

**THE MINEU PROYECT, AN EXAMPLE OF ECO-TOURISM IN A MINING
LANDSCAPE: THE SIERRA MINERA OF LA UNIÓN, MURCIA, ESPAÑA.**

M. ORTEGA¹, J. I. MANTECA MARTÍNEZ², J. CALVO LOPEZ¹, M. C. BERROCAL³

¹Depto. de Arquitectura y Tecnología de la Edificación. Universidad Politécnica de Cartagena, matilde.ortega@upct.es, jose.calvo@upct.es; ²Depto. Ingeniería Minera, Geológica y Cartográfica. Universidad Politécnica de Cartagena. nacho.manteca@upct.es; ³ UNED, Centro Asociado de Cartagena. berrocal@um.es

ABSTRACT

The Sierra of Cartagena-La Unión (Murcia, España), with more than 25 centuries of mining history, constitutes one of the most relevant examples in Spain of mining landscape, deeply modified by the human activity and testimony of this regional historic evolution.

The mining activity was languishing from the decade of the Seventies of last century and stopped definitively in 1991.

After years of pillage and abandon of the Geo-mining patrimony administration, has been aware of that the patrimony must be recovered and placed in value, to be used as tourist and cultural, revitalizing resource of the socioeconomic activity of the region.

Among the different projects, we are going to focus on the present work on the performances realized in the context of the European project Mineu. The tarjet of this project was to develop the draft of a "good practices manual" for the recovery of the mining heritage. In the project there have taken part multidisciplinary teams (Mining engineers, geologists, archeologists, architects, experts in tourism) of several countries (Slovakia, Germany, Italy and Spain). As "pilot zone" for the application of the obtained conclusions, there chose a sector of the Sierra of Cartagena - La Union, named "Cuesta de las Lajas" (Slope of The flagstones), specially richly from the patrimonial point of view.

The economic funds of the Mineu project, has allowed the materialization of some of the proposals selected by the experts. Among them it is necessary to emphasize the safety related ones, due to the level of inherent risk in these mining zones. Actions of excavation have taken to themselves to end first and the extraction of rubble, which have put in evidence elements hidden by ruins. After the industrial-architect elements cataloguing (washers, shafts, galleries, hoppers, etc...) and landscape (rafts, mine dumps), there has been projected a net of paths that connect between the diverse elements and allow a visit along this portion of territory, focused as a natural museum outdoors, or ecomuseum.

The development of the Mineu project and his application to a pilot zone of the Sierra of Cartagena - La Union, proposes as a model of performance for the respectful recovery of mining heritage, and puts of manifest the interest of the multidisciplinary approach in this type of works. This example encourages us to realize performances of recovery in a moment in which the region of Murcia is immersed in a great constructive explosion that seems does not respect too much the natural patrimony, since already it has happened in other coast European regions.

1. ANTECEDENTS AND HISTORY

The development of this article will centre on showing how the history of a geographical space comes marked by the natural resources that we find on it. If we relate the history of another place would be completely different, since it would be affected by other factors.

For the study of this article we are situated in a mining zone with more than 25 centuries of history placed in the south-east zone of Spain.

The Sierra Minera of Cartagena La Unión, at the south of the region of Murcia, occupies approximately approximately 10 x 5 kilometres and has a rectangular surface lengthened in direction North-East – Southwest . In this space we find one of the major accumulations of lead and zinc of the Iberian Peninsula.

This mountainous set, which is considered part of the Bética mountain chain in its more oriental part, spreads parallel to the Mediterranean coast from the city of Cartagena up to Cabo de Palos and separates the littoral of the interior plain in which finds the city of La Union.

The coastal zone is abrupt whereas the interior has softer mountains, coming up to the plain of the Cartagena's field.

In all this Sierra, which colors ocre and reddish made presage to the former civilizations of the existence of mineral

The ocre and redish colors along the sierra made presage to the former civilizations of the existence of a great quantity minerals. In this space we find one of the major accumulations of lead and zinc of the Iberian Peninsula.

The coastal situation of this territory, which was favoring the trade with other zones of the Mediterranean, the richness of its lands and fundamentally the mineral richness of its mounts, has motivated that different civilizations have fought to settle on this rich coast.

We find a landscape deeply modified, become infested with elements archeoindustrials, as mineral washersy, head frames, shafts, and landscape elements as surgencias, rafts and dumps, which betray to us the great quantity of changes that have realized the different cultures on him it.

The Sierra Minera of Cartagena - La Unión is in a zone deeply marked by the changes that suffered historically all the coasts of the Mediterranean Arch. From the Bronze Age we can find settlements in the zone that reflect the first works of mining industry.

After the first Phoenician and Greek populations, that used methods of extraction based on wells and galleries technologies, the mining splendour came with the Romans, since they developed a few advanced technologies of exploitation that allowed creating a prosperous mining industry based basically on the lead and the silver. The great economic growth lived in the zone, thanks to the mines, brought the foundation of Carthago-nova, a prosperous Roman settlement with a great trade with other points of the Mediterranean and an advanced urbanism for the epoch.

The present Cartagena, especially his old town, is seated on the ruins of buildings of Roman Period. These buildings, are being found nowadays in the works of the new constructions that there is realized in the city, which is giving a great archaeological importance to the same one.

The intervention carried out by the Town council to safeguard this great patrimony consists of raising the ground floors and supporting the basements as museum spaces. One of the finds of major importance, that is necessary to highlight, is the Roman Theatre found under the ruins of the city, and that is just now near to his opening to the public once restored by the architect Rafael Moneo.

After the Roman occupation, where the great majority of the mineral was extracted, there came near to the depletion of the mines with the means of extraction that existed till then, which led to the abandon of the mines and to a great economic crisis from the 2nd century D.C. This situation was mixed with a few years of the history become infested with obscurantism, battles and diseases, the Middle Ages, which kept the zone in an economic lethargy of which would not wake up until centuries later.

After centuries of almost total absence of the mining activity, arises, from 1840, one most important mining and metallurgical development that allowed to place to the district of Cartagena-La Unión, between the principal producers of lead, not only of Spain, but entire world. The Sierra of Cartagena, between 1860 and 1900, was producing as average 44 % of the production of lead of Spain, which in turn was appearing between the first world producers.

This period also marked the Sierra Minera. The division in grants of the area, allowed, that every miner should exploit a piece of land, that was renting to him, remaining with a part of the benefits, unlike previous stages in which the State was doing it.

The great quantity of small grants that were spreading over the Sierra, created a landscape riddled with mining elements. In addition, the use of the wood like fuel and as element of cribbing of the mining wells, produced an intense deforestation in the zone that still appreciates nowadays.

The work in the mine was very hard. Entire families were done with a grant and were exploiting it. There there was carried out a process of exploitation in which first the miners were managing to accede to the interior of the land by means of wells and galleries, as in previous periods. Later, the mineral was extracting with the drilled hole technology, what a great risk, due to the detonation that was carried out. Later, after the ore chosen mineral, that was obtaining for the detonation of the material, was transported on the outside to rib, (loaded on the back) ó in trucks.

This labor there were in the habit of realizing boys of approximately 10 years since his small size was allowing them to accede for the narrow galleries of the mines.

There have been done studies that have demonstrated that the population of the Union during these years has minor height that that of nearby zones. This due to the fact that the children having worked from very early age in the mine were not coming to develop completely.

Once in the exterior of the mine the material was crushed and t the residue was separating by means of a method based on washers of differential flotation. These washers allowed that the mineral by gravimetry, was going on to the bottom and the sterile one was floating, and this way, after several processes of wash Illegara to a complete separation of the material.

In this period there was lived again a stage of economic prosperity in the zone, which lead to a great demographic growth and to the creation of many new wealthy what led to a great peak of the high class. This growth allowed to the rich miners the construction of great quantity of modernist buildings, commanding style in the whole Europe. The architecture of the zone met strongly favoured, we can find, in both the city of Cartagena and in La Unión, great quantity of buildings of a great decorative and ornamental richness proper of the modernism, many of them constructed by the architect Víctor Beltrí.

The demographic boom brought with it that was producing a workers' great arrival from the zone of Jaen, Huelva and Ciudad Real to exploit the great quantity of grants that existed in the Sierra. In this period takes place a great demographic growth and the arrival of new miners of Andalusia brought a new cultural interests. The interest interfered for the Andalusian gipsy singing (arte flamenco) that will continue up to the actualidad with the celebration every summer of the International Festival del Cante de las Minas (Sing of the Mines) in the modernist building of the Public Market.

Finally the fall in the lead's prices and the first world war provoke that there takes place a new mining and economic crisis in the zone. This mining peak declines with the first world war.

In the middle of the 20th century, and thanks to the arrival of the Multinational company Peñarroya, a new mining boom took place in La Unión. It was possible thanks to the utilization of methods of "open pit" exploitation highly mechanized, and to the modernization of the technologies of concentration, which allowed a better utilization of the minerals.

The open pit mining industry had an important environmental impact, since the poor material's grade was doing necessarily to move big quantities of area to get to extract the mineral.

The landscape was deeply modified. One of the most serious impacts of those actions was the mineral washery Roberto, whose spillages on Portmán's bay were of such an importance that they prompt to the filling of the same one.

In the decade of the eighties there takes place a fall of mineral prices and began the depletion of the mines. In addition, the environmental provoked impact, takes major relevancy every time due to a major legislation and public awareness.

Finally, and after years of social fights and economic losses, it is decided to sell Peñarroya's areas to Portmán Golf. This company tries to support the mining activity, though basically Peñarroya claims to create an urban development complex in the Portmán's Bay zone.

After Roberto's washery closes due to environmental problems, another sky open exploitation zone is tried to build near to another washery in a village called Llano del Beal, very close to La Unión.

It's necessary for the new exploitation zone to dismantle this village and move all the people to a new settlement that is tried to build. The intention was to re-place the dismissed workers in the Roberto Washery and support the zone mining industry. But, a great problem arrived, the majority of the villagers would refuse to leave their houses because many of them were silicosis sick old miners, women and children with a very big spirit of union. A local revolt would be created in opposition to the Washery that for many years did not allow to the workers cross to do the necessary explorations. The neighbors entrenched in shops, block the ways, and even they throw stones at any person who was related to the opening of the mine. The police (guardia civil) arranged workforce for many years but the revolts were unstoppable.

Finally after verifying that there would be impossible the opening of the new mine the company desisted from continuing with the mining activity in the Sierra.

2. GEOLOGY OF THE SIERRA OF CARTAGENA-LA UNIÓN

The Sierra of Cartagena-La Unión, which finds in the most oriental limit of the Cordilleras Béticas, is composed of a series of stratiform ore body made up in the Alpine orogenia that passed along more than 200 million years from the Triassic up to the Pliocene. On the stratiform ore body there settle thermal fluids of a vulcanism posterior stage and hydrothermals movements motivated for postorogénics movements.

According to the teacher D. Jose Ignacio Manteca we can find in the Ierra Minera different deposits types that attending to the morphologic and geological characteristics they qualify in stratiform ore body, mioceno's disseminations, dike rocks structures, stockworks and veins associated with the vulcanitas and monteras or gossan.

The stratiform ore body.

They have been the major mineral resource of the big developments to open pit. Two types are the Superior ó the first mantle and low ó the second mantle.

The first mantle places in the base of the carbonated package of San Ginés. It's in the central zone of the Saw, with an extension of 10 km² and in a small area in the east.

The second mantle occupies 40 km² and is in direction NNE-SSO centred on the Sancti Spiritu zone.

The first type we find it in the Llacimiento de los Blancos with such sulphurs as the pyrite, blende, galena, marcasita and pirrotina.

In the second type we find the area EmiliaSan Valentín and Tomasa with such principal minerals as the greenalita.

Disseminations in the Mioceno.

They are in the south of El Llano del Beal, and have elongated form. They constitute the most important current resource mining after the disappearance of the stratiform ore body. There exist different litologies perlitas, sandstones and conglomerates.

One presents pyrite, marcasita, blende and galena together with clorita and quartz.

Dike rocks (filonianas) structures.

A dike rocks field exists in the system of principal fracturation N130, between Escombreras and Cabo de Palos. The veins are fitted into different litologies levels, limiting itself to the intersection of the fractures with the carbonated packages. They are in the habit of having an extension included between 500 meters and 1 kilometre.

Stockwoks and veins associated to vulcanitas.

They are in La Parreta, Cabezo Rajao and La Crisoleja. In the Cabezo Rajao we find a few veins of complex structure accompanied of an intense hidrothermal alteration.

Also we find stockworks in La Crisoleja related to the subvolcanic dome that there exists. In several points of the Cuesta de las Lajas dikes gap or seeds appear with a similar mineralization.

Monteras or gossan.

They are superficial masses of rusty mineral, consisted of the primary sulphurs oxidation. There exists an oxidation of oxides, hydroxides and sulfates and the gohetita appears as principal mineral, hematites and silica and in minor measure the jarosita.

3. ACTUAL STATE.

After years of restructuring with search of new sources of wealthy, the population has become stable with a minor unemployment and there is a period of economic summit in the whole region of Murcia nowadays, motivated largely by the construction and the industry, since the agriculture, which from early years was the engine of the economy together with the mining industry, are at a standstill.

Nowadays, both the local and regional Public Administrations, are been aware that it is necessary to recover the whole geo-mining patrimony spread over the whole Sierra Minera, since it can be a way of generating wealthy and development by means of the tourism.

Our society for a few years are going through acts of vandalism and pillage of the Sierra Minera, due to the little importance given to the mining vestiges.

The Pithead frames of wood have been destroyed to use his structure as fuel in periods of penury, and many of the metallic structures have been dismantled to be sold as scrap.

An example of the terrible one pillage of metallic elements of the mining structures it is the Cabezo Rajao, a mountain exploited from Roman period that receives its name due to a vein of galena that was extracted leaving an hollow inside.

Another example of many outrages on the mining heritage is the current use of the ancient mines as uncontrolled dumps of rubbles.

The mining constructions, which were placing close to the mines to guard the machinery, are being dismantled to re-use his solid bricks and the tiles of his covers of two waters in the construction of autopromotion's houses.



Figure 1: View of one of many metallic castilletes spread over the whole Sierra, in this case that of the MinaTrinidad Pozo San Esteban in El Garbanzal.

And this way we might continue with a no end of elements of the Sierra Minera.

In this context arises the Mineu Project promoted by Town council of La Unión.

This project is born with the intention of realizing, promoting and extending the knowledge of the mining heritage, a cultural expression unknown by the great quantity of European citizens.

Its fundamental intention is to join professionals of different nationalities to contribute with different solutions on how to act with this heritage, and finally, to realize a manual of good practices of conservation of the mining heritage, together with a free access web page that allows to anyone could access to the different reached solutions.

Firstly, the Town council of La Unión, as promoter of the above mentioned project, got in touch with three associates collaborators: the RDA Senec Pezinok of Slovakia, the Brearchimede S.O. of Italy and the Deutsches BergbauMuseum of Germany.

This idea arises as a project selected by the European Commission inside proposal sessions of CULTURE 2000 and has a total budget of 281.716 Euros, of which 47% is subsidized by the European funds of the CULTURE 2000 program and other one 53% it is contributed by four associates who form part of the project.

After the selection, the participants of the different countries plan a series of meetings organized by each of the associates in his places of origin to which the rest of participants travel.

Meetings are realized in the diverse organizing countries by professionals of different fields, geology, archaeology, tourism, architecture and nationalities, where solutions are debated. Finally, there is created together a manual of " good practices ". In addition, 9.000 DVDs with the project's conclusions will be realized in two languages that will distribute to the associates participants in order to distribute them in their native lands.

Later, the Town council of La Unión proposes as practical case, the intervention on a pilot zone of the Sierra Minera of La Unión, the well-known Cuesta de las Lajas (Slope of the Shales), named like that for the great quantity of smooth flat stones and of little thickness existing there.

The ideas contributed by each of the countries participants are studied in depth and, later, a common project of interventions is written about the zone.

The economic resource of this project has allowed the materialization of a part of the contributed solutions that are detailed below.

4. MATERIALIZATION OF THE MINEU PROJECT.

The area of intervention of the Mineu Project, focus on, as we have said, in La Cuesta de las Lajas (The Slope of the Shales). This Slope is placed in a space near to the city of La Unión, in the well-known 33 mining road that joins La Unión, an inland zone, with Portmán, placed on the coast, crossing the Sierra Minera.

The construction of this Route was promoted by the Spanish government in the years in which the mining crisis took place in order to occupy the population who was in unemployment due to close down of the mines.

The 33 mining road joins different mining spaces and has a great geological value, since in this space of the Sierra are appeared of andesitic magmas, and fractures of the area due to a great hidrotermal activity.

The Mineu project centres its first stage on this road. Some of the motives by which this enclave has been selected for the accomplishment of the project are that this space is a property of the town council, that has a great quantity of easily recognizable mining vestiges and what is near to the city of the Union and to the stop of the train station that joins Cartagena with the beaches of the Mar Menor. This train was started using for transporting mining goods connecting The Union with the Port of Cartagena.

The Mineu project centres on the first stage of this road. In which, visually we find, in the first term, a pool of sterile created by the arrival of the muds that were coming from the mineral washery that they find in the zone. In the slope of the mountain we meet two mineral washeries, of tin and sulphur, a copper precipitator and a condensation coil chimney for the fumes generated by the smelting lead.

Little later, in the 33 mining road, we find material appearances, a showy mine called “Mina Remunerada” and later a mine excavated in the mountain called Agrupa-Vicenta, inside which the Universidad Politécnica de Cartagena studies nowadays the possibility of placing a museum.

In the whole mountain we find great quantity of mining shafts and in a zone to major height we find the “Pablo and Virginia” mine. Beside it there are ancients working sheds of miners work in poor condition of conservation and a hopper to unload the materials.

On having reached the highest zone of The Slope of the Shales, we find a viewpoint from which is contemplated the landscape of the city of La Unión and of the Field of Cartagena. In this viewpoint we find elements of street furniture, flags, benches and plants that they find also in some other points of the tour of the 33 mining road.

Even we find a small chapel and a barbecue zone. All these elements have been placed throughout the years without any project that organizes them.



Figure 2: In the first term the path constructed from the 33 mining road to the washeries and in the second term the washery of the “Remunerada” Mine. In the top part can be appreciated the viewpoint and the entry to the Mine “Agrupa Vicenta” and the mine “Pablo and Virginia”.

The Mineu project considers giving a connection to all these elements spread over the mountain in order to create an open air ecomuseum or cast museum.

For it a series of tours are suggested, that following the curve levels that come from the low part of the mountain, crossing for both mineral washeries of tin and sulphur up to the viewpoint placed at the top. It tries to create a few rest zones in different strategic points where there place furniture elements as benches.

In addition, protection elements placed in differences and hollows that could be dangerous.

Also the industrial mining elements are tried to put in value that are in the mountain's slope, principally two ancient mineral washeries.

The short resources of the first subvention only has allowed to realize some of these interventions, but it's necessary to obtain more funds to continue with the complete ideas of the project, such as aspects relating to safety, with the purpose of protecting the top part of the mining shafts, and the relating ones to the indication's panels, with explanations of the visited elements.

Almost totality of the first subsidy has been used for the creation of the tours and the very important labour of cleaning-up of one of two mineral washeries.



Figure 3: In the first plane a view of La Cuesta de Las Lajas in the background the panoramic view of the city of the Union and of the Field of Cartagena.

The intervention done in the paths has consisted of planning a tour that ascends for the mountain that allows visiting both mineral washeries. From the first point, which departs from the 33 mining road, the paths follow a zigzag tracing across the mountain of ascending way that comes up to the viewpoint placed in the high part of the mountain. The path bifurcates in a middle point, at the level of the first washery of the Mina Remunerada, to visit the most distant second washery.

The labours of recovery was centred basically on the cleaning works of the gravimetry washery of the “Mina Remunerada”, placed in the lowest part of the mountain, and the shortage of the resources has not allowed to continue with the cleaning labours of the second one.



Figure 4: A Photo of a little chapel in the Cuesta de Las Lajas.

What has been carried out, up to the moment, in the Washery of Remunerada are labours of clean-up and excavation of structures semiburied, remaining still hanging the works of consolidation of the buildings ruins.

After the cleaning works, there have been found very interesting remains. They are a few circular structures of work known like " round buddles " or "courses" as they are known in the zone. These elements are realized with bricks with the lightly convex bottom. Their functioning was based in that the material was moving in the interior by means of courses that were separating the mineral. In the

sides it can be appreciated a cement bench where might have placed the electrical engine and the lateral outlet remains where was going out the water and the most light residues.



Figure 5: A Photo of round-buddle of convex bottom group of the Remunerada mine's washery. We can estimate the central orifices where there was placing the gyratory axis and the lateral hatch where was going out the water and the most light residues ó sterile.

5. OTHER INTERVENTIONS IN LA UNIÓN.

Besides these interventions, in La Unión there are some other projects with a great relevancy.

The regeneration project of the Portmán's Bay is one of the projects of major projection that is tried to realize in the municipal area of La Unión. The zone, inundated by the spillages of sterile material realized by the Peñarroya company, tries to be transformed in a Sports Port and a leisure area. There has been summoned an invite tenders of ideas that has provoked a great interest among the architects and the population of the area, being at present waiting his material accomplishment.

Other intervention realized is the Centre of Interpretation "Mina las Matildes". This project concentrates in the recovery of an ancient abandoned mine, and its transformation on an interpretation centre of the Sierra. It is necessary to indicate that one of his major achievements is based on the landscape study realized with the zone sterile materials. This project could realize thank you an initiative of the Foundation Sierra Minera, which has been financed by the European Program "LifeMedioAmbiente" and the cooperation of the CARM areas of Environment, Tourism and Culture, the Cartagena Town council and the Cajamurcia Foundation.

The mining tradition also leads to realizing a mineral market every year. On the other hand, it is realized, with a great international projection, the traditional "International Festival de Cante de las Minas", that remembers the musical Andalusian gipsy (flamencas) traditions of the zone and is celebrated in La Unión's modernist architecture jewel, the Public Market.

In the city we find also a museum dedicated to the mining industry, placed in the ancient rehabilitated building called Lyceum.

In addition, the city of La Unión is very opened for the progress, and has not doubted in the celebration of an invited tender of architectural ideas inside the European program for the urbanization of a city district.

Another ambitious city's project, which promotes the Tourist Consortium Sierra Minera, has the intention of doing visitable the "Cueva Victoria" (Victory cave), and open to the public the "Mina Agrupa Vicenta".

But the most ambitious project that is going to be realized in La Unión undoubtedly is the creation of a thematic museum about the mining industry in the Cabezo Rajao, promoted by the Consortium. The particularities of this zone and his great extension might do of this project a real tourism center.



Figure 6: View of the Cabezo Rajao, mountain exploited from Roman epoch that take his name for the great gap that stayed in it after the extraction of the vein of galena that was finding in his interior. We Can appreciate also mining elements as chimneys and head frames. In all this space we try to place a Thematic Museum of the mining industry.

Other organizations, as the Murcia Town council, also interested in the mining heritage, has realized during the present year an itinerant exhibition called “Bocamina” about history of the mining industry in the region.

6. OTHERS INTERVENTIONS IN SPAIN AND EUROPE.

The geographical spaces that we deal with this chapter has been modified in a very different way depending on the material's richness materials that it was possessing and the methods that were necessary for its extraction.

We have verified that to develop historically of a zone is very joined to social factors, to the geography of the zone and even according at random to the passing of time. Therefore is necessary to analyze aspects as different as the sociology, the geography, the history or the architecture to understand a space.

In the Sierra of Cartagena - La Unión, we find a territory very marked by the mining activity and the different transformations that have carried out along the history. To this landscape we are called it a cultural landscape, since it's the key to understand the industrial history of the zone.

The peculiarity of this landscape comes from the mining heritage that contains. This heritage arises when stops a mining activity and consist of real estate and landscapes linked to it, that make us understand and interpret the zone mining heritage, his technological evolution and his sociological impact.



Figure 7: View of The Sierra of Cartagena-La Unión, deeply modified by the human activity.

The great majority of the mining zones that have come to the exhaustion of their natural resources, present at nowadays deserted and dirty installations, which are victims of pillage. At present, the interventions that are carried out in these zones try to recover and preserve for future generations what this heritage has meant.

There is tried make the population aware of the rich heritage that possesses, that values and especially that take part in his conservation.

In Europe, in the last 20 years numerous initiatives have developed for the conservation of the Mining Heritage.

Among these interventions the concept of “eco-museum” has been created since the landscape is linking to the geological and arching-industrial heritage.

Nowadays three Mines Museum exist in Europe, Lewarde in France, Wieliczka in Poland and Kerkrade in Holland that have more than 100.000 visits each year, which reveals us the great tourist engine that these topics wake up.

Unfortunately in Spain there has been very late the interest to recover the mining heritage.

Some of the actions that it is necessary to emphasize in Spain are Almadén, Rio Tinto (Stained River), Linares, or El Maestrazgo among others. In all these interventions we meet zones, like the Union, that there have lived through flourishing stages of mineral extraction.

Nowadays, the population tries to give value to the remains that the mining activities, today abandoned, have left in the zone.

Almadén, in Ciudad Real, was one of the major mercury producers in the world. This activity left a subsoil riddled with galleries that are not visible from the exterior. This way so, the city has considered to do the interior galleries visitables for the tourism. One of the major attractions to the tourist belongs to feel a miner. During the visit, the tourist realizes a descent to the mine by means of an elevator that recreates the noises and sensations of the epoch. Once in the interior, an underground tour is realized by the mines with a miner guide that explains the methods of extraction. Finally, the mine exit is realized by means of a mining train that ends in a mining industry museum.

Rio Tinto (Stained River), in Huelva, it's a zone that has extraordinary extractions to open pit. Though has a mining history past, will be after the arrival of the English Company Tinto Company Limited in 1.873 when a great gold, silver and copper extraction industry will be generated. This industry will leave in the zone a set of abandoned victorian mining buildings of a very interesting architecture and a great quantity of industrual archaeology that spreads over the geography. To put in value this heritage the civil service also have used the resource of the mining train to visit the remains.

On the other hand in Linares, Jaen, we find a riddled zone of chimneys and mining wells surrounded with olive trees that have allowed to realize an ecomuseo following the old mines' route.

In El Maestrazgo, placed in the Geologic Park of Aliaga and the Paleontologic Park of Galve in Teruel, we find the concept of eco-park. This term is used in Europe to designate natural spaces that

has a landscape and geological particularities. In Europe we find other ecoparks as Haute-Provence's Reserve, in France, the Westeifel Geopark in Germany or the Lesvos's Forest Geopark in Greece.

A country which is necessary to congratulate for the great labor realized in the field of the putting in value of the mining heritage is Germany. His interventions are of a great relevancy for its extension and also for its respectful accomplishment.

Some examples are the intervention carried out in Zeche Zollverein in Essen, which called former "The more noble industrial construction of Germany", that has transformed his installations into a center of design, restaurants and visitables zones that have converted in a great tourist area.

Another interesting action is the solid residues treatment landscape intervention on the area carried out by Latz and Partner in Völklingen's High Ovens. In this place, which was declared world heritage by the UNESCO, it has been played with the vegetation and the water creating paths and bridges on not accessible zones that allow to connect leisure and free time areas.

Another example where the existing elements have been used with tourist purposes is Duisburg Nord. In this place a gasometer has transformed in a mountain-climbing zone, paths have been created, panoramic towers have placed in mines' points turning out to be a space with a great tourist interest with thousands of visits a year.

We can verify that in Europe and even in Spain there are carried out interventions similar to the Project Mineu of La Unión. In Germany these interventions already are giving its fruits as tourist spaces since thousands of visits are obtained with the consequent economic benefits for zones with an exhausted mining activity.

In Spain these spaces are been created follow the model of other countries and economic benefits are starting obtaining in some exhausted zones. It's well know that the tourism allows to show our heritage generating simultaneously richness.

The sun-beach tourist package exploited in the spanish tourist zones is starting becoming exhausted since the tourist tries to enjoy his vacations but every time with a major cultural interest. So, the big trips companies look for destinations increasingly interesting from the cultural point of view. Our coasts every time turn out to be less attractive since they are being destroyed urbanistically and the tourist every time looks for destinations more virgins in countries with a lower economic level that allows to the tourist after the change of currency to work out more benefited.

Spain lived through a stage of European massive tourism a few decades ago when the country was going out of a dictatorship with a low economic level and with all our coasts practically virgins, nowadays we continue receiving tourists but the pass of time has improved the economy of the country and though continues being tourism, this one visits Spain motivated by our culture, nevertheless, every time the prices are more expensive than other destinations.

It is important to diversify the tourist offer and looking for a cultural tourism besides the beach tourism, since the competition is every time better. Our region in addition to the beach tourist offer have a great cultural heritage that must be put in value as the case of the Sierra Minera.

It is very important that there are carried out interventions similar to the Project Mineu to foment this important cultural tourism.

7. CONCLUSIONS

The case of the Mineu Project is an example of how multidisciplinary groups, which consist of professionals of different fields like mining engineers, experts in tourism, geologists, archaeologists and architects, can work as team and take forward, with illusion, projects of intervention in the territory. But it is necessary to continue with the effort of the Administrations to conclude the works of the project, since still the project is in an intermediate phase and is necessary major resources to finish the interventions.

Interventions like the Mineu project excites us in the continue fomenting the respect to the landscape and to the industrial architecture that lies on it, inside of one country in which urban-scandals like the Marbella's territory requalifications involved a great part of the national territory motivated largely by the economic boom of the brick.

The region of Murcia is not unconnected to this boom since great part of his economic growth is owed to the construction of the second residence for a good part of the citizens of Europe. We must respect the heritage and the landscape and to learn of the wrong interventions realized in previous epoch in order that in a few years we should not meet the problems arisen in flourishing economically former periods.

La Unión a city that evolves in an enviable way, so much architectonically, like ideologically, see the quantity of cultures that have passed for the zone and it is a city that shows us a great example of an administration interested in respecting and putting in value his heritage.

We must congratulate to the administrations such as the Excmo. Town council of La Unión and particularly to the Councillorship of Culture and Tourism for the big support been given for the recovery of the mining Heritage of the Mining Saw, as well as for his great labour of management realized for the achievement of an European subsidy through the Mineu project, and for trusting in the members of the professional team who elaborated the project.

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Curricula

Matilde Ortega Ortega.

Architect for the Escuela Superior de Arquitectura de Valencia, has worked like liberally architect realizing projects and she has been employed as teacher of drawing at different institutes of the region of Murcia. In addition nowadays she gives classes of industrialized construction inside the Department Architecture and Technology of the Building of the Universidad Politécnica de Cartagena.

José Ignacio Manteca Martínez.

Graduated in Geology for the University of Madrid. Doctor in Geology for the University of Madrid. He worked for 20 years in mining , as mine geologist, with the Peñarroya mining company at the La Unión mines (Murcia, Spain). Actually is titular professor of Geodinamics, at the Mining Engineering Department of the Cartagena Technical University (Murcia, Spain) .

Jose Calvo Lopez.

Architect for the Escuela Superior de Arquitectura de Madrid. Doctor architect for the same University. Nowadays he is a titular teacher of Descriptive Geometry and teacher of Doctorate in the area Architecture and Urbanism inside the Department of Architecture and Technology of the Building of the Technical University of Cartagena. He has a great number of publications about architecture of the stone.

Mari Carmen Berrocal.

Archeologist for the University of Murcia. She gives classes at the distance University, UNED, and great quantity of writings has published on systems of cave art, and Roman mining industry in La Unión. Also she has worked as adviser in archaeological excavations in Cartagena.