

GIUSEPPE PIGNATELLI

DISUSED QUARRIES ON THE SORRENTO COAST. LOCAL HISTORY,
ENVIRONMENTAL DAMAGE AND REUSE

Abstract. – Mining activities play a prominent role in landscape deterioration, and their effects are especially evident in the Sorrento peninsula, where many quarries have been working along the coast for more than seventy years. Although it has always been an essential area of the local economy, the intensive exploitation of limestone ridges (as analyzed in the first part of this essay) has given rise to many territorial management issues which have been worsened by the closing down of the main coastal mines and by the ways they are being reused. The inadequacy of the national and local laws allowed the ruin of an area with high environmental value, which resulted in the conversion of many disused structures into tourist facilities, while more appropriate operations could have capitalized better on their potentials. Since the locating of tourist infrastructure in a mine site is very questionable and the configuration of the land makes it extremely difficult the re-naturalization, any idea of reuse should therefore involve the rehabilitation and valorization of abandoned workplaces, such as the mining park in the Jeranto bay created by FAI, the Fund for Italian Environment.

[...] how many ignoble scars on the coast do testify the affront! The list begins with Conca in Marina d'Alimuri, continues with the quarries of Capo di Sorrento, Marina di Puolo; now it is the turn of Jeranto, farther which there are other two gems - Marina del Cantone and Marina Crapolla - which the miners have not thought of yet. But they will certainly do it, unless anyone else thinks to save them from the fate which the most enchanting sites of the legendary land seem destined to (Cerio, 1937).

Introduction. - Since the middle of last century, due to the gradual diffusion of new models of development induced by the processes of industrialization and urbanization and related territorial events, as well as by the absence of suitable laws, Italy has been affected by an inexorable process of degradation in which the landscape has been irrevocably damaged in its visible forms and in its more intimate identity values (Mautone, 2001 p.12).

Among the economic activities mainly involved in the transformation of the territory, the mining ones have a major responsibility, especially in the case of strip mining, in affecting the morphological structure of the landscape, which constitutes its essential support.

This happened particularly in Italy, abundant in rock materials used especially in the construction industry, where large and small quarries have - and in some areas have had in the past - a wide diffusion and often a leading role in the social and economic growth (Laureti, 1988, p. 330). The influence that these activities has generated on the territory has already caused well-rendered damages, often untreatable, with the risk to cause further ones if the delicate post-dismantling issue is not dealt with and regulated by the elimination of degradation states and, often, of lawlessness and speculation¹. It is a path that many European countries have already taken, and it is clear that Italy must necessarily conform with them to offer an opportunity for redemption to areas otherwise condemned to the gradual humiliation of their identity. For an effective sustainable development, historical and innovative

¹ Some concise information about the quarries in Italy (Legambiente, 2014): although in the last years the crisis of the construction industry has considerably reduced mining activity, currently (2012) there are 5,592 operative sites and more than 16,000 abandoned quarries (not included the disused mines in Calabria and Friuli Venezia Giulia). To regulate such a delicate industry is the RDL 1443/1927, that was conceived when there was in Italy a large demand for building material for public works, without any regard for the impact on the territory. Only fifty years later (DPR 616/1977), the mining jurisdiction has been transferred under the Regional control, although in many Regions the legislative body is still inadequate. The absence of a quarry planning, in addition to shady and incomplete laws and regulations, encouraged once more speculation, whose alteration of the precarious hydrogeologic balance of the territory has caused further damage to the landscape.

activities will have to be combined to practices of reclamation and amelioration based on environmental remediation and economic and social profit.

The mining activities in the economy of the sorrentine area. - Most of the above-mentioned effects on the landscape appear clearly in the Sorrento peninsula², eastern portion of the gulf of Naples. Having kept almost intact its environmental and landscape features for a long time, at the beginning of last century the peninsula was humiliated by irresponsible human actions: the opening of several quarries along the coast - mainly concentrated in the territory of Massa Lubrense - has irreparably altered a landscape of great environmental value³, which has been strongly damaged hereinafter by a wild building activity. In geological terms, this area is dominated by limestone-dolomite formations, topped by layers of arenaceous-argillaceous rocks, detrital sediments (gravels and conglomerates) and volcanic deposits (tuff and various material from the Vesuvian and Phlegraean areas). Near the mountains and along the coast there are large stratified limestone rocks and gravels at different levels of compactness (Dainelli, 1930, p. 24; Castaldi, 1968, p. 11). Given the many purposes of the materials that constitute the territorial structure, it is understandable the role they had since ancient times, generating a flourishing trade through their extraction and subsequent manufacturing⁴. For a long time, in fact, the different processes of the quarry activity have been among the main sources of the local economy, certainly less significant than activities relative to maritime, agricultural, fishing and dairy production, but still able to provide the families of miners with some profit, given that even a small quarry could employ many workmen such as *tagliamonte*, *cavapietre*, *carcarari* and *pipernieri* (Pignatelli, 2006, p. 33).

The intensive exploitation of the most extensive limestone deposits in the region of Naples, that started in the late Nineteenth century and lasted until 1920s, led to the gradual demise of traditional mining activities, playing for half a century an important role in the economy of the area of Sorrento. The irreparable damages to the coastal landscape, more evident in the less populated areas (such as the Jeranto bay), have caused a lot of land management problems, further aggravated by the shutdown of the quarries system in the 1970s.

The coastal quarries between Castellammare di Stabia and Sorrento. - «Along the Stabia and Equa road [...] the mountain near the sea is abundant of stones, which are used for lime and cement, and therefore it is said that Naples was born by this mountains, being these materials continually brought there for

² Regarding the geographic classification of the area, please refer to the wide available literature, in particular to Castaldi, 1968, and Ruocco, 1982.

³ About the landscape peculiarities of the area of Sorrento, please see de Seta, 1977, and Manzi, 2001.

⁴ Toponyms such as *Cava*, *Cavone*, *Cavoncello*, *Cementaro* and *Petriere* (and also as *Calcara*, *Calcarella*, *Forno* and *Fornillo*) are widespread along the coast, indicating the places designated to the extraction and manufacture of materials used in buildings, road paving and retaining walls that still contribute to soil protection.

erecting and whitewashing buildings» (Parrino, 1709, p. 245). This is how, in the early years of the Eighteenth century, appeared the initial stretch of the Sorrento coast, characterized by many sites for the extraction and the cooking of limestone. In fact, until the early decades of the Twentieth century, the *strong* lime of kilns of Sorrento and Amalfi⁵ and the *sweet* lime of Stabia - both appreciated for quality and durability - continued to be sold in the area of Naples. Since 1930s, this production faced a rapid decline due to the high costs of production and the poor quality of handmade lime compared to industrial materials.

Until the 1970s, along Sorrento National Road, between the headlands of Pozzano and Scrajo, many quarries have been exploited for the extraction of boulders used in port quays, as well as crushed stone for the kilns of the near factory of *Calce e Cementi*⁶. Nowadays, the many service areas of quarries are totally abandoned, occupied by mesh to contain the frequent fall of rocks; only the buildings of *Calce e Cementi* have been converted into a tourist estate by a reclamation of industrial archeology which started fifteen years ago as an exception to the Urbanistic-Territorial Plan of the area of Sorrento and Amalfi.

Since the 1920s, also the Marina di Equa bay was interested by an intense activity for the production of stones for the building market in Naples and in Vesuvian and Phlegraean commons (Bianchini, Pecora, Albertini, 1957, p. 52). Up ahead, on the headland of Punta Gradelle, there is a high concentration of other mine sites open in the Fifties, and still working until a few decades ago, aimed to meet the local needs of stones and gravel after the shutdown of the quarries of Massa Lubrense, Alimuri and Equa (Ruocco, 1982, p. 319). Here as well, the rock has collapsed in many places, and is caged by nets and metal anchors in order to guarantee safety⁷. Until mid-Sixties, along the coast below the headland of Punta Gradelle, the Alimuri quarry was still active, fuelling a flourishing lime trade (Cerio, 1937; Pane, 1955, p. 49). After its shutdown, in the flat service area was built a big hotel that still lies unfinished at a short distance from the sea in spite of many demolition orders⁸.

The coastal quarries in the territory of Massa Lubrense. - In the area of Massa Lubrense, extreme limit of the peninsula of Sorrento, the limestone extraction was for a long time limited to small areas, and

⁵ Ancient kilns (called *calcare*) along the Amalfi coast can be seen at Punta Germano, in Vettica Maggiore and near Capo d'Orso (Visetti, 1991, pp. 158 and 174).

⁶ In addition to the quarry of Scrajo, equipped with four kilns for lime production, reference is made to the *Pozzano Reale* for crushed stone extraction. The *Calce e Cementi* factory, closed down in 1975, had its maximum expansion in the late Fifties, when it employed about 180 workers (Mastrogiacomo, 2000, p. 49).

⁷ The Urban Plan of the municipality of Meta had considered to convert the mining areas into interchange parking lots to streamline the traffic of cars and tourist buses. This proposal was rejected by the Province of Naples in 2002, because this reuse is incompatible with the status of places.

⁸ In 2014, the municipality of Vico Equense has finally approved the preliminary demolition project.

entrusted to a few very specialized spaccapietre⁹. As clarified by Filangieri di Candida (1910, p. 555) «the limestone industries have been of little importance in the past [...]. Now, in the solitary Marcigliano bay, a huge quarry extracts thousands tons of stones from the Monte Corbo, to build dams in the port of Naples». Between the late Nineteenth and the early Twentieth century, in fact, national companies were established in order to intensively exploit the large coastal limestone sediments, placed strategically in protect inlets between the gulfs of Naples and Salerno, easily accessible from cargo boats. Between Puolo and Crapolla (administrative extremes of the coast of Massa Lubrense), by 1920s seven quarries sites - Merlino in Puolo, Chianella at Capo Massa, Vitale in Marcigliano, Cenito and Mitigliano, and on the Salernitan side, Jeranto and Recommone - were opened, some of them in places until then excluded from mining. The smallest and inland quarries, characterized by family management and traditional mining methods, suffered an inevitable decline, and were doomed to close in a few decades¹⁰.



Fig. 1 – The limestone quarries along the coast of Sorrento and Amalfi

⁹ The sites for the extraction of gray tuff (such as Pastena and Cimentaro near Monticchio) and of Massa stone (local sand stone fared in the Chiaia near Marina della Lobra, in the Petriere of Monte San Nicola and in the Tore), were instead very numerous and well-organized (Pignatelli, 2006, pp. 31-35).

¹⁰ At the end of the Nineteenth century, the limestone coastal quarries were located in the bays of Calcarella in Puolo, Fountains, Mitigliano and Mortelle near the Marina del Cantone; they have been active until the Fifties (Bianchini, Pecora, Albertini, 1957, p. 56). More numerous were, instead, the inland quarries, concentrated in the surroundings of the villages of Monticchio, Torca and Sant'Agata.

In the plants of big mining companies, which instead employed many workers, the materials were extracted through either dynamite or TNT mixed with gunpowder; this operation was facilitated every two or three years by more powerful charges. On the service flat area the life of quarry was so organized: in a remote position were placed the shacks of miners, laborers and technicians, the service and administration offices, the canteen, the gunpowder keg and the power station. Below the rock ridge were instead placed the steam cranes for the loading of boulders, the workshop and, closer to the sea, the rock-crusher for the production of crushed stone and gravel. All around, a complicate network of tracks, provided with high forks for loading the material on the barges or on smaller boats, winded up to the piers.

The Merlino quarry in Puolo. - The exploitation of the vein of Puolo started in the late Nineteenth century, when two modern kilns for the production of lime were established; a few years later, this activity, that stopped around 1920, was sided by the profitable extraction of limestone ridges of the *Mountain* and *Calcarella*. Since 1927, after the acquisition of the site by the Merlino company, the quarry worked mainly in the production of large boulders for port quays (Esposito, Cuomo, Moffa, 1986, p. 35). In the little village, whose economy at the time was based on fishing and on little maritime trade, the quarry offered a great economic opportunity, the local workers being joined by many miners and blasters from Sardinia, hired for their recognised mining experience. Also the small harbour was soon sacrificed to the quarry needs, always filled by barges (*Campania, Asti, Savoia, Torino* and *Teresa*), that were then towed by powerful tugboats¹¹.

¹¹ Information about the daily activities of the quarry, together with the wide and unpublished photographic documentation, was provided by Francesco di Leva, a motorman on the tugboats *Pietro Micca, Andrea Doria, Utile* and *Santos* since the Forties.

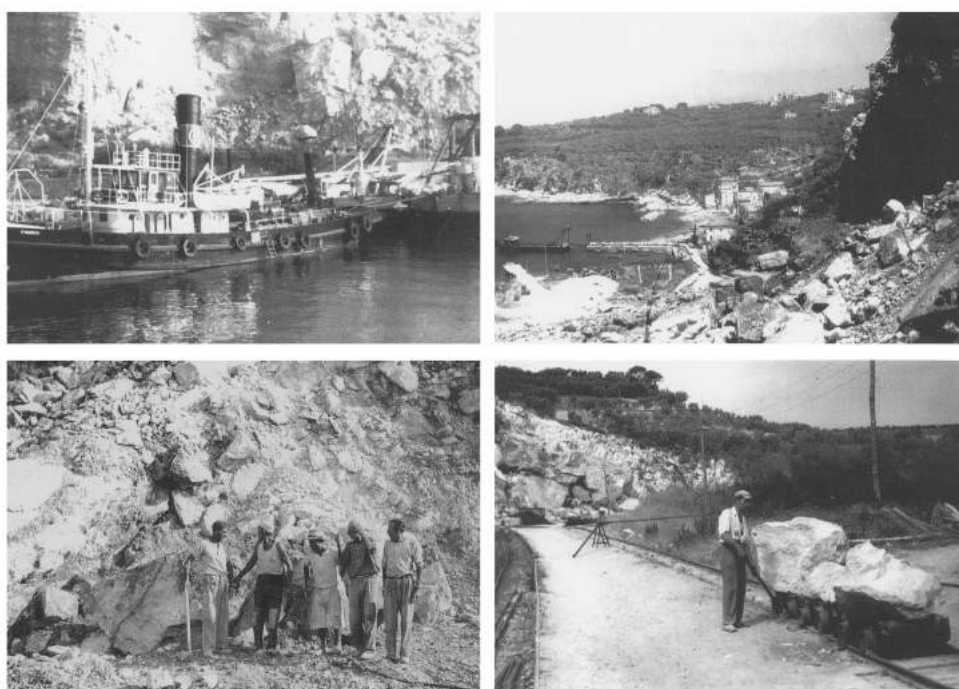


Fig. 2 – The quarry of Puolo in the early of the Fifties

In 1929, Filangieri di Candida (1929, p. 55) denounced the devastation of the bay of Puolo and the ruin of the Roman villa of Pollio Felice in Portiglione, which «surrendered to the dynamite explosions that are transforming this beautiful coastal landscape into a horrible heap of ruins». As the archaeologist Amedeo Maiuri (1990, p. 9) expressed his sorrow for the damage of the site of Calcarella, «disfigured, alas, by a huge stone quarry», also Roberto Pane¹² (1955, p. 74), a careful witness of the best times of the quarry, a few decades later described the complete ruin of the bay, denouncing that «there has been no capability, nor will, to prevent this barbarism».

After the quarry shutdown, in the mid-Seventies, the mining area first faced an attempt of abusive building speculation, and then a complete abandonment. Nowadays it looks like a ghost town; the power station is reduced to a depot; the piers are ruined without forks and jetties, and the nearby crusher is destined to succumb to the action of the sea. The large area below the rock ridge, never reclaimed, hosts a boat storage and a parking lot; only the gray tuff workshop was recovered in its original structures.

¹² Historian of Architecture, he was a strong supporter of landscape and historic city preservation. In 1955, he published *Sorrento e la costa*, into which converged all the themes reaffirmed twenty years later in the proposal of Territorial Coordination Plan and Landscape Plan of Sorrentine and Amalfitan Area, drafted between 1974 and 1977 (Regione Campania, 1977).

Further along the coast, opens up the little inlet of Chianella, which once housed small quarries for the production of gravel. These quarries were connected to Portiglione by a long tunnel dugged in the rock. A still visible hopper, built once again on the ruins of a Roman villa, testifies this remote business (Pane, 1955, p. 76).

The Vitale in Marcigliano and the quarries of Cenito and Mitigliano. - A little further on, in the bay of Marcigliano, in the early years of the Twentieth century were opened the *Vitale* quarries, that until the Sixties supplied boulders in port piers. Here, the intensive exploitation of limestone ridges started a little earlier than in Puolo. The progressive destruction of the mountain was already denounced in 1910 (Filangieri di Candida, 1910, p. 555). Nowadays, the mine area is occupied by a tourist estate characterized by poor architectonic value and considerable environmental impact, against the backdrop of a beach resort realized on the piers, still occupied by forks and other metal structures.



Fig. 3 – The ex-quarry Vitale in Marcigliano and the “Conca Azzurra” tourist resort

In the Cenito bay, beyond the Marina della Lobra, the remains of a quarry closed in the Sixties, and then turned into a tourist estate recently recovered after many years of neglect, are still visible. Rounded the head of Baccoli, there is the solitary the bay of Mitigliano where, up to 1950s, a small quarry worked in the extraction and manufacturing of crushed stones, as testified by the remains of an ancient kiln and a little pier.

The quarries of Jeranto and Recommone. - On the Salernitan side of the peninsula, lays the ample bay of Jeranto, which was disfigured by the deep wound inflicted by the ILVA quarry in the early years of the Twentieth century. Unlike the other mine sites of the coast of Sorrento, usually tied to the production of building materials or port boulders, the short life of this quarry has been characterized by a very intensive activity, continuously supplying the blast furnaces of the iron and steel industries in Bagnoli, near Naples¹³. So, hundreds of thousands of rock cubic meters were violently exploded, and almost daily loaded on cargo ships by the six large hoppers still visible at the edge of the mining area.

Only on the occasion of the first Conference on the Landscape, organized on the isle of Capri in the summer of 1922, the mayor of Massa Lubrense denounced the ruin of the bay of Jeranto (Cerio, 1923, p. 72). Also Norman Douglas¹⁴ took part to in the protest having seen «how, after such hateful mining activities taking place on the hill, the charm of this place, once solitary, has been completely destroyed» (De Angelis, 2003, p. 183).



Fig. 4 – The gutted ridge by ILVA quarry in Jeranto bay

¹³ The construction of the ILVA factory in Bagnoli was started thanks to the Special Law 351/1904 for the economic rebirth of Naples, and was completed around 1910 (Cardone, 1993, pp. 226-234; Mazzetti, 2001, pp. 253-261). The activity of Jeranto quarry, which immediately supplied its blast furnaces, began probably in those years.

¹⁴ Austrian writer with Scottish origins, he settled in Capri for the first time in 1903, returning afterwards for long periods in 1914 and 1946, when he received the honorary citizenship thanks to the writings in defense of Capri's and Sorrento's landscapes (e.g., *Siren Land*, 1911).

Many years later, Edwin Cerio¹⁵ confirmed the need to preserve the bay «destroyed by the explosion of mines that tear the promontory [...], devastated by the human destructive rage more than by the fury of the elements»¹⁶ (Cerio, 1937). Anyway, the quarry operated until the post-war years, and employed more than two hundred workers. Unable to handle the increasing limestone demand¹⁷, and to pledge the re-supply to the blast furnaces also during winter storms, it was finally closed in 1952 (Ruocco, 1964, p. 54). On the promontory, to remind of almost half a century of activity, remain nowadays the kitchen, the direction, the laboratory, the power station and the gunpowder keg, in addition to the pier, the holding tank and, above all, the great hoppers, «horrors of a disused mine site, no one being in charge of their dismantling, that testify to our Country's civil irresponsibility» (Pane, 1955, p. 49).



Fig. 5 – Abandoned structures of ILVA quarry in Jeranto bay

Finally, beyond the bay of Marina del Cantone lays the inlet of Recommone where, until the Fifties, was active a small quarry that destroyed the promontory of Sciuscelluzza head; also here, the service area of the mine site is occupied by a beach resort belonging to adjacent accommodation facilities.

¹⁵ Mayor of Capri between 1920 and 1923, he fought a personal battle in defense of the landscape, against building expansion and at the flood of "architectural models" extraneous to the island traditions.

¹⁶ «[...] the mountain has to be ruined, because stones for the roadbeds and blocks for port works are needed. Stone quarries are absolutely necessary, but when such a charming place as the coast of Sorrento has been so repeatedly scarred [...], can't mining companies be asked - or even forced - to respect the vestiges of that classic landscape, which is also a incomparable treasure of our country?» («Il Mattino», March 5, 1937). Few days later, Norman Douglas will reply: «My dear Cerio, thank you [...] for your worthy complaint against the destruction of the bay of Jeranto. I wish you will achieve the expected result! I fear, however, just the opposite, because there have been similar complaints in the local press, with no avail» (Centro Caprese Ignazio Cerio, 2003, p. 40).

¹⁷ In the post-war period, the factory of Bagnoli underwent a large production increase, and in 1951 was sided by the *Cementir* factory for the production of blast-furnace cement (Cardone, 1993, p. 233; Andriello, Belli, Lepore, 1991, p. 93).

The crisis and abandonment of the sorrentine quarries. The current forms of reuse. - Since the middle of last century, along with the crisis of the primary sector which led to the retrenchment of agriculture and fishing, that had always been the driving business of the economy of the peninsula of Sorrento (Manzi, 2001, p. 485), also mining activities began to feel the burden of a far too complicated organization, that had already made the quarries management unfavourable. The land transportations of the materials, which were time-saving and offered a major usability, supplanted the traditional maritime ones, which suffered too much from weather conditions. Since the end of the Forties, Neapolitan cement plants and iron and steel industries begun to occasionally get supplies from the quarries which were closer to the towns and to the main roads, reopened to confront with the growing needs of post-war reconstruction¹⁸. Few were the quarries in Sorrento (Pozzano, Scrajo and Gradelle) that survived, even if only temporarily, to satisfy the local needs of stones (Ruocco, 1982, p. 319). All the others (from Jeranto to Puolo, that survived tenaciously until 1975) were closed quickly, leading to a long series of problems of land management, particularly evident in the area of Massa Lubrense.



Fig. 6 – The ex-quarry of Recommone in the end of the Sixties

Besides the modest activities related to the local product manufacturing and trading (citrus spirits, olive oil and dairy products), the economy of Massa Lubrense is nowadays mainly based on élite

¹⁸ Reference is made, in particular, to the quarries in southern Casertan area (mainly concentrated between Caianello, Mount Tifata and Maddaloni), that opened between the late Nineteenth and early Twentieth century but, in contrast to those of Sorrento coast, were strengthened since the 1950s.

tourism. Unlike the rest of the Sorrento peninsula, the many summer houses, the few hotels and the absence of a modern marina¹⁹, make this area a unique. In spite of an extraordinarily picturesque coast, paradoxically this territory lacks mainly of sea accessibility and seaside resorts. The coast, indeed, is very steep, and even the few low sides are difficult to reach for the masses. This results in few overcrowded equipped areas (marine of Puolo, of Lobra and of Cantone *in primis*) with a consequent deterioration of the quality of services.

For this reason, the disused quarries (together with the loading piers and surrounding buildings) would be ideal places for tourist activities, set in high-value landscape areas. Even if many of these structures (such as Puolo, Marcigliano, Cenito and Recommone) are already become accommodation premises, it should be noted that the existing activities have been set spontaneously, and often illegally, in the complete absence of a basic planning able to capitalize the many potentialities of this territory.

Until the emanation of regional laws, in the late Seventies²⁰, no technical opinion was required when opening a quarry: in fact, no evaluation of possible environmental damages, such as land and water pollution and alteration of hydrogeological structures was made. Consistently, the above mentioned RDL 1443/1927 considered only a general compensation to be given to the soils owners, in disdain of the historic and scenic values of the territory.

Due to the inadequacy of the laws, for nearly a century a systematic devastation of extended areas of the Sorrento coast has been permitted. Rather than promoting environmental full restoration or, at least, decreasing the negative impact on the landscapes, new activities have been allowed to keep on speculating on the very same places which had already suffered from exploitation.

The location of accommodation facilities in quarries, often in absolute non-compliance of urbanistic legislation, is a rather questionable choice, also because not-reclaimed artificial ridges often collapse, with serious risks for the users. The reclamation for recreation purposes of brownfield areas - by now a frequent custom also in Italy realized either with public or private participations - concerns, in facts, morphologically different sites, such as level lands or areas with less declivity²¹. In the case of quarries in accentuated slopes, the restoration and further reuse are, vice versa, extremely complex because of the negative impact on the surrounding environment (Legambiente, 2014, p. 86).

¹⁹ In March 2014, at the end of a long bureaucratic procedure, the State Council has definitively rejected the project of the municipality for the new port of Marina della Lobra, judging the expected works incompatible with the hydrogeological situation of the area.

²⁰ In Campania, in particular, the management of quarries and peat bogs is currently regulated by the LR 54/1985; the LR 13/1995 established the PRAE (Regional Plan for Mining Activities), whose proposal, approved in 2001, is aimed at «protecting the landscape and boosting the economic development of the mining industry, in a way compatible with the environment» (Del Gaudio, Vallario, 2007, pp. 225-253).

²¹ We refer, for example, to the restoration of quarries in Merone, in the province of Como, and Robilante-Roccavione near Cuneo, both converted into natural oasis by reforestation and creation of artificial lakes (Legambiente, 2014). It is very interesting the reuse for touristic purposes of the Blegny-Trembleur quarry, in Belgium, entrusted to a private association and converted into a museum with a pertaining hotel (APAT, 2007, p. 30).

After the shutdown of the last quarries, despite the fact that the proposal of the Territorial Coordination Plan and Landscape Plan for Sorrentine and Amalfitan Area (Regione Campania, 1977, p. 46) had reiterated the need to reduce hydrological risks to support a sustainable reuse, no specific action has ever been made²².

Mining parks and re-naturalization. - In 1986, after thirty years of complete state of abandon, IRI (the ultimate owner company) donated more than 100 acres of Jeranto quarry to the Fund for Italian Environment, that in 2001 promoted a series of actions for the reclamation of mining area. The recovery of the ancient beaten paths, the renovation of cultivated areas and the restoration of the sixteenth-century tower of Montalto, represented the first steps towards the definition of a real mining park; in the reception center, prepared in an oil mill not far from the work area, were arranged old machinery and the quarry documents, integrated by an itinerary system to tell visitors the daily life in the most important industrial site of Sorrento peninsula. It is, therefore, evident the will to work, in addition to natural peculiarities of the bay, on surviving structures, looking at the industrial archeology as a way to preserve the history and memory of places. In particular, the FAI and the municipality of Massa Lubrense have promoted activities for the promotion of the old quarry together with the natural reserve of Punta Campanella, in which Jeranto bay is one of the most attractive location²³.

The cultural and educational use of disused areas, following the example of the Italian and European mining parks²⁴ is, therefore, the most appropriate one, especially for the sorrentine quarries - and lubrense in particular - , that preserve intact many of the original machinery and equipment, to show an important side, but little-known, of economic and social local history.

²² The article 17 of the Urban Territorial Plan of Sorrentine and Amalfitane Area (LR 35/1987), with regards to the identification of specific areas for the formation of territorial PRG, considers in the Territorial Zone I (*tectonic and morphological sites characterized primarily by living rock or, sometimes, by spontaneous vegetation*) the full protection of the natural environment and, when necessary, a series of landscape restorations. The Campania Region not produced yet the Regional Plan for Landscape, indispensable for planning in step with the Regional Territorial Plan, LR 13/2008 (Regione Campania, 2008), and which has among its main objectives the regional sustainable development and the upgrading of deteriorated areas. Approved by the Regional Council in 2012 (Regione Campania, 2012), but harshly opposed by several environmental associations (such as Italia Nostra, Legambiente, WWF, FAI), the PPR is not effectively operating because it has not yet (in August 2014) been ratified by the Regional Council.

²³ The Marine Protected Area of Punta Campanella, established in 1997 in range of the LQ 394/1991, extends for over 40 km of coast between the Capo di Sorrento and Punta Germano, affecting the municipalities of Sorrento, Massa Lubrense, Piano di Sorrento, Sant'Agnello and Vico Equense (in the province of Naples) and Positano (in the province of Salerno), with the manifest objective to preserve the natural, scenic and historic value of area, subjecting it to protection in respect of traditional economic activities.

²⁴ Since the mid-seventies of the last century, at the same time of the decline of mining industry, in Germany has been launched the recovery of brownfield sites, at first limited to historical buildings (such as the nineteenth-century *Malakowturm*), and gradually extended to all quarry areas, transformed into territory museums *en plein air*. In Italy, where this phenomenon is more recent, we remind among the most interesting ones in the many sulfur mines of Sicily, the eight sites of the Park Geominerary, Historic and Environmental in Sardinia, the Mineral Park of Elba island, the mining Ecomuseum in Val Germanasca (Turin) and, in particular, the Ecomuseum of the Gorno mines (Bergamo), that with its different itineraries can be compared to what was realized in Jeranto bay. About a broad overview of the most recent initiatives in Italy, reference is made to APAT, 2006; APAT 2007; ISPRA, 2011.

This is the reason why it should be mentioned the "Miglio Blu" project, created in 2003 by the municipality of Massa Lubrense in range of the Integrated Territorial Project of the Sorrento and Amalfi Peninsula, that imagines the requalification of tourism offer by the identification of a sustainable itinerary along the coast, between Marina della Lobra and Puolo (Comune di Massa Lubrense, 2003, p. 3). This project concerns, in particular, the re-greening of the slope of ancient Chiaia quarry, the reclamation of mining area in Marcigliano and in Calcarella and, above all, the reopening of the service tunnel between Chianella and Portiglione. This is not a real mining park, but however an appreciable plan based on a long itinerary to increase the knowledge about some areas strongly degraded by mining activities, improving the environment and, above all, preserving the memory of the territory.



Fig. 7 – Massa Lubrense. The "Miglio Blu" area, between Marina della Lobra and the ex-quarry of Marcigliano

Therefore, the way undertaken by the municipal authority seems to be the right one. Following what so far has been achieved, the abandoned quarry of Cimentaro, between the villages of Monticchio and Schiazzano, for example, could become the ideal site where set up a documentation center of traditional mining activities because of exceptional state of preservation of the tunnels and wells; only with the contribution of memory of objects, of networks and of people who contributed to build the history of an area, indeed, it is possible to establish the cognitive presuppositions for its preservation, appreciation and regeneration (Lago, 2001, p. 77).

A different approach, instead, is for the environmental restoration of degraded areas, particularly the ridges gutted by mines. If the naturalization reproducing the original natural conditions is not applicable

to sorrentine coastal sites because, as already mentioned, in quarries characterized by steep slopes is not adoptable the mechanical re-modeling of the land, or the filling with alternative materials. Neither the artificial terracing to reduce the slopes and to give a natural aspect to the ridges, is easily pursuable due to high execution costs and to unsatisfactory results. It is not even conceivable the re-greening actions, although modern agrarian techniques make it possible to implant the vegetation even on particularly steep and rocky surfaces because of the proximity to the sea and soils structure (Montalbano, 2005, p. 15).

In conclusion, it should be highlighted, however, that different ways of re-naturalization or alternative re-use, not always areas degraded by quarry activity have to be retrieved with specific projects. Infact, every environmental alteration due to extractive industry, after its shutdown tends gradually and spontaneously to decrease through slow adaptation and regeneration processes of soils and water flows, the dispersion of pollutions and recolonization of vegetation (Mazzanti, 1993, p. 29), particularly in the smaller quarries (such as in the bays of Chiaia, Fountains, Mitigliano and Mortelle), abandoned for more than half a century. Unlike the places devastated by mines, nowadays untidily damaged without planning or common sense parameters, in these sites the mining wounds were fortunately healed due to the gradual ridges, the soils quality and, above all, the absence of human interventions.

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