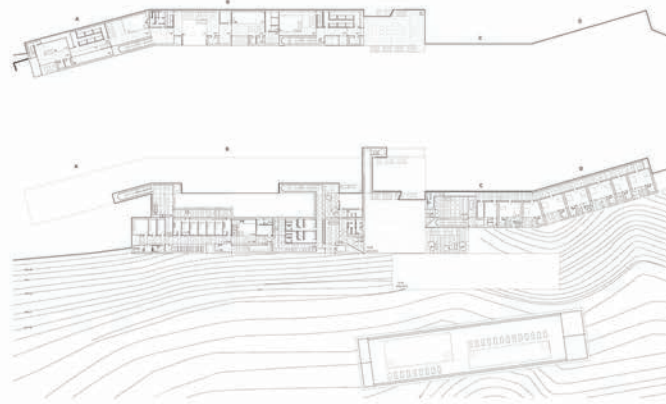
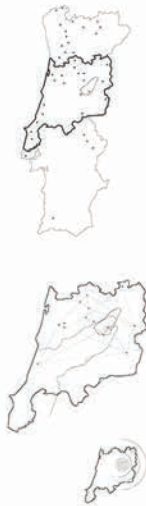
costs: N/A

From the author:

"There is a source, where the deity of the forests, tired after hunting, is used to come with his nymphs to wash his virgin limbs in the foaming water. (Metamorphosis, Ovidio)

Cave sequences is a project developed along the Zezere valley. It is a depository of different landscapes, a place made of rural and industrial spaces that overlook the river. Most of these were industries now dismissed, but they still are the identity of the place. Starting from these traces that such a stratified territory possesses, the project intends to emphasize an intrinsic longitudinal tension of the Manteigas landscape. Such a territory is so potential for natural aspects (valley is a natural creek of thermal water) how weak it is about the regeneration of rural areas. Several administrative addresses work to relaunch local identities in view of an international tourist idea. The orography of the territory has been the most significant suggestions of the project. A rugged territory brings difficult to live it, the solutions could come from the terraces for the cultivation. It is the terracing that best represents the artificial work of a natural territory as primordial act of architecture: modify the land with a wall. Just these walls in the project inhabit and dig in the spaces of life ("grotta" or "cavity"). According to this massive work, light is the center of attention, which is either zenital or lateral. It solidifies in light cones and pierces the interior of the baths."





inhabit the land



sequences



living on the wall



succession of spaces



void of light

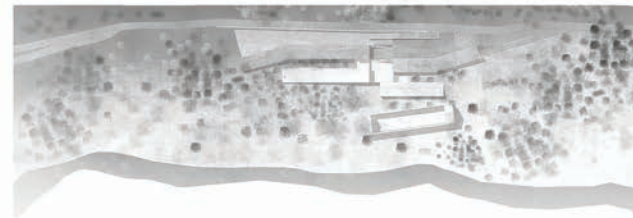


granite

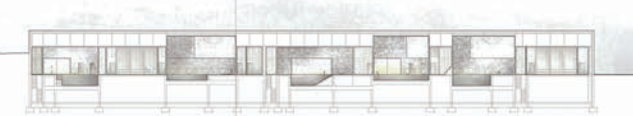


From the tutor:

"At the very beginning of this thesis, the students had collaborated, for some months, to the current architectural activities of Francisco Aires Mateus's Office, in Lisbon, where they were able to clarify and refine some general aspects of the thesis project. These matters, dealt with Aires Mateus's Office, were then taken up in their Master thesis, a project call "cave sequences". The thesis project studied mainly the relationship between materials and spaces, through the design of a new thermal complex, located in a small Portuguese village, Manteigas. This Master Thesis project tried to put in a close relation the urgency of a new cultural interpretation of the architectural process with an innovative interpretation of the existing physical conditions through an original design of materials and spaces. This work has received the highest possible rating by the Master Diploma Board of their university. During this occasion, they have revealed as two intelligent, talented and passionate students. They have some significant skills in architectural design, with a high cultural curiosity and both of them are extremely good in synthesizing ideas and architectures. They have also a high proficiency in processing and representation of architecture and are very able in control drawing tools. They are equally keen to learn new things, and able to develop autonomous and critical research activity."



inhabit the land engrave define sequences measure sign the limit to include build the vacuum perceive take the material light



CAVE SEQUENCES

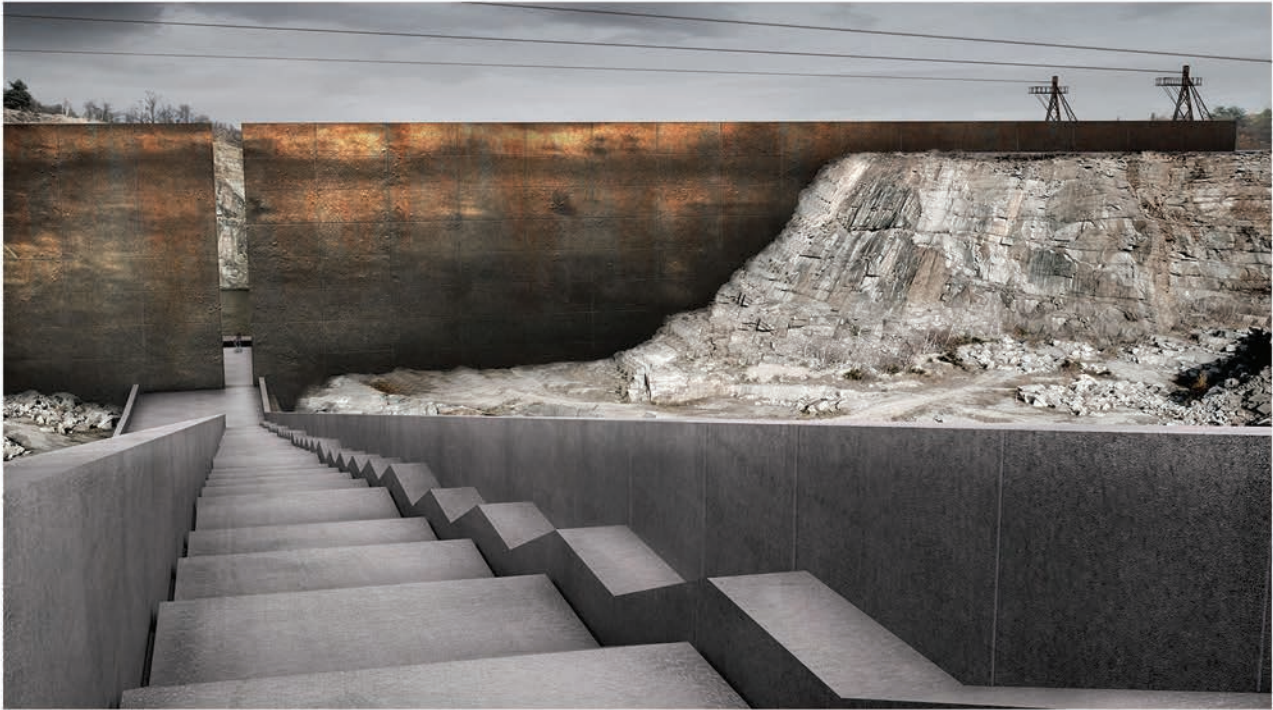
STONE HELL

location: Gross-Rosen, Poland
function: Museum Complex
year of rehabilitation: 2016
architects: Nizio Design International
quarry surface: N/A
built surface: N/A
costs: N/A

From the authors:

"The concept of Stone Hell links the universal truth, which we have been entrusted to share, with the sphere of individual reception. The use of simple means of expression which carry a deep symbolic meaning, has created a universal place, where the members of all nationalities and religious groups, which suffered in KL Gross-Rosen, will find commemoration of this tragedy. The means of expression, which have been chosen to create the symbolic meaning, are based on the concepts of modern architecture, which commemorate the mass murder of nations, and extermination of the ethnic groups. The consecutive stages of the march, during which the visitors will travel across Stone Hell, are divided into theme sequences: taking a symbolic journey, successive discovery of the truth, crossing the border between life and tragic death, between light and darkness. During their journey, the visitors will recreate the victims' way to work, explore the quarry and observe it from the level of surrounding hills. The concept of the project is based on the idea of exposing the historical part of the quarry, exploited during the time when KL Gross-Rosen was functioning."





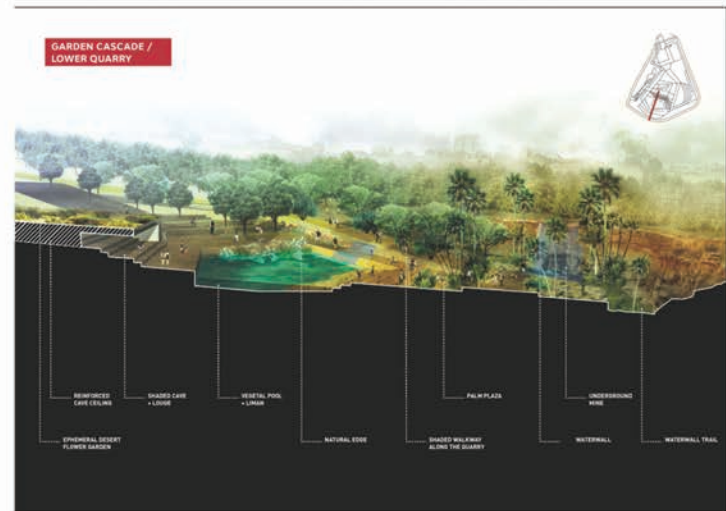
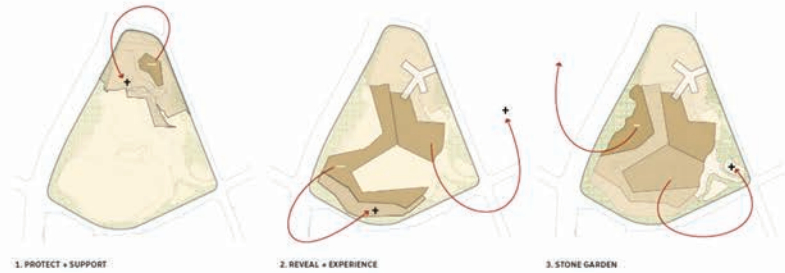
BE'ER SHEVA QUARRY PARK

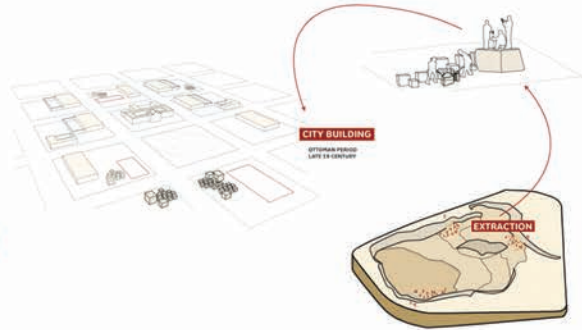
location: Be'er Sheva
function: Park
year of rehabilitation: 2018
architects: SCAPE Studio
quarry surface: -
built surface: -
costs: -

The project transforms an Ottoman-era quarry at the heart of the Be'er Sheva into a dynamic and unique public park for the community at large. As the process of extracting and carving of stone has become an integral part of the park's design, the team studied existing geological features that could be further exposed, enhanced, or otherwise expanded upon. The team documented viewsheds and vantage points that revealed different strata of limestone or views to the city.

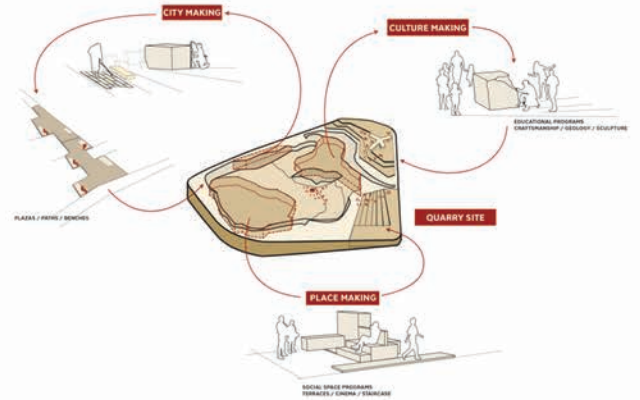
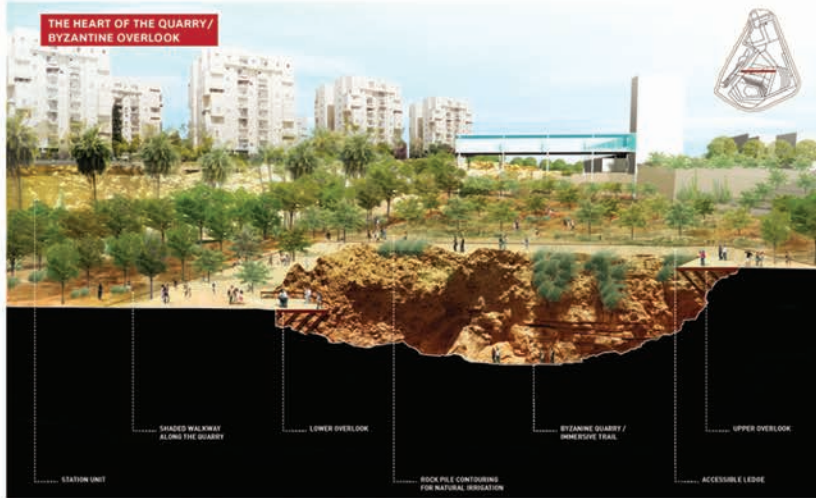
The team also documented the existing planting communities and studied ways to integrate seasonal interest into park design, and observed how the site is currently used to aid in developing a more robust programming strategy. This included an investigation of the interfaces with the adjacent communities to best suit their needs and plan for easy and flexible access to the proposed open spaces and park programs.

Geology is acting as a catalyst for transformation in Be'er Sheva, Israel. SCAPE collaborated with landscape architects Topotek 1 and LOLA on the design of the Be'er Sheva Quarry Park, which remakes an abandoned limestone quarry into a public site through a dynamic and participatory process of carving, extraction, and revegetation. Central to the design is a connective civic promenade that transverses the park space, interpreting geological strata and offering views of the public landscape under construction. The deep cuts and elevated promenade intentionally intensify shadows, expanding the use of the park throughout the afternoon hours. Water collects at the bottom of the garden cuts, encouraging the growth of vegetation and creating shady escapes from the harsh desert climate. As time advances, garden rooms are incrementally revealed to the public, creating a site experience that grows over time, shaped by the process of material flow and extraction. Through the relationship of found and constructed, residual and new, the Be'er Sheva Quarry Park provides an experience that is constantly evolving.





A HISTORIC MATERIAL



CRYSTAL PARK - ANDERSON ROAD

location: Hong Kong

function: Park for the local community

year of rehabilitation: 2012

architects: Ove Arup and Partners

quarry surface: 17 ha

built surface: 17 ha

costs: --

History

The mining activities started in this quarry since the 20th century. Rock as natural resources of the past has witnessed the transformation of Hong Kong from a small fishing village to an international financial centre.

Concept

The ideas of developing the designated area are based on the guiding principles of ecofriendliness and condensation, hence the name Crystal Park, which symbolizes the process of condensation and its purity and clarity as a natural environment.

Crystal Park will be revived as a spectacular icon of the district and territory by adding different design elements of green ribbons, reflection pools and carbon trails. By condensing the different ideas of the quarry site's concept proposal, we hope to sustain the concept of sustainable into the site by incorporating new ideas while assimilating the local characters and culture of the community.

The new quarry at Anderson Road development area is essentially significant in more than providing a sizable amount of green space. It allows the great opportunity for redefining our city identity through reusing and reallocating the ancient resources.

The process of redefining the value of Hong Kong is signified by the Crystal Park which would become a sparkling crystal for Hong Kong. This does not imply that the Crystal Park would just be a place for recreation and leisure; rather, it shows the capacity of human creation which brings impossible possible, and shows the better could be excellent. The new Crystal Park would promote a new way of living and become a space to be treasured by the city as a whole.

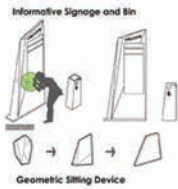
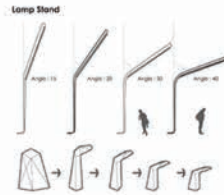




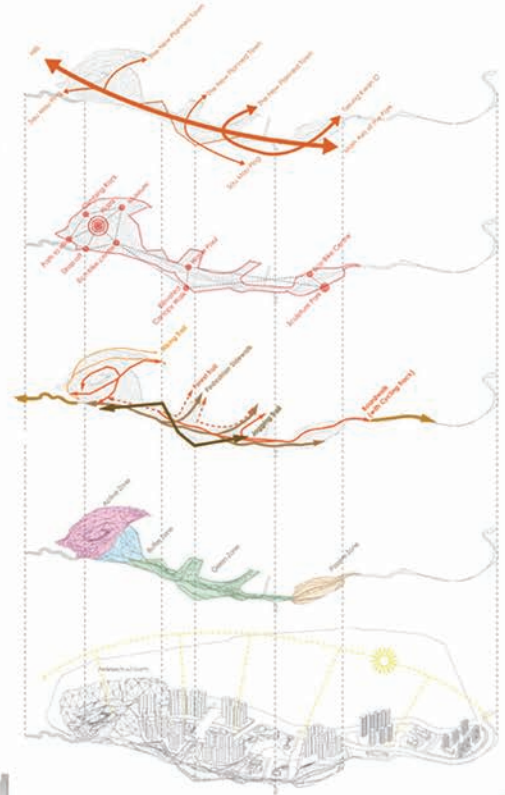
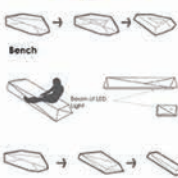
Master Layout Plan (1:2500)

Legend

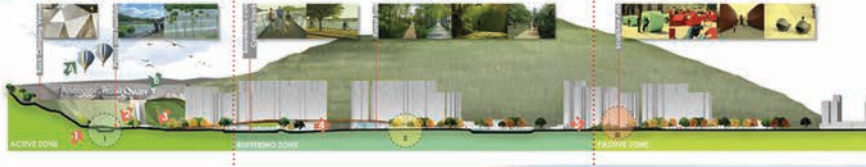
- 1. Entrance of Quarry Cavern Museum
- 2. Rock Climbing Facility
- 3. Amenity Lake
- 4. Amphitheater
- 5. Welcoming drop-off zone
- 6. Eco-bike parking Pavilion
- 7. Cycling Track
- 8. Forest Trail and jogging trail
- 9. Boardwalk
- 10. Sculpture Park



Geometric Seating Device



Longitudinal Section



YORKSHIRE GEO 01 CENTRE

location: Yorkshire

function: Geology exhibition with research facility

year of rehabilitation: 2007

architects: Emma Fairhurst

quarry syrface: -

built surface: -

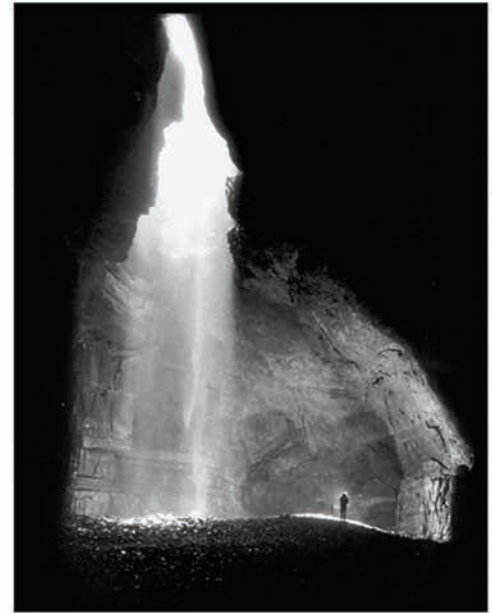
costs: -

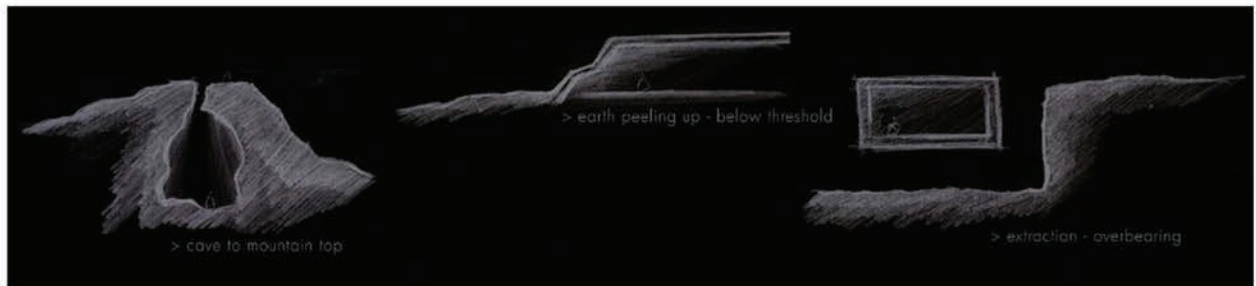
The abandoned quarry houses a scheduled ancient monument that stands today as a testament to the harsh way of life endured by over one hundred men between 1872 and 1940, to produce quicklime for agricultural use. The dramatic landscape in which the kiln nestles has been man-made through agriculture and quarrying, however this does not make it any less stunning - this unique landscape instigated an exploration of the sublime.

The thesis evolved from a desire to explore the sublime qualities of the dramatic Yorkshire Dales landscape and to heighten the sensations experienced upon encountering the towering man-made quarry face which the proposal nestles beneath.

A local context is rich in unique geological features which greatly influenced the architecture as well as providing the function for the proposal – a geological exhibition centre incorporating a research and education facility to promote the distinctive qualities of the Yorkshire Dales' greatest asset – the breath-taking natural and man-made landscape.

The site is a disused quarry complete with a redundant but historically important limestone kiln high in the North Yorkshire Dales. The buildings are, appropriately, for exhibition, discovery and research into the local geology. The project is concerned with resolving practical imperatives: how new and sustainable uses can be found to repair a fractured brown field site in a remote rural setting; with place making - how an appropriate setting can be created for an important industrial monument; and with the poetic - buildings that capture and reflect, in every aspect of their form, materials and assembly, the sublime setting.





ROM: ROMAN QUARRY REDESIGN

location: St. Margarethen, Austria

function: Cultural center/ Visitors center

year of rehabilitation: 2008

architects: AllesWirdGut Architektur

quarry surface: 4430 sqm

built surface: 4980 sqm

costs: 10.000.000 €

The quarry of St. Margarethen in the Austrian province of Burgenland—one of the oldest in Europe and in the possession of the Esterházy family since the first half of the 17th century—has been part of a UNESCO World Cultural Heritage Site since 2001. The sandstone quarried here was used for the building of St. Stephen's Cathedral in Vienna as well as for a number of landmark buildings of the Ringstrasse period.

Until 1977, the "European Sculptors Symposium", initiated 1959 by Karl Prantl, was the site and source of inspiration for international artists to create works in stone. Still today, numerous sculptures give the area around the quarry its unique character. And this place is not least characterized by an unequalled panorama in which the view unfolds far into the Pannonian Plain of Hungary.

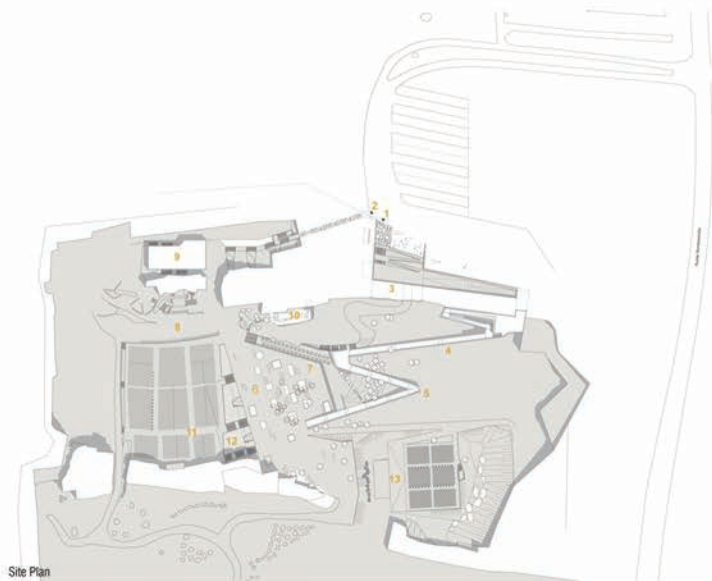
Today, the quarry of St. Margarethen is one of the most beautiful and impressive open air arenas in Europe and has undergone—under the ownership of the Esterházy Family Private Foundation, one of the largest cultural entrepreneurs in Austria—extensive development of this highly sensitive natural space. The spectacular architecture makes the impressive natural setting of the venue a palpable experience for about 220,000 annual festival visitors.

Spectacle Under the Stars – Staging Steel and Rock. A show in the Roman quarry doubtless is a unique experience for every visitor, whether it is the classical-music lover enjoying a performance of the opera festival or a local watching the annual passion play with his friends as amateur actors.

The playing and singing under the open sky on a gentle summer night, far away from the noise of the street is an experience that even the average visitor who is not too much into opera and passion plays will find overwhelming.

Until now, though, it has only been the stage itself that has benefited from the ambience of the location, unique in Austria, whereas the path used by visitors to get from the parking lot to their seats in the auditorium and back always was an unatmospheric, merely functional accessway.

The basic idea of the design is to extend the ambience of the magnificent rock-face scenery to all parts of the theatrical arena so as to make it a more palpable and visual enveloping experience.



Site Plan



Aerial View



Aerial View



Ramp Ensemble View



Exterior Lobby View



Quarry View

Quarry Landscape Rehabilitation

location: Helin, Spain
function: Public Garden
year of rehabilitation: 2016 (designed)
architects: SSS Architects
quarry surface: N/A
built surface: N/A
costs: N/A

There are places in the history of architecture that take us to imaginary worlds, worlds that refer to the myths, so incredible and improbable constructions not for its beauty but for its magic, they rest in our collective memory since ancient times, they already exist or not.

The labyrinth is one of those magical, infinite and fictional spaces that belongs to the imaginary. Borges' labyrinths of infinite sequences, the overwhelming labyrinth of Kafka, the prisons of unfinished spaces from Piranesi or Escher impossible places, are mental and visual representations of labyrinthine spaces. But the physical experience of the labyrinth goes beyond imagination; in architecture is where the maze is expressed in its most sensory dimension, because it is not built by words or images, is built with space.

Since the Greek architect Daedalus built the labyrinth of Crete, architecture has built these confused and entangled spaces recurrently. Our project is one labyrinth more, but it is a new model of infinite spatial models that can build the concept of labyrinth.

Our project is a maze of horizontal planes in the landscape, a topographic labyrinth more influenced by the stepped structures of the Inca cities or terraced rice fields of Indonesia, than by mazes sons of Daedalus formed by vertical planes of passages and crossroads.





Mt. Olympus Regeneration Project

location: Greece

function: agricultural facility

year of rehabilitation: 2014

architects: Christos Kakouris

quarry surface: -

built surface: -

costs: -

The building intends to reclaim an old and abandoned quarry and reinforce the reforestation concept on Mt Olympus foothills using a new and applied patent called Myco-restoration. This type of restoration is being part of a suite of six mycological solutions, using fungi, and these solutions are based on mycelium (roots of mushroom). The mycelium infuses all landscapes, it can be grown externally. It can also hold soils together and give about 200% percent more minerals to the soil. This process aims at restoring this abandoned landscape by cultivating mycelium, then inoculating that to the topsoil, mixing it with wood chip debris and then local flora and fauna will be attracted.

Architecture, in this project works as a substitute material in nature and embraces the sense of evolution in Nature.

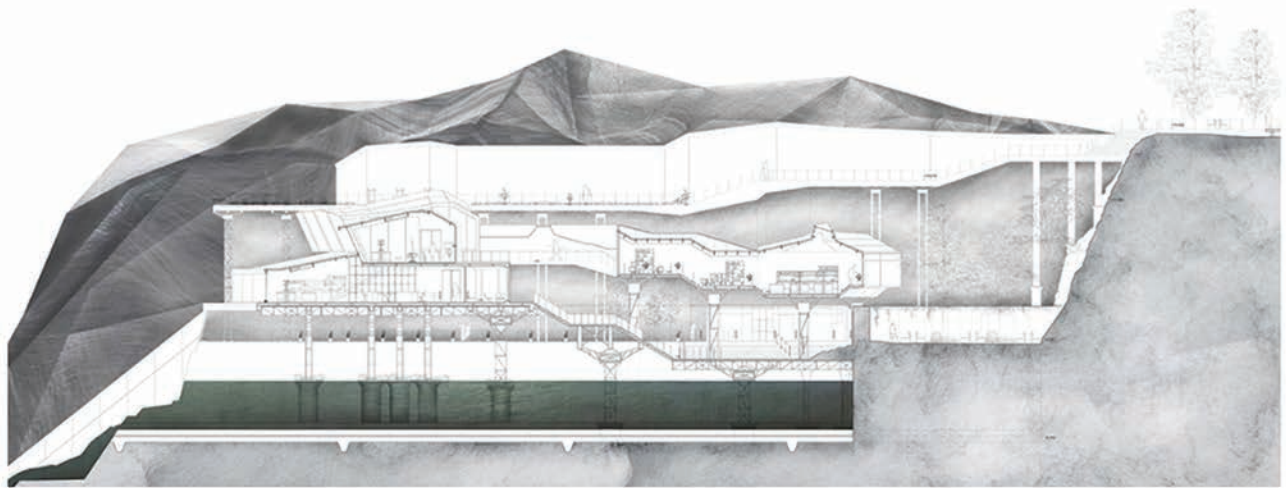
The building, through the Myco-restoration and the Reforestation transforms from a Laboratory of Nature to an Agricultural Facility for people consisting of various activities for learning and enjoying the Mt. Olympus landscape in this new and restored habitat.

Building sectors:

- Laboratories / Agricultural Facilities and workshops
- Public space
- Earth sheltered accommodation

The project investigates both the process of cultivation as a facilitator of knowledge, and architecture's role in enhancing of the transformative and regenerative role of nature. Complex of rooms / pods (nature's fruits), courtyards, in-between spaces, views, lifted terraces, all woven around the canal – the water, the source of life.





RECOVERY OF THE ENCI QUARRY

location: MAASTRICHT, NETHERLANDS

function: wetlands ecosystem, campus devoted to renewable energy

year of rehabilitation: 2015-2020

architects: Rademacher de Vries Architects

quarry surface: 70 000 sqm

built surface: 33 000 sqm

costs: 5 000 000 €

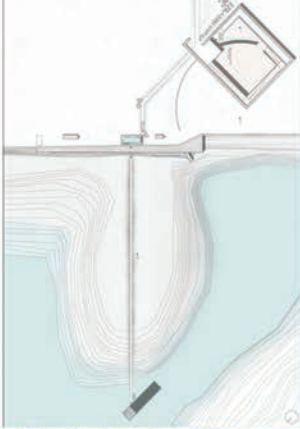
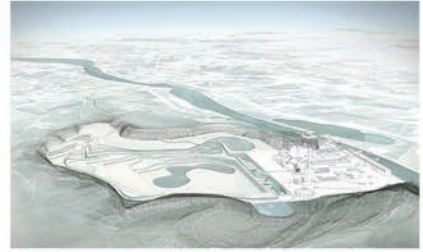
The ENCI quarry, in operation since 1926, has supplied the Netherlands with cement for more than a century. The excavation, remarkable for its size, has created a unique artificial landscape which has now been transformed into an impressive natural reserve. The site of the quarry is Mount Saint Peter, one of the few peaks standing out on the flat Dutch countryside. Thanks to its outstanding natural attributes, it has now been listed as a Natura 2000 site which is remarkable for its visible industrial formation within a system of underground caves of some 150 km in length. This has led to unique geological discoveries and has favoured the existence of biotopes that are very unusual for the country.

The reason for converting it into a public space was the extraordinary industrial landscape of the site together with the biological diversity of its surrounds. An iterative approach was adopted in order to learn, through the phases, how to carry out a project of creating public spaces without conflicting with the natural reserve. As the work proceeded, it stimulated intense debates between different interest groups over such basic issues as ecology, accessibility, pollution, work, and tourism.

The project has three main parts, which have been developed in separate phases: the quarry, the transition zone, and the business park. A lookout platform was designed to offer views of the early changes and also to provide access to the place. In the first phase, the quarry was filled with water to create a lake to keep the zone damp. While half the area has dry, nutrient-poor limestone soil which encourages the growth of rare plants and the presence of insects, the other half is a system of plateaus where several watercourses form a wetlands ecosystem. The design of the second phase, centred on the so-called transition zone, an intermediate area between the business park of intensive use and the quietness of the quarry habitat, is inspired by the techniques, elements and textures of quarrying activities. A micro-topography is thus created by means of paths that draw attention to geological and spatial effects as well as a drainage system with hot- and cold-water fountains. The final phase, the business park, which is to begin in 2019, will be a campus devoted to construction materials and forms of renewable energy.



location in relation to the city



RECOVERY OF THE ENCI QUARRY

Jewels of Salzburg

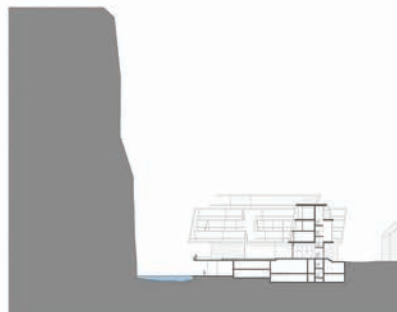
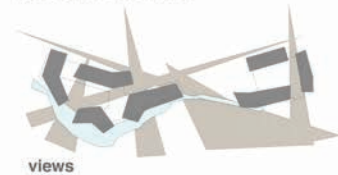
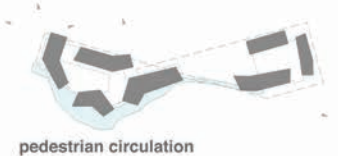
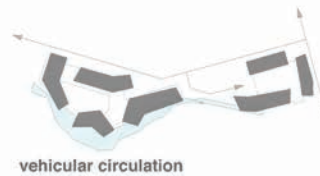
location: Salzburg, Austria
function: housing
year of rehabilitation: 2014
architects: Hariri & Hariri Architecture
quarry surface: 8850.0 sqm
built surface: almost the entire surface
costs: not listed

Inspired by the defining natural elements of the City of Salzburg, this proposal takes form. The master plan of this development abstractly mimics the city and becomes the Microcosm of the city of Salzburg itself, with the defining mountains and Salzach River flowing through.

To create a dialogue and a personal, meditative experience we have cut a narrow creek at the edge of the rock wall, which guides and invites the public through the site. Just like the Salzach River, it creates a new boundary, provides movement and extends the nature into the site. The old path is incorporated in this sequence where the water travels from the highest elevation on the site through series of water falls and becomes the collector of melting snow water, icicles, and rocks. This pedestrian path is carefully designed to allow the public to enjoy the natural beauty of the forest and the rock face without disturbing the privacy of the residents. This water canal also provides a place for exhibition of outdoor water sculptures.

Architecturally this project simulates the rock formation, deposits and random composition of a quarry site where pieces of rocks are chiseled from the mountain and then cut to smaller pieces stacked up in a random fashion. Each block then becomes a container, a wrapping enclosure of smaller blocks or apartments within, allowing each living unit to be unique with magnificent views. With this approach the mountain becomes a "generator" rather than a "backdrop". The buildings we have proposed here are set back from the rock-face. They hover over their bases just enough to create a tension from where one could almost reach out and touch the rock.

One hundred luxury residences will occupy the six new structures on the site, none of which reach more than eight stories in height. The program also includes exhibition space for the House of Architecture, a gallery and lecture space in the old brewery's underground vaults. Covering the subterranean facility will be a public green space punctured by sculptural skylights jutting from the ground.





QUARRY INFRASTRUCTURE IN MARCO DE CANAVESES

location: Marco de Canaveses, Portugal
function: academic project
year of rehabilitation: 2016
architects: Beta Architecture (Ana Pinheiro)
quarry surface: 130 000 sqm
built surface: a few parts of the quarry
costs: not listed

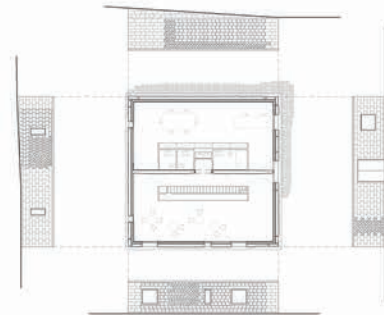
This project was developed on the dissertation of my architecture Master, about granite quarries in the region of Marco de Canaveses – north of Portugal. I consider the project a composition, it's an industrial complex and it represent a previous study for infrastructures to the quarry of Granidense's company, that provided real data where the study was developed. The task of seizing the everyday issues of the quarries formed part of the theoretical research to acquire the necessary knowledge to design with practical intelligence the functional elements of the program, since the program is quite unusual. The program's components have a considerable extension, it is divided in a main pavilion with 3 workspaces, 2 warehouses and the management volume.

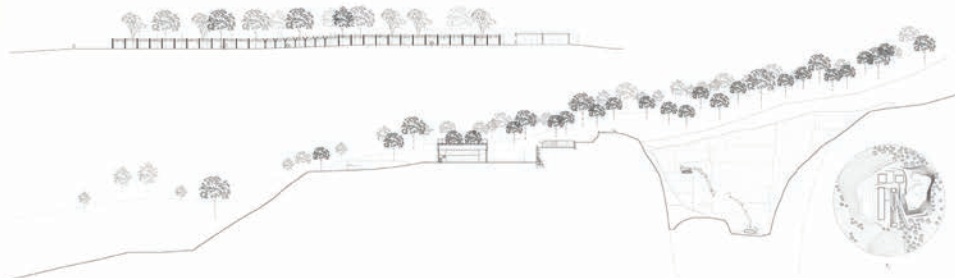
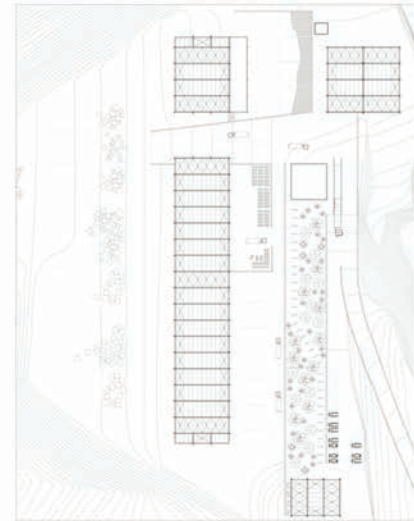
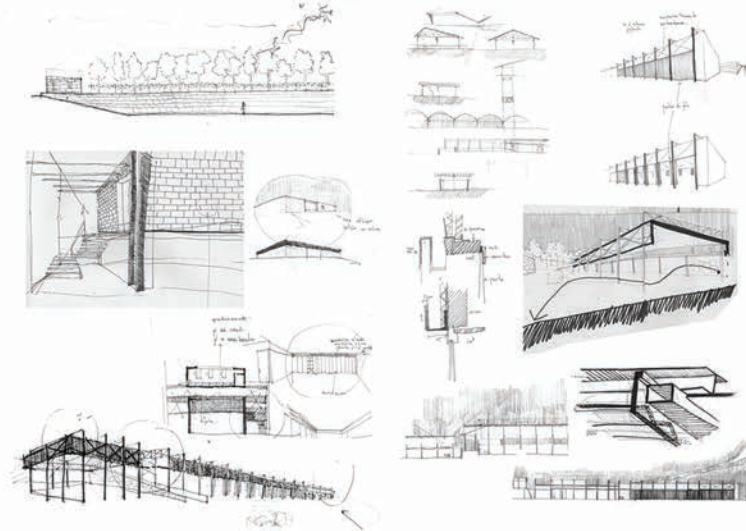
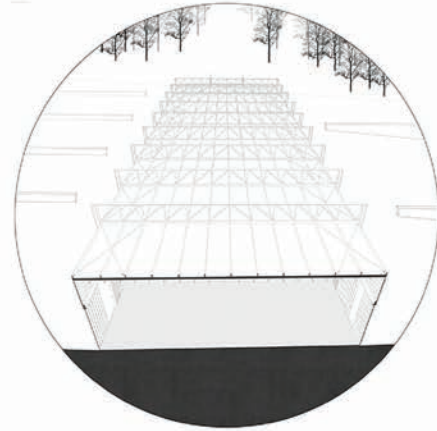
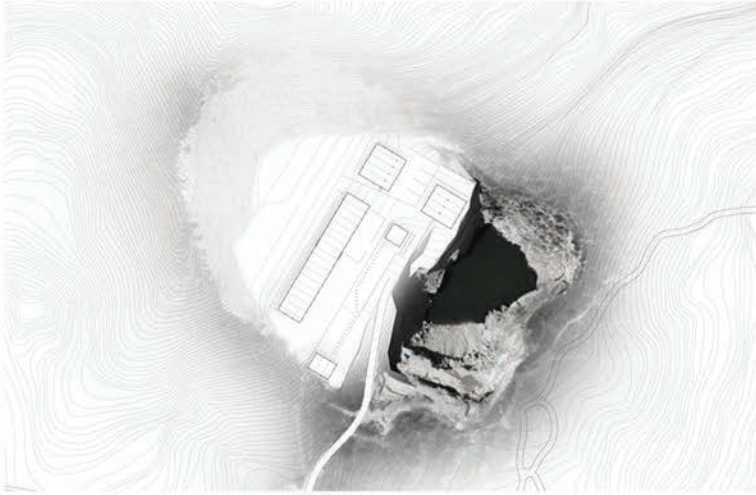
The project was designed to compete with the pavilions ordered by catalog that haunt the territory. In this sense, the relationship between functionality / economy resources determined the design outlines, where the roof of the pavilion represent a big improvement to this industry: it is adaptable to the circumstances of the three distinct workspaces. The complex is mostly constructed by steel and plate, a single volume is made of stone-the administration one-to display to the visitor the qualities of mason's manual work in the art of building in granite, characteristic of the region.

My main goal whit this proposition was to show that architecture help to serve all human activities, not just houses, schools or museums, even when it's temporary.

The latest version of a prototype is often called beta. In such version, where all its essential items are thought, reflected and defined, without being verified in the real world.

The main goal of beta is to provide a tool to the architectural community to design new projects. Currently, a lot of resources are needed in order to design any project by any architecture firm. Unbuilt projects will not be forgotten thanks to beta, giving the leading role to the initial phase, where its essence is collected. a platform where people can discuss and reflect the current way of design is the result of this process.





QUARRY PARK ADVENTURES

Quarry Park Adventures, a multimillion-dollar zip-line and rock-climbing amusement park in Rocklin, lost nearly \$300,000 in profit in its first nine months of operation under new management last year.

Profit fell significantly short of expectations set when the park reopened in April under Adventure Operations LLC, a subsidiary of a Colorado-based adventure park company. To help the beleaguered park get back on its feet, the city approved this week allocating more money towards the amusement attraction, as officials continue to bet Quarry Park Adventures will be a boon for Rocklin's emerging downtown.

Between April and December last year, about 36,600 people visited the park, bringing in about \$1.1 million last year in revenue. But for eight consecutive months, expenses outpaced gross profits. Park officials attributed that to the "unrealized revenue" from the 7,350 attendees who came with old tickets and season passes purchased in 2018 through the previous operator that were honored by the new operators.

"It's fairly dismal as you can see," the park's general manager Dylan Burt told Rocklin City Council last month. "Suffice to say that for now, those previous pass holders had a large effect on our ability to make money."

Last year, Burt told Rocklin City Council he expected about 41,000 people would attend the park in its first year of operation, saying, "I think that in this market that's fairly easily attainable."

But the park has faced additional "operational" challenges, like finding and keeping high-level staffers, accommodating fluctuating walk-in attendance, and adjusting to weather that can dramatically affect attendance like high heat or heavy rain.

This initial term sheet also includes a three-year partnership and a 120-day termination option, allowing flexibility to the City so it can ensure Quarry Park Adventures meets its potential. If the term sheet is approved on Feb. 12, a formal agreement will be presented for Council ratification at their March 12 meeting.

Quarry Park Adventures is an important part of Rocklin's future and the City is committed to its success. The City is eager to reopen the park this spring and encourages the public to take part in Tuesday's discussion.





EUROPEAN CENTER FOR GEOLOGICAL EDUCATION

*location: Chęciny, Poland
function: educational centre
year of rehabilitation: 2015
architecture: WXCA Studio
quarry surface: 35577 m²
built surface: 8450.0 m²
costs: 30000000 PLN*

The ECEG is a multi-functional research and development center, commissioned by the **University of Warsaw** is a meeting place for geologists from around the world, located in a depleted **quarry Korzecko**. The project is located in old, exploited quarry, 500m from the **ruins of medieval royal castle**. The challenge was to fulfill the functional requirements with the **smallest possible impact** with the existing surroundings.

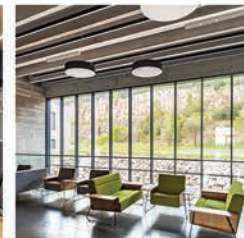
The rectangular blocks of the buildings were scattered around the quarry like freshly loosened stone blocks. The main objective of the concept is to **split the functions** into separate buildings. The result was embodied by five two-storey buildings connected with a glass corridor. The geometric shapes of the buildings, as compared to the background of the aforementioned **30 m rock wall**, create a connection between what is natural and what is processed with the human hand, making us reflect on the importance of natural resources and their management. The intention of the project was to create forms that will not dominate, but complement its unique location.

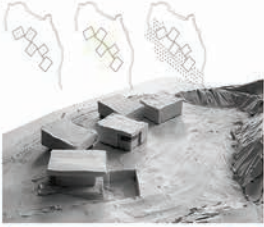
The complex has three main functions: **educational centre, laboratories and auditorium**. In addition, there was a need for accommodation spaces and a canteen.

First main building includes representative functions: an entrance lobby connected to the canteen and a foyer with an auditorium hall for 240 people. The second building is a research laboratory facility with geological laboratories where the found specimens are subjected to pre-treatment. Then the created formulations are analyzed in chemical, geophysical and geological mapping laboratories. The whole technological line is connected with an education area enabling young students of geology to participate in the process.

The challenge was to find balance between aspects related to **energy efficiency** of the buildings, the use of renewable energy sources, combined with an optimal cost and respect for the surrounding nature, animate and inanimate. The main source of heating and cooling for the buildings are heat pumps with a ground heat exchanger. The lower source consists of 91 wells drilled 120m deep. Heat pumps will work in the "water" / "glycol" system. In addition, water is also heated thanks to the solar installation in the form of solar collectors placed on the roofs.

Landscape design and green roofs are preserving naturally occurring plant species in this area like grassland swards.





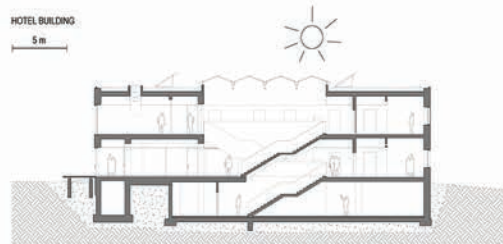
BUILDING LAYOUT AND POSSIBLE ACTIVITIES

10m



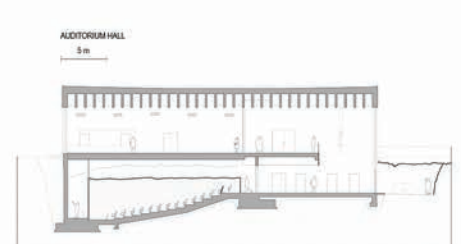
HOTEL BUILDING

5m



AUDITORIUM HALL

5m



ROYAL ACADEMY FOR NATURE CONSERVATION

location: Ajlun, Jordan

function: educational (learning center, research center, training center, restaurant)

year of rehabilitation: 2014

architects: Khammash Architects

quarry surface: Site area: 156'780 m²

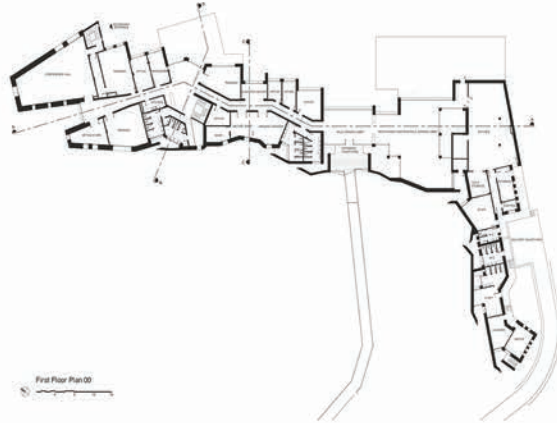
built surface: 3'600 m²

costs: 4.442000 USD

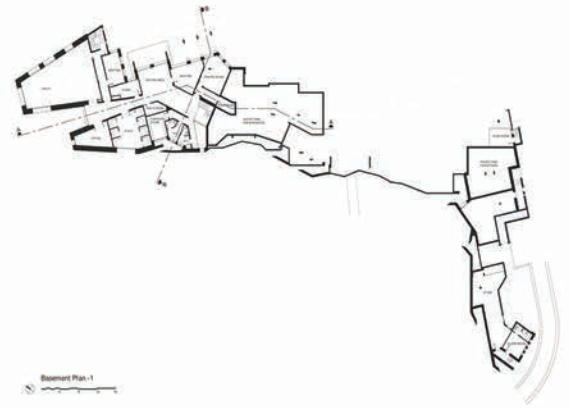
History of the place: In the late 1980s-1990s, the Jordanian Government decided to stop many functioning quarries for a variety of environmental reasons. The abandoned quarries remained as untreated wounds and abandoned cuts in the landscape, with no serious land reclamation efforts. The proposed site of the new the Rangers Academy Building held the shadows of a once was a functioning quarry that extracted **limestone**, extensively used in the region as building material. The project for an Academy was originally proposed to be on a site inside a **nature conservancy reserve**, but the architect convinced the client to use an adjacent **abandoned quarry** which is outside the reserve. It was designed between 2009 and 2011. Majesty King Abdullah II laying the foundation stone of a specialized Academy for training on the protection of nature and sustainable development near Ajloun Forest Reserve in 2011 and the construction was completed in 2014. HRH Crown Prince Hussein inaugurated the Academy in 2015. The academy is "the first center in the Arab world" specialized in offering training on nature conservation.

The goal of the project was to construct an international-standard academy and 'centre of excellence' in Ajloun for **eco-tourism** and environmental ranger services in order to meet the national and regional requirements of the tourism industry and environmental agencies and create significant career opportunities and socio-economic benefits the people of the Ajloun. The Academy Building has a double folded functionality: from one side it is an **environmental academy** that presents nature-oriented educational programs, on the other, it is a **high-end restaurant** and a **craft shop** that finance the academic program of the project. Beside the economic **sustainability** of the project, there are a number of constructive techniques, principles and equipments used in order to comply to this principle. Within the Academy, environmental systems are applied, including natural ventilation, insulation with straw, cooling and heating using a geothermal system and using the internal heat of the earth, collecting rainwater from the Academy's rooftop and Greywater. The local workforce and local techniques were used to complete the construction. Moreover, the vicinity with the natural reserve determined a thoughtful relation of the building with the trees.





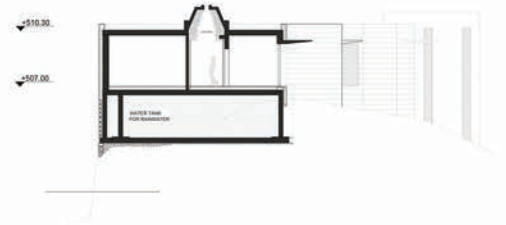
First Floor Plan 00



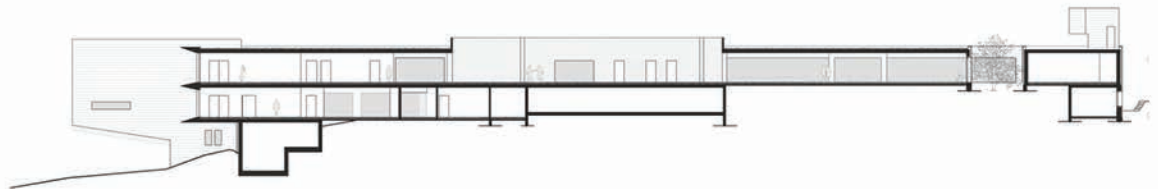
Basement Plan -1



Section B-B



Section C-C



Section A-A

ECO-CITY 2020

location: MIRNY, SAKHA REPUBLIC, RUSSIA

function: city

year of closure: 2004

architects: Studio AB Elis Ltd

quarry surface: 1 150 000 sqm

built surface: 1 150 000 sqm

status: proposal

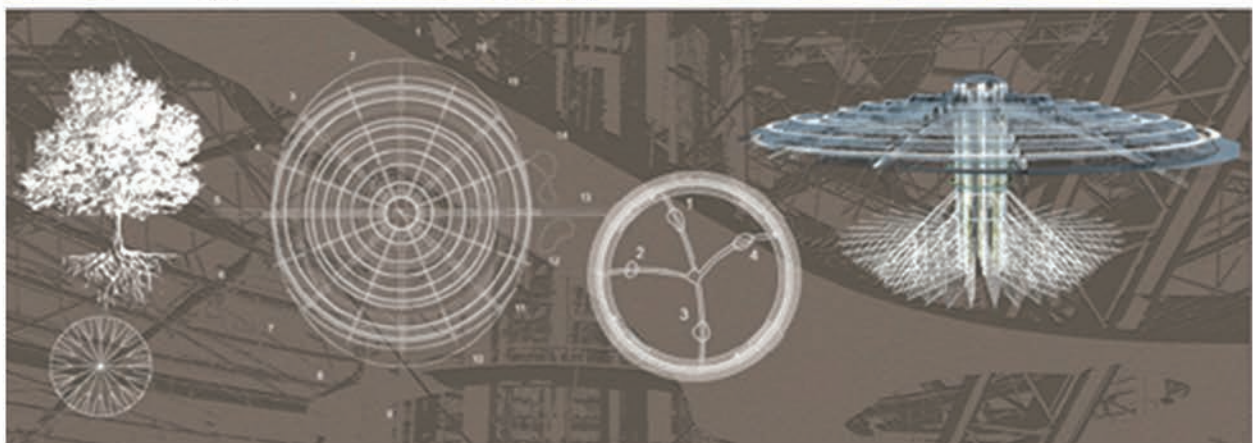
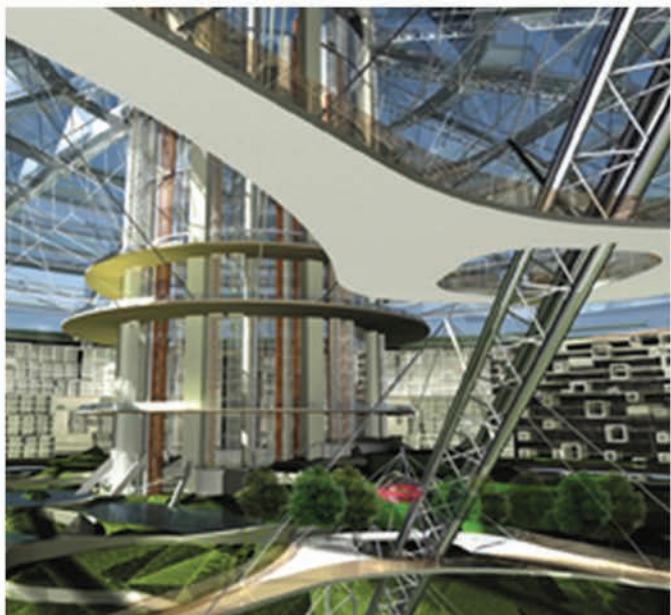
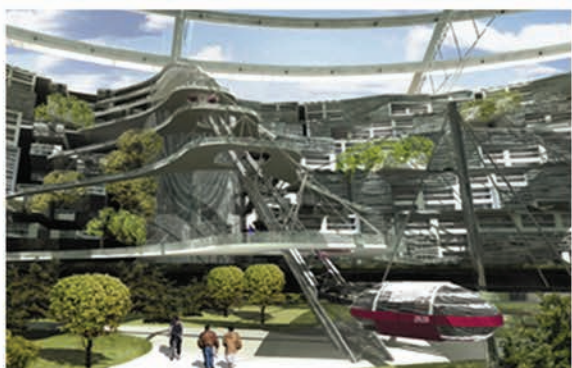
Eco-city 2020 is a proposal for the rehabilitation of the Mirny industrial zone in Eastern Siberia, Russia designed by the innovative architectural studio AB Elis Ltd.

The diamond-bearing deposits were discovered on the 13 June 1955; they found traces of the volcanic rock kimberlite, which is usually associated with diamonds. In the same year was founded the city of Mirny to support the development of the quarry. The development of the mine started in 1957, in extremely harsh climate conditions. Seven months of winter per year froze the ground, making it hard to mine. During the brief summer months, the ground turned to slush.

The mine was closed in 2004; at the end the mine was more than 525 meters deep (4th in the world), has a diameter of 1,200 m and is one of the largest excavated holes in the world. Now Mirny counts a population of 37000 citizens in an area of 123 km²; it is also served by an airport.

The idea was to create a new garden city that will be shielded from the harsh Siberian environmental conditions characterized by long and severe winters and short hot summers. The new city would attract tourists and residents to Eastern Siberia and would be able to accommodate more than 100 000 people. The new city is planned to be divided in 3 main levels. In the upper part there will be the residential area that develops all around the quarry.





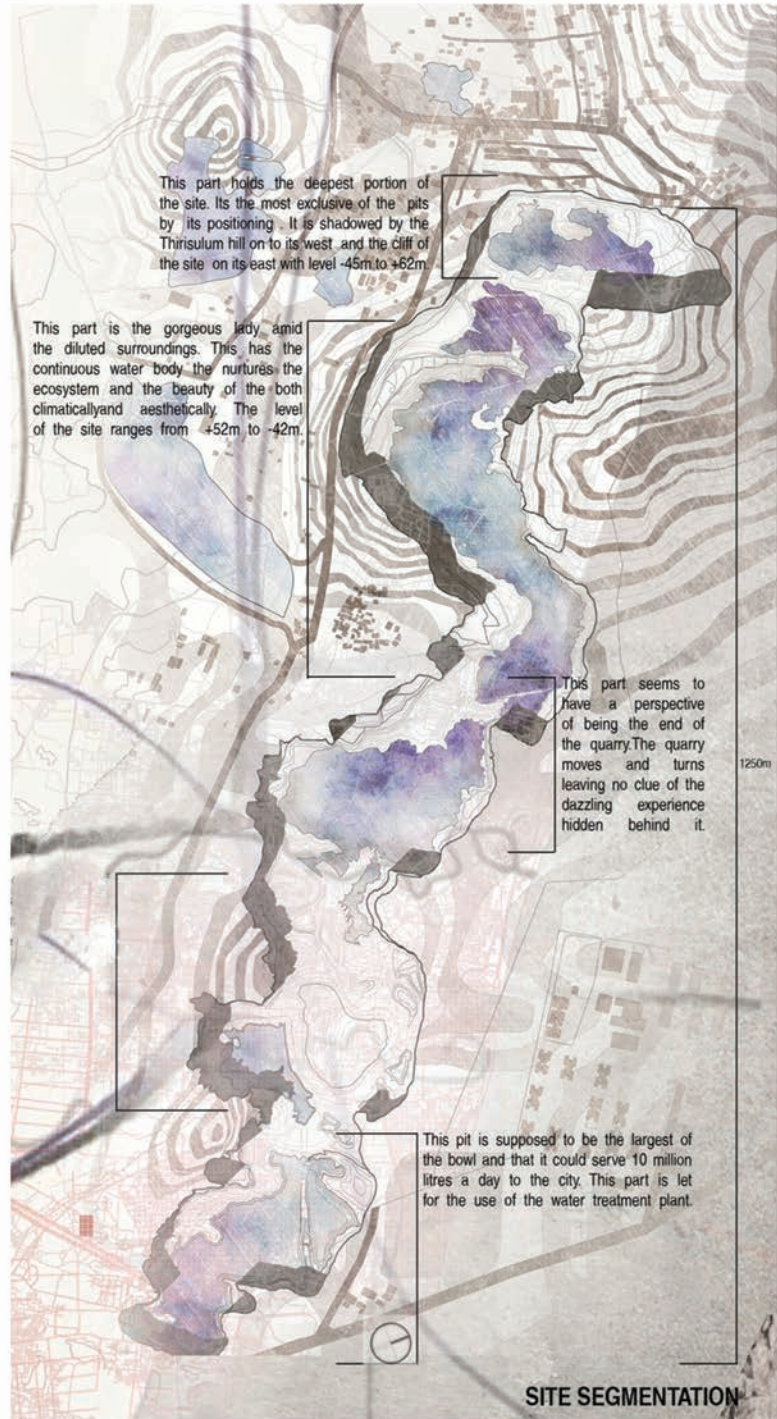
REVITALIZATION OF ABANDONED QUARRY

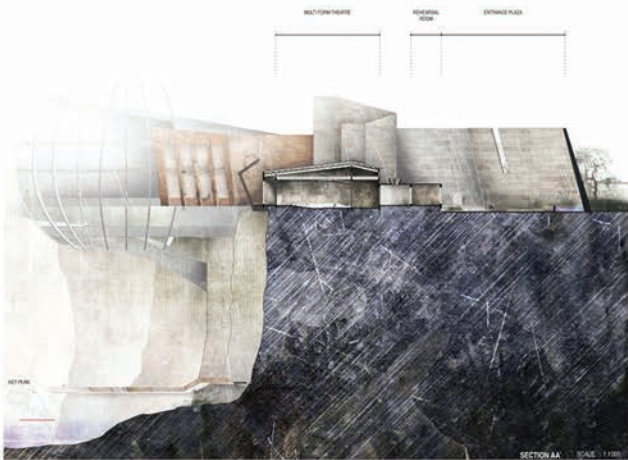
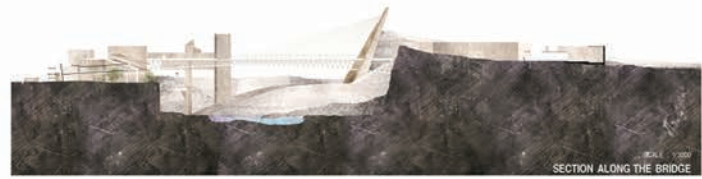
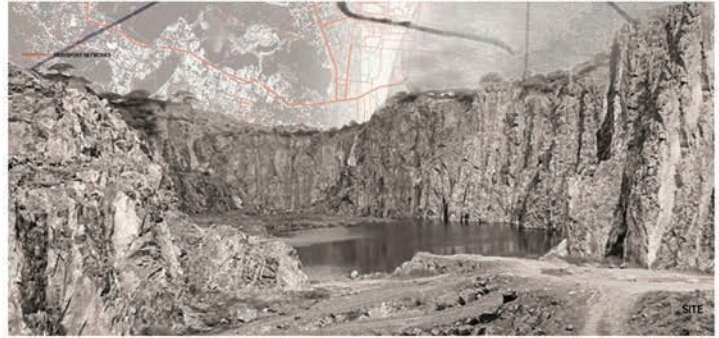
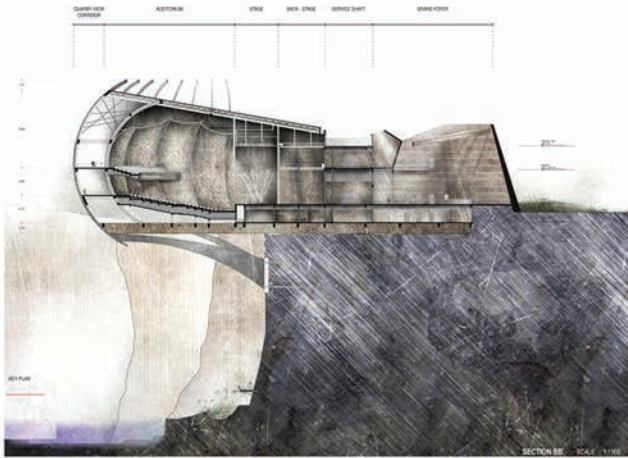
location: Chennai (India)
function: urban park
year of rehabilitation: 2017
architects: Preetika Balasubramanian (student)
quarry surface: ~15.00 ha
built surface: -
costs: -

The industrial revolution provided us with the engineering and power necessary to make profound economic and social change. However, with this unprecedented growth and new found prosperity, an abuse of natural resources and our environment initiated a trajectory of unforeseeable consequences. Today, we are leaving our historically wasteful and turbulent manufacturing economy in favor of a seemingly more stable and mainstream digitally driven era. With this, we are seeing the massive areas of disrupted land that once stood to represent the height of innovation and success appearing as abandoned wastelands all over the world. **With the quest to redevelop these areas lies the opportunity to re-imagine the definition of public space and green infrastructure.**

This thesis takes a critical eye to previous and current design strategies of industrial landscapes and identifies new typologies relevant within this construct. **Using a Gravel quarry with abandoned area as its site, this thesis proposes a master plan to reclaim, restore, and reuse the quarry as an alluring recreational green space for the surrounding community.** In seeking a redefinition of the urban park, this thesis argues that a new type of cultural parkland is needed that envelope structures, that conversed and ground that responds to 21st century living.

This proposal uses a series of architectural interventions to respond to sites visual character and fill the recreational needs of the community. **How can a forward looking architecture acknowledge a surrounding context defined by its past?** This thesis aims to capture the knowledge of previous violent enterprise, physical industrial remnants, topographic qualities of a Quarried landscape, and the character of the surrounding community in order to fuse architecture with its industrial surroundings. Through this entwined relationship of architecture and its surrounding landscape the project is able to provide unique amenities that embrace the quarry's industrial heritage. The proposal sees what has been abandoned not as waste, but as an opportunity to redefine the cultural park in order to create dynamic and engaging spaces.





LILYDALE QUARRY REDEVELOPMENT

location: Melbourne (Australia)

function: mixed-use (mainly housing)

year of rehabilitation: 2015/2017

architects: -

developer: Intrapac Property, Brencorp Properties, Bayport

quarry surface: 25 ha

built surface: up to 1000 houses

costs: ~\$100 million (only to cover the pit)

A suburb-sized development replacing a former quarry in Lilydale today releases its first wave of townhouses and apartments.

And with flats accounting for less than 1 per cent of homes in the outer eastern suburb, they're expected to be popular.

Avant Townhomes, a subsidiary of developer Intrapac, which is developing the Kinley estate, will have 12 townhouses and four apartments for sale from February 29.

General manager David Lunardi said buyers had been registering for updates about the townhouses and apartments since the project was launched.

"It's almost a new concept for the area, though when we say apartments it's not three or four storeys — it's a double-storey building," he said. "So they will present like a townhouse facade."

Latest realestate.com.au figures show fewer than one in five homes in Lilydale are semi-detached units or townhouses, and not even one in 100 are apartments.

Kinley estate sales manager Joel William said prices from \$485,000, coupled with low-maintenance living, were expected to resonate with first-home buyers and downsizers, a trend already seen with the estate's land sales.

"Anything around 400sq m has been sold out for months," Mr William said.

The townhouses and apartments will have five different designs, all with modern mixed-material facades, and positioned to look across wetlands.

Some will also feature a rooftop terrace.

Standard fit-outs will include live appliances, open-plan living zones, double glazing, tiled floors, built-in barbecues and even a flat-screen TV that will be plugged into the estate's fibre-optic network — removing the need for rooftop aerials.

"People moving in will have a live internet connection and a TV ready to go — it's all operational," Mr Lunardi said.

Kinley also has a rich history, with the quarry once run by the father of famed Australian opera singer Dame Nellie Melba, and many of its streets are named in honour of quarry workers who left their jobs to fight in World War I and II.

Two-bedroom apartments are priced from \$485,000-\$520,000.

Two-bedroom townhouses are \$545,000, and three-bedroom floorplans are \$599,000-\$660,000.





DEVON QUARRY ECO-HOLIDAY VILLAGE

location: Devon (UK)

function: holiday housing, accommodation

year of rehabilitation: 2016

architects: Habitat First Group

quarry surface: 63 ha

built surface: -

costs: -

A disused quarry in Devon will be **transformed into a huge, multi-million pound eco-tourism development** - and should be operational in just two years time.

In April last year Habitat First Group successfully applied to create **158 cabins and lodges and a 40-bedroom hotel** at the former Venn Quarry between Landkey and Bishops Tawton near Barnstaple in North Devon. The developer said the new site – called Birchwood Lakes – is **expected to create 100 jobs during development, as well as additional customer service and maintenance roles following completion**. They also estimate the **63-hectare site will generate £3.9m a year for the local economy from visitor spend**. A number of 'reserved matters' planning applications are expected to be finalised this year to establish the design of the development. The **former quarry**, which ceased operation in 2006, will also be **restored into a nature reserve**. Habitat First Group said Birchwood Lakes will offer "**world-class nature conservation alongside the sustainable holiday accommodation**" and represents "an exemplar scheme within the North Devon Biosphere reserve, whose purpose is to harmonise development with the natural environment". A statement from the firm said: "Habitat First Group has successfully achieved this at two other UK projects based in the Cotswolds and Dorset, both of which are former quarries."

Speaking last year, director Red Paxton, one of the family members who owns Habitat First Group, said: "We plan to create a truly unique offering to guests and locals in North Devon, providing **high quality and sustainable holiday properties with outstanding facilities**."

"We will continue to work closely with local councils and communities to ensure Birchwood Lakes is a successful site that tourists and residents can enjoy together."

"We will create a thriving habitat for local wildlife and will provide leisure facilities designed for all ages to enjoy."

Prior to submission of plans, Habitat First Group had consulted with the communities in Landkey and Bishops Tawton, and the district and county councils, detailing their plans to transform Venn Quarry into Birchwood Lakes.

In addition to **facilities created for guests including swimming pools and a spa, the site will also be open to local residents**.





MAHABHARATA – NALACHARITAM 2014 Avignon version

location: Carrière de Boulbon, Avignon, France
 function: Theatre
 year of rehabilitation: 2014
 architects: KIZ ARCHITECTS
 quarry surface: 37146 m²
 built surface: 670 m²
 costs: unknown

The venue for Mahabharata in Avignon is the Boulbon Quarry, a ruin of a huge stone quarry surrounded by a stone wall over 20m. Peter Brook first directed a version of the poem in 1985 there. This venue is overwhelmingly huge and desolate that the theory of Mikoshi cannot be applied. Kiz got the new idea. He made seats as low and flat as possible and enabled the audience to really "look up" at actors.

The idea has some problem. From low viewpoints, the audience cannot see through the stage and watch back performers unlike general Western theatres.

On the stage of Western theatres, which have proscenium arches, there are "near" and "far" and the expressions of infinity or eternity are beyond the very back. The way of perspective, where a big thing is near and small thing is far, follows this concept.

In Hikari no Nai, originally written by Elfriede Jelinek as Kein Light and directed by Motoi Miura 2013, Kiz set "a window" on the very back on the stage to express light and darkness. This idea follows the Western perspective.

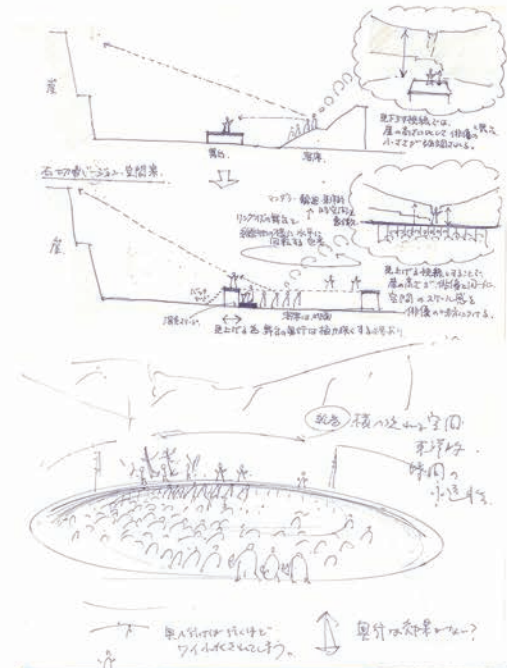
On the other hand, the stage for Mahabharata in Avignon does not have this perspective. Kiz did not think this to be a weak point and used as a strong point. He spread the stage out to the left and to the right and created a ring-shaped stage.

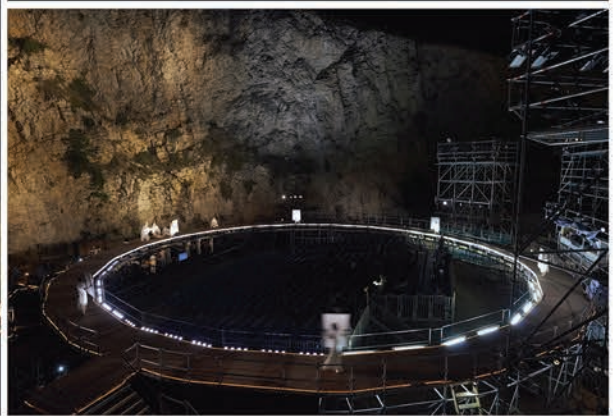
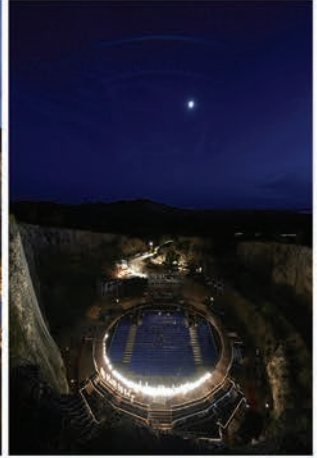
The stage is curved along with a stone wall like a corridor and shapes a ring. The ring is 3m high, so the audience sees actors with the stone wall. It is like actors are dressed in the stone wall.

The stage spread to the left and right is like a Japanese picture scroll in Heian era. The actors as mythical existences with the stone wall may reminds you of the cave paintings in Lascaux.

The ring-shaped stage harmonizes a huge stone quarry with the world of the myth.

A ring is a symbol of eternal circulation, cycle of reincarnation, and the cosmology that blesses successive lives. In the place surrounded by the huge stone wall, the ring performs as the window to the sky.





STONE NEST AMPHITHEATRE

location: Weihai, China

function: Amphitheatre

year of rehabilitation: 2019

architects: Sandwich Design / He Wei Studio

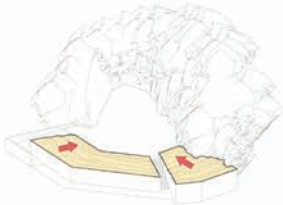
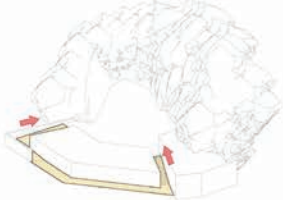
quarry surface: 3382 m²

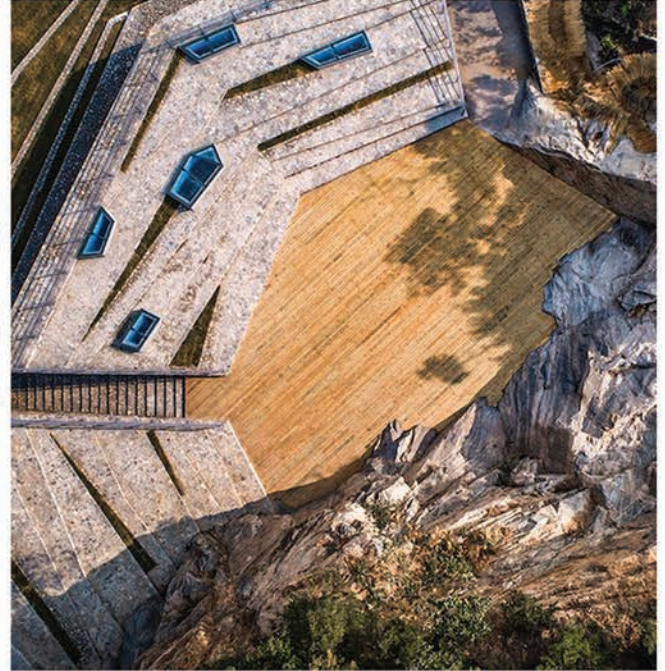
built surface: 280 m²

costs: unknown

A base emerging from reading of site and location. In its previous life, the Stone Nest Amphitheatre was a small-sized stone pit located in the Wujiatuan Village at Songshan Residential District in the city of Weihai, Shandong Province, China. Since 1990s, along with the rapid urbanization of China, a great number of stone pits had emerged all over in Weihai, among which this project was one, as well. For the past few years, as the state is paying increasingly attention on environment protection, almost all of the stone pits have been closed. Accordingly, this place had also been gradually discarded and eventually turned into a relic, given a name by the local as "Shi Wozi (Stone Nest)". During the site exploration, the design team found this abandoned stone pit by accident and was amazed by its charm. After years of erosion through the time, this relatively small stone pit, in a form of a naturally curved hand, renders a presence of some kind of artificial nature with its old traces of quarrying. The architect has been especially impressed by the exposed jagged precipice and steep cliff. How to transfer this stone pit that once ruined the environment into a public place that will benefit the local people? That has been the biggest question of this project.

In a sense, this project is a kind of architecture in landscape. And, according to the architect, a "light" posture should be taken to deal with the site, the architectural form and their relations in between. The cliff of the site is intactly preserved, without any processing, as the background wall of the amphitheatre, which, with its arc-shaped form produced by quarrying, realizes excellent acoustics. From the architect's point of view, the cliff itself is the most significant content of entire the performance, which is not only the background of the stage, but also one of the major performers. Its existence, as the start point of the whole space, determines the characteristics and atmosphere of the theatre. The audience area is set up hemming in the cliff, of which the height is gently elevated starting from the horizontal plane of the stage, forming a rounding up field. The shapes of the stage and the audience area are fitted to the original terrains, not pursuing symmetry. The seat terraces of the audience area are designed as free broken lines to strengthen the landscape efficacy of the venue.





CAVE BIANCHE HOTEL

location: Favignana island (Sicily, Italy)
function: hotel facility
year of rehabilitation: 2015
architects: CUSENZA + SALVO STUDIO
quarry surface: mq. 13.000,00
built surface: mq. 3.500,00
costs:

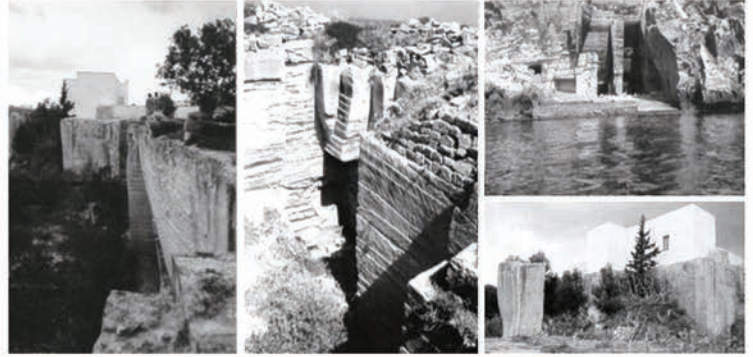
Favignana is an island in Italy belonging to the Egadi archipelago, in Sicily. Main island of the Egadi archipelago, it is located about 7 km from the western coast of Sicily, between Trapani and Marsala, and is part of the municipality of Favignana. The entire north-eastern area of Favignana is made of tuff and has the absolutely singular aspect of countless quarries, caves, sinkholes and erosions. For centuries, together with fishing and agriculture, the tuff was the primary source of income for the population. Numerous fruit trees were also planted in the disused quarries, placed here expertly to be protected from the strong surface winds, creating spectacular underground gardens where tuff and nature come together in a perfect union. Thanks to the wind protection guaranteed by the high walls, and with the contribution of the sun, the islanders managed to exploit a habitat suitable for vegetative development, creating a "natural greenhouse", which allowed to have a warm and cool winter climate in the summertime. These places have taken the name of "underground gardens". In the largest limestone quarry of Favignana, in over 3,000 square meters of green spaces, in a sequence of volumes obtained from the quarry itself, a hotel (Cave Bianche Hotel) was created in a sustainable key in collaboration with the Cusenza + Salvo studio study. The project consists in the construction of a hotel structure through the recovery of the disused quarry in 1970. The first phase of the recovery works that began in 2003 dealt with the safety, restoration and static consolidation of the quarry walls, while the subsequent phases dealt with technical and architectural problems. The works were completed in 2015. The spaces at the bottom of the quarry delimited by the limestone walls established the sizing and planimetric and altimetric development of the underground complex which is configured according to a sequence of volumes separated from each other through vertical cuts that allow light and air to enter by adjusting the temperature of the interior spaces. The volume intended for the rooms is divided into two parts spaced from each other by a slit that cuts the building in all its height allowing natural light to penetrate from above inside the three floors of elevation.



NATURAL VENTILATION AND COOLING

hot air →
cold air ←
sunlight ☀

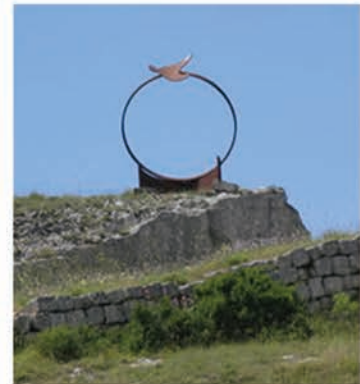




LA PALOMBA SCULPTURE PARK

location: Matera (Basilicata, Italy)
function: museum
year of rehabilitation: 2013
architects: Antonio Paradiso
quarry surface: mq. 65.238
built surface: mq. 14.781
costs:

The park is located in Matera, a town located in Basilicata known for the uniqueness of its stones, on the S.S. 7 Appia in La Palomba within the Archaeological Historical and Natural Park of the Rock Churches. Born on the initiative of the artist Antonio Paradiso, who has been working for this great anthropological work for several years, it consists of a space of six hectares, a former Paleolithic site, a Neolithic village with a fortified trench and a hut bottom, well and megalithic wall, in the last hundred years transformed into a tuff quarry and lastly into an anthropological work; an outdoor contemporary art gallery. The entrance to the site is clearly visible from the road that leads from Matera to Taranto, highlighted by a car crushed by a boulder (work by Antonio Paradiso). This and other works in stone and metal, often dedicated to the flight of birds and the myth of Icarus, can be found inside. In 2013 the sculptor Paradiso wanted to create a lasting art exhibition with his own works, which is periodically enhanced through the temporary insertion of works by other contemporary artists, who create their works during a stay in the city of the Sassi, through therefore a concrete approach with the surrounding environment. A gallery permanently houses works by Nicola Carrino, Pietro Coletta, Luigi Mainolfi, Eliseo Mattiacci, Hidetoshi Nagasawa, Giuseppe Spagnuo, Mauro Staccioli. It is a place of anthropological art, as Paradiso itself points out: works and territory delicately merge giving life to a cultural-geological landscape, inside a quarry, an element that sanctions the progressive interaction between man and man, 'environment. The quarries are an element of the territory which testifies to the gradual adaptation of man to the environment and the development of skills and techniques in the use of materials found in nature. Over the centuries, the local tuff has been used to protect, build, decorate, restore and, from an artistic, architectural and decorative point of view, has marked the history of the city. Even now some local artists make use of it, using a method that is adequate with respect to contemporary working practices. The open-air architecture of the La Palomba Sculpture Park is certainly a striking example that in life it is always possible to reinvent yourself by giving vent to your character. In fact, some of the Park's works were obtained from the wreckage of the World Trade Center after the massacre of 11 september 2011.





THEATER IN THE FABRIANO QUARRY

location: Grottaglie, Italy

function: theater

year of rehabilitation: 2006

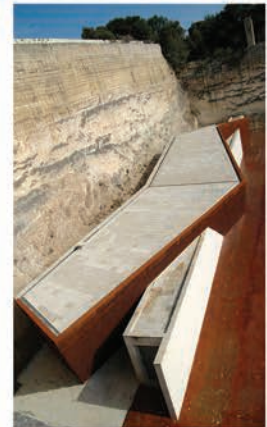
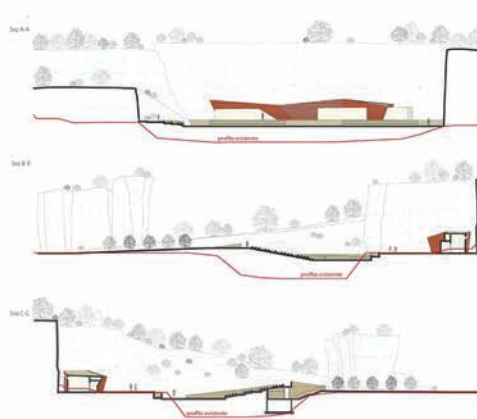
architects: Donati D'Elia Associati; Francesco D'Elia

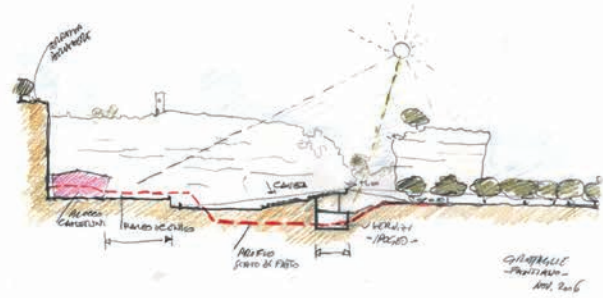
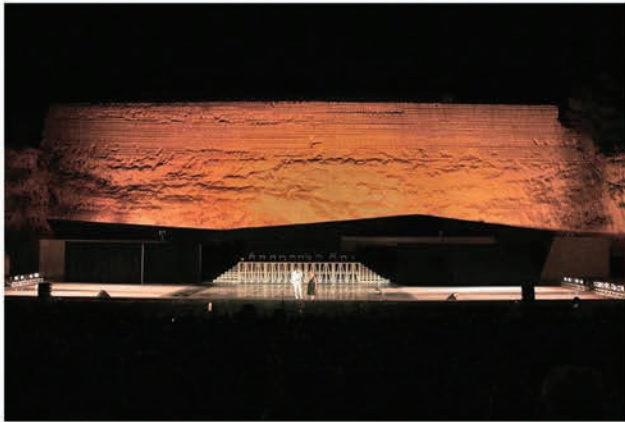
quarry surface: 950.840,71 mq

built surface: 80.000 mq

costs:

In the Cave di Fantiano Park there is a park where sporting events, shows and important events take place. The area subject to the intervention is located about three kilometers, north-west, from the urban center of Grottaglie. A place occupied for a long time by the population until the consolidation of the current historical nucleus of the country, affected, between the fifties and seventies of the twentieth century, by an intense extraction of material for the production of tuff and calcarenitic sand ashlar. Subsequently the quarry was abandoned, allowing the development of rigorous vegetation and that of fauna. In 1999 the importance of this place was recognized with the establishment of the Terra delle Gravine Regional Natural Park. The recovery of the Cave area is part of an integrated redevelopment and enhancement model, which also involved the historic center, the Ceramics Quarter and the rock habitats. The principles of eco-sustainability have been the guiding thread of all the choices adopted with the aim of developing new tourist-accommodation opportunities and raising the quality of life of the community. A part of the area is dedicated to the "Civil Space", used during the year to carry out outdoor cultural events, such as international musical performances, sporting events and cultural projects of various kinds. The organization of seasonal theatrical and concert events allowed in the first instance to reclaim the places. The result of the design choices is the creation of a place characterized by the alternation of "full" and "empty", characterized by a high environmental value and articulated in a complex network of multipurpose and multifunctional services, spaces and activities. The guiding idea of the project was to generate an overall image with strong symbolic and representative values, from an architectural, landscape and environmental point of view, which was able to relate to the agricultural and human context through immediately recognizable signs. The characteristics of the materials and building components have been taken as an aesthetic value to be highlighted, to highlight the stimuli and the pre-existences of the place and give correct meaning to the architectural details, to the differentiations of material grain, to the design textures, to the colors, to the treatment of the surfaces of various materials, to tree and shrub species.





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