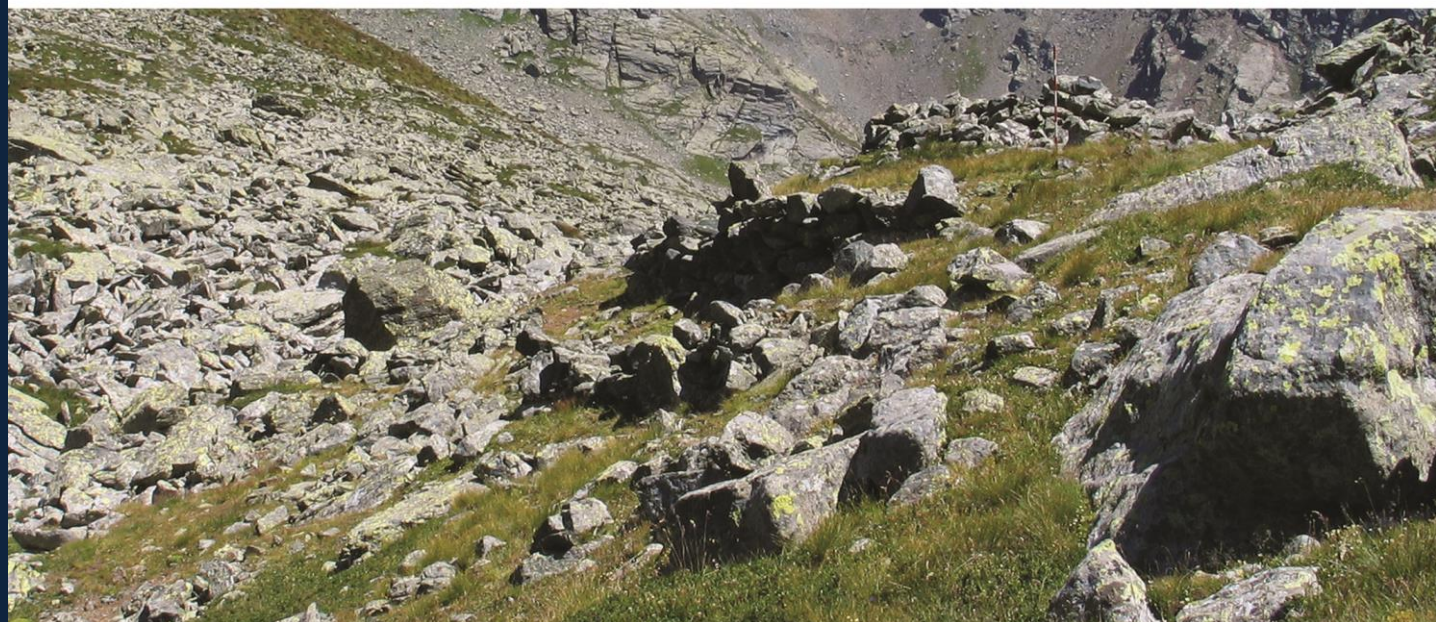
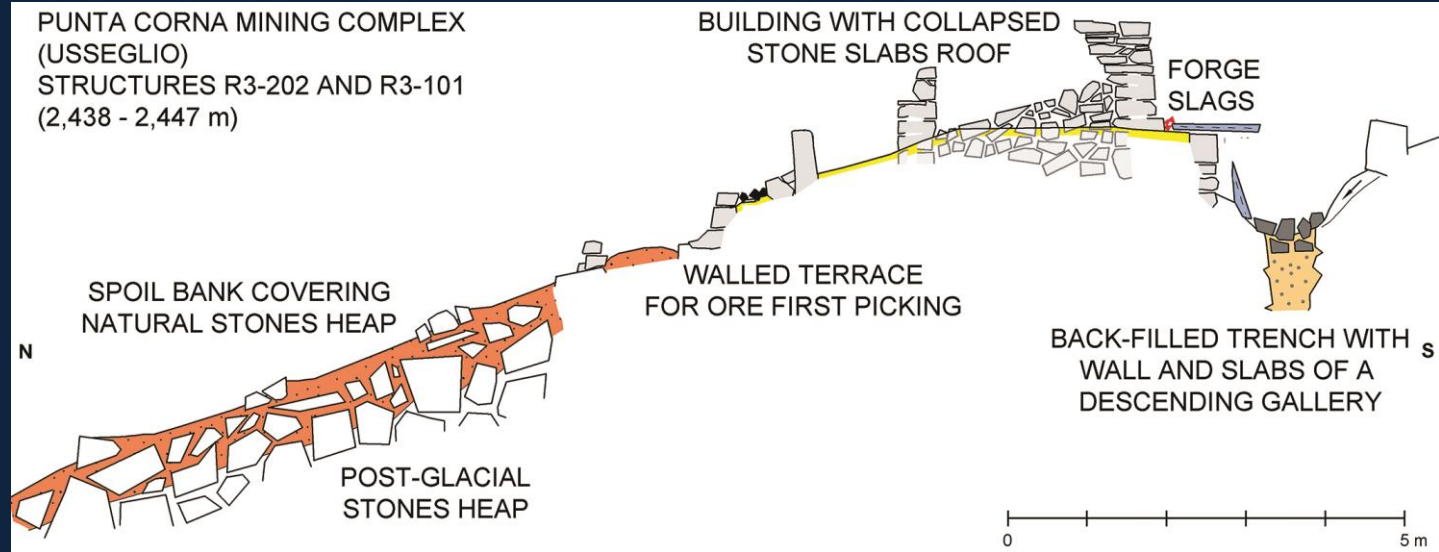


PUNTA CORNA MINING COMPLEX
(USSEGGLIO)
STRUCTURES R3-202 AND R3-101
(2,438 - 2,447 m)



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The ancient mines of Usseglio (Torino, Italy)

Pluriennial programme of recording, study, preservation and cultural development of the archaeological mining heritage in an Alpine valley

Topography and Geology

Punta Corna mountain mining complex is located on the left side of the Arnàs stream valley (western Po basin), spreading from 2.250 to 2.900 m (main peaks attain 2.930 up to 3.108 m), between Rossa Lake (hydroelectric storage near French border, 2.718 m) westwards and Torre d'Ovarda mountain group (3.075 m) eastwards.

The siderite and Co-Fe-Ni arsenides mineralizations belong to a trending system of post-metamorphic hydrothermal veins, mainly within the metabasites of the Piemonte Zone, related to the circulation of hydrothermal fluids along extensional structures linked to brittle deformation events which affected the rocks at the end of the alpine orogenesis. The mining complex is protected by the institution of a 10 km² area, wherein minerals collection and man-made objects removal are totally forbidden.

Aerial reconnaissance and field survey point out a sheaf of some km long, till 10 m large and 12 m deep, open air trenches, issued from archaic iron ores mining; their order of magnitude is equal to today's industrial plants one, like roads, hydroelectric power plants or dams. Trenches are associated with pits, ditches, descending galleries (often voluntarily filled up after the end of the exploitation), sink-holes, undermined boulders, spoil banks, remnants of little rough-stone half-buried buildings and also walls, used for terracing, ore crushing and picking, sheltering gallery entrances and closing natural rock-shelters.

Archaic exploitation

The exploitation was focalized on iron hydroxides (limonite, goethite), resulting from siderite decay. The fragmentation was strictly limited to mineralized veins, particularly in upper and softer levels; it halted when reaching inner and harder levels of massive, unweathered iron carbonates (siderite). No drill holes and rare tool marks are visible on trench sidewalls. Miners used steel manual tools, occasionally found near the trenches during field survey.

Today, iron ores are seldom visible in the open air, because they have been nearly completely removed by the exploiters. Trenches are partly occupied by not-removed boulders and panels of the embedding rock, so their bottom is presently unattainable; nevertheless, they seem sometimes to be connected to descending galleries entrances in lower levels. Sidewalls are rather stable; widespread spoil banks run along the ditches.

All these features are excavated under main boulders, sheltering the access to veins; they are circular, oval or funnel-shaped, placed upright the veins, flanked by little, mound-shaped spoil banks, obstructed by post-functional collapses or voluntarily filled in after the end of the exploitation. Underground, rough-stone walls, slabs and stairs are preserved for few metres. In general, the structures are well preserved in comparison with their working time, because of scarce post-functional colluvium.

Left: Figure 1 - Vertical section of a typical archaic plant and photo-view of the investigated area.

Gunpowder diffusion in mining activities began in the 17th century: the first statements in the duchy of Savoy date from 1671, in the duchy of Milan from 1665. The organization of a pre-blasting mining exploitation, possibly similar to Usseglio ones, can be observed in the polyptych by Hans Hesse (1522) for the altar of mine workers in the church of St. Anne at Annaberg-Buchholz (Herzgebirge, Sachsen, Germany).

Chronology

The dating of archaic exploitation to the middle ages is based on archaeological finds, particularly steel tools (12th-14th century) and pottery (11th-13th century), and on historical documents, referring to mines activity, cast iron, steel and silver production, ore thefts, in the years 1264 (but carrying on previous contracts), 1316, 1318, 1333, 1335, 1402, 1438, 1515...

Since 1753, after a long period of scarce production, a new chapter begins, because of the discovery of cobalt ores, exploited by counts Rebuffo di Traves also for what concerns copper and silver (cobalt-iron-nickel arsenides with tetrahedrites). Two maps, dating to 1758-1772, mark the exact positions and directions of several veins. In 1758, a building named «Casere», much larger than medieval ones, rises at 2.625 m near Veil Lake to house the workers. The exploitation was no longer opencast mining, but mainly underground, with several multi-level grids, sometimes intercepting former works, in an incoming proto-industrial perspective. Two new buildings were constructed before 1815, at 2.374 and 2.439 m respectively: both are recorded in a mine section dating to 1823, near the entrance of crosscuts. Veins can be observed underground, where the exploitation stopped: they show a series of parallel, almost vertical bands, with a lot of gangue.

Sources

Still today, veins, galleries, spoil banks and buildings reported by mine sections and maps can be identified in the field, even if galleries and stopes are mostly inaccessible, because of landslides, or dangerous, because of timbering fall down. Documents reveal us that sometimes miners lived in very hard conditions: the «Dwelling of Workers» («Abitazione de Lauoranti»), recorded by a map, in 1758-1772, at the foot of «St. Mary Mine» («Caua di S. Maria»), was a walled prehistory-like rock-shelter, still used occasionally in the twenties of the 20th century by the last prospectors.

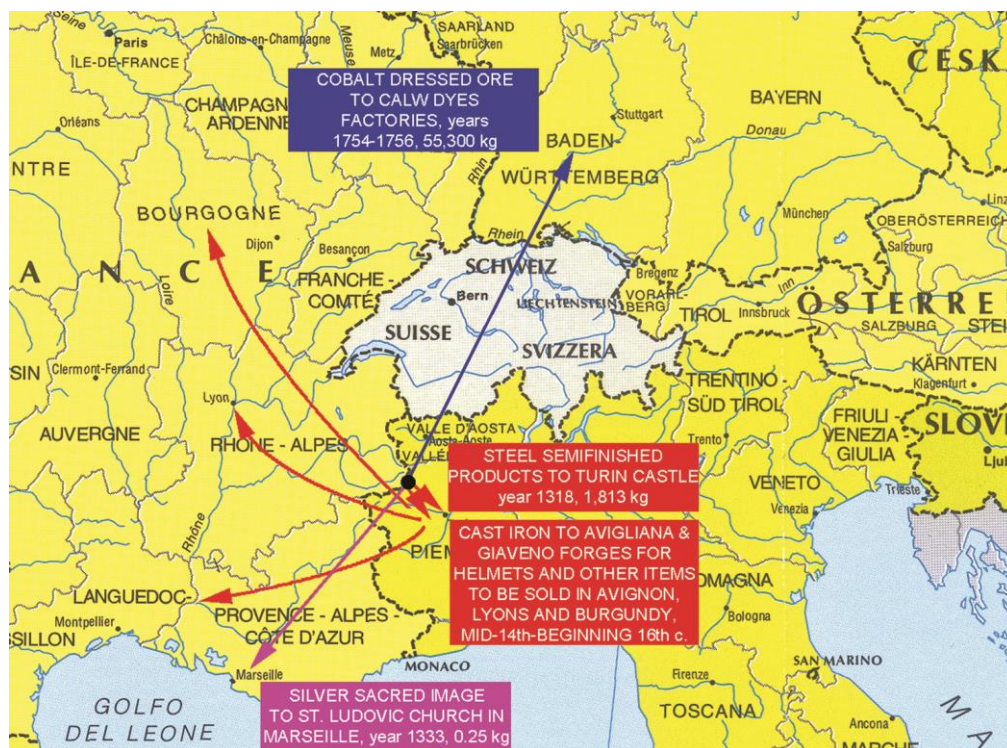
Protecting the entrances

To reach the deposit bed, that was hidden by a thick layer of debris, miners built some long galleries into such sediments, protected by side walls and roofed by rough-stone slabs. One of the most impressive linked a dwelling to the real lower entrance of a mine, that was cut in hard rock: in that way, miners avoided blockings of the entrance by landslides or by avalanches and escaped long removal works in spring, when restarting the exploitation after the winter break-time (documents inform us that the season lasted no more than four to six months).

The “cobalt factory”

Usseglio built-up area still hosts the “Cobalt Factory”, at 1.290 m in Crot hamlet, built in 1755-1757 according to a plant model imported from Saxony and Bohemia by S.B. Nicolosi di Robilant (1724-1801), general inspector of the mines of the Kingdom of Sardinia (1752-1773). The dressed ore that was produced by this plant was exported to Württemberg (55 tons until 1756). The original look of the building is recorded by maps and drawings dating to the period 1823-1854. The factory was then enlarged and modified, becoming since 1896 one of the earlier hotels devoted to the rising mountain tourism, with the evocative appellation «Albergo Miniere» («Mines Hotel»). Today it is a stop of the external itinerary of the Civic Alpine Museum.

Right: Figure 2 – Not just a local market: international routes from Usseglio to European destinations.



Working plan 2013

Following the Museum programs, in order to increase and to develop knowledge of territory, in summer 2013 a lot of new studies and are going to start: recording and topography of archaic mines located in the area, in safe conditions underground survey of mining, according to speleologist/archaeological standards and multidisciplinary study of cavities and evidences (mineralogical, mining, wildlife, archaeobotanic, etc.).

Conclusion

One of the statutory aims of the Civic Alpine Museum of Usseglio, entirely volunteer-conducted, is the «systematic recording and cultural development of the historic heritage of sciences and techniques». Museum's researchers, with the determinant aid of several colleagues of other institutions, are carrying out a full survey of archaeological mining structures in relationship to geological, technological, historical and iconographic data. The state of preservation of this heritage is good, as the area is geologically stable, vegetation is almost absent, mining was suddenly abandoned and no subsequent activities but pasture took place. Several sites are accessible to public in summer and at the beginning of autumn, as Museum organizes workshops including guided tours in Punta Corna protected area.

Literature

Rossi, M. & A. Gattiglia (eds.), *Terre rosse, pietre verdi e blu cobalto. Miniere a Usseglio. Prima raccolta di studi* (Torino 2011) 236 p.