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The Significance of Historical Mining Sites as Cultural/Heritage Resources- A Case Study of Zilan Historical Mining Site, Erçiş, Van, Turkey

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Abstract

Historical mining and mining-related industrial sites have been the focus of increasing attention by the scientific community in recent decades. These sites can be made more attractive if developed in relation to mining heritage, culture, and geo-tourism. They have not been explored in detail because they have large scales, remote locations and their information content is unfamiliar to many archeologists and museum specialists. In the absence of a full assessment of significance, contemporary human activities could destroy the records in these sites for obtaining some short-sighted immediate human needs. This study examines some factors of measurement of attractiveness of such sites. Two sites from Turkey, well-known Yesemek Stone Quarry and Sculpture Workshop and a newly discovered Zilan Historical Mining Site in Erçiş (Van, Turkey) are used as illustrative examples. This examination shows importance of the Zilan site and an urgent need for critical studies evaluating the site with a balance between preserving mining heritage, containment of environmental risks, tourism, and rural development.

Key words: Mining heritage, Geotourism, Open-air museums

Özet

Madencilik ve madencilikle bağlantılı tarihi-endüstriyel alanlar son yıllarda bilim dünyasının ilgisinin giderek arttığı konular arasında yer almaktadır. Bu alanlar, madencilik mirası, kültür ve jeo-turizm temalarıyla değerlendirildiğinde daha çok ilgi çeker hale getirilebilirler. Detaylı olarak incelenmemelerinin nedenleri arasında fiziksel olarak büyük boyutta olmaları, büyük yerleşim yerlerinin dışında olmaları ve taşıdığı önemin birçok arkeolog ve müze uzmanlarının ilgisinin dışında kalması sayılabilir. Arkeolog ve müze uzmanlarının katkılarıyla, detaylı bir değerlendirilme yapılmadıkça bu alanların bünyesindeki değerli bilgiler güncel insan ihtiyaçları doğrultusundaki faaliyetler sonucu yok olacaktır. Bu çalışmada söz konusu alanların önemini ortaya çıkarmak amacıyla dikkate alınması gereken bazı kriterler incelenmektedir. Çok iyi bilinen Yesemek Açık Hava Taş ve Heykel Müzesi (Gaziantep) ile yeni keşfedilen Zilan Tarihi Maden Alanı (Van) alan örnekleri olarak kullanılmıştır. Yapılan değerlendirmeler yeni bulunan Zilan Tarihi Maden Yerinin önemini, acil ve ciddi bilimsel çalışmalar yapılması gereğini ve çalışmalar yapılırken madencilik mirası, çevresel risklerin sınırlandırılması, turizm ve kırsal kalkınma boyutlarının dengeli bir şekilde gözetilmesi gerektiğini göstermektedir.

Anahtar kelimeler: Madencilik mirası, Jeo-turizm, Açık Hava müzeleri

1. Introduction

Historic industrial sites are valued globally, because they bare clues about processes that evolved the technology and society of today. The historical mining sites are special cases of industrial sites, because they contain not only architectural, but also landscape elements related to geography and topography (Conesa et al., 2008). According to UNESCO (2005), the cultural landscapes “are illustrative of evolution of human society and settlement over time, under influence of the physical constrains and/or opportunities presented by their natural environment and of successive social, economic, and cultural forces, both external and internal”. The historical mining sites fit this definition well. These sites may also be considered as mining heritage sites; where the term “heritage” is to mean a number of different kinds of phenomena, including cultural, artistic, archeological, historical, religious, military, scenic (including mining landscape) (Edward and Coit, 1996; Conesa et al., 2008). All of these phenomena are capable of generating cultural touristic activities and economic opportunities. Thus, the historical mining sites could advance the development of tourism by touching people’s curiosity and creating excitement. As a result, the number of open-air museums cultivating the concept of heritage/cultural tourism are on the rise. The mining sites are mostly located in open areas, such as in a valley or at a slope of a mountain; as such, their touristic development is suitable to open air type museums, but not to traditional in-building museum concepts.

As a land of many civilizations, Turkey has numerous historic sites, many of which are functional today as open-air museums. Efes, Hattuşa, Nemrut, and Göreme are only a few examples of such sites that are famous world-wide, each attracting millions of visitors every year. The income generated contributes not only to the economic and social wellbeing of the current generation, but also helps the sites to be protected for the benefit of future generations. In Europe, the popularity of open air museums is best proved by the fact that in 2004, there were 500 million museum visitors in the 25 countries of the European Union (Rentzhog, 2007). This number is higher than the whole population of the European Union and 33% of these people visited open air type museums. Consequently, the significance and social prestige of open air museums cannot be queried; the existing cultural policy and social dialogue must always deal with this important segment of culture.

Historical mining and mining-related industrial tourism is not as extensive as general heritage tourism, but it has been the focus of increasing attention by the scientific community in recent decades (Hardesty, 1990; Edwards and Coit, 1996; Rybar, 2010; Tuğcu, 2012). Along this attention worldwide, increase in demand for certain minerals and related revitalization of mining can create problems for historical mining sites as cultural resources, because increases in the demand and prices of certain commodities could make these long-abandoned sites potential profitable mining sites, once again. Furthermore, mining of these areas by surface mining methods can be more attractive in such circumstances because it allows mining profitably from surface to deeper levels without resorting to more costly underground methods. However, removing tens to hundreds of meters of earth from surface to uncover the ore destroys the archeological record. To save the record, and yet benefit from the ores, requires cooperation of specialists from various areas, among them museum specialists and archeologists who can assess the significance of the site in cooperation with the counterparts in mining and metallurgical fields.

In this article some factors of measurement of cultural attractiveness of historical mining sites, which museums and miners should consider before dismissing the sites altogether as their areas of interest, are explored. Two sites (Figure 1) are used as illustrative examples: the well-

known Yesemek Stone Quarry and Sculpture Workshop (Gaziantep, Turkey) and the recently discovered Zilan Historical Mining site in Erçiş (Van, Turkey).



Figure 1. General location map

2. Significance of Mining and Processing Sites

A site is considered as significant if “it has yield or is likely to yield information in history or prehistory” (Hardesty, 1990). This information can be related to the evaluation of demography, technology, economics, social organization, or ideology, such that it can be used to reconstruct aspects of the sites during historical and pre-historical times (Table 1). In a historical mining site, remnants of any mining activity become important sources of information. Shaft tunnels, drifts, stockpiles, chips left from ore enrichment operations, and slags are all significant when evaluating a site. Any organic material left over from food, wooden utensils, or tool parts are particularly useful in dating the facility and assessing social life at the place.

Several models have been developed to systematically evaluate a historical mining site. According to one model, the following are major elements to consider: uniqueness of the site and objects in the site, conditions of the site and objects, accessibility of the site, existing scientific and professional publications, availability of information, safety criteria, visual value, value of provided service, and individual objects found at the site (Rybar, 2010).

Mining/ Processing Remnants	Objects	Evaluation Processes	Areas of significance	Implications
-Slugs -Stone chips (heaps) -Tunnels -Shafts ..	-Wood -Ceramic objects -Metal objects	-Dating -Historical background -Mining/ processing -Archaeometry -Cosmogenic studies	- Product(s) -Demography -Technology -Economy/Trade -Social organization -Cultural organization	-Reconstructing & Understanding past form of the site -Understanding current -Implications for future

Table 1. Major components that may be found in a historical mine site and their significance

2.1. Yesemek Stone Quarry and Sculpture Workshop (YSQSW) - An Example of a Historical Mining and Processing Site Currently Operated as an Open Air Museum

One of the best-known examples of open-air museums about historical mining and processing is the Yesemek Stone Quarry and Sculpture Workshop. Yesemek was first discovered by Felix Von Luschan in 1890 while he was excavating Zincirli (Sam'al). Between 1958 and 1961, the site was excavated by a team under the leadership of Prof. Dr. Bahadır Alkım. It is an ancient stone mining and processing center, with 100 000 m² areal extent, is located at about 23km distance from Islahiye, Gaziantep, Turkey. The ancient basalt quarry, and more than 300 lion, sphinx and mountain god sculptures with various degrees of finishing on the slopes of Karatepe, are the main attractions of the site (Figure 2). Each weighing 15-500 tonnes (Aktüel archeology, 2012), the exact function of these sculptures (Figures 2-5) are still not known (Tuğcu, 2012). They likely belong to the Late Hittite Era and may have been manufactured for other centers of the empire, transported to and finished on locations where they would be erected permanently (Aktüel archeology, 2012). Some highlights about this ancient stone workshop are listed below:

History

- Most of the sculptures are dated from the 10th century through to the 8th century B.C. Yesemek sculptures cannot be dated later than the 12th century B.C. (the informational plate at the site, Tuğcu, 2012)
- In terms of iconographic features, the unfinished sculptures from Yesemek show similarities with Hittite art. The thesis (Tuğcu, 2012) offers the suggestion that the Yesemek stone quarry and sculptural workshop was operated under Hittite control, and was dated to the reign of Suppiluliuma II.
- The presence of unfinished sculptures at Yesemek indicates that the works at the sites were interrupted for some reason.

Functionality

- The absence of finds such as pottery and tools from the quarry site indicates that the site was used only as quarry and sculpture workshop rather than a residential area.

Society

- The type of work carried out at Yesemek required a highly organized authority that was strong both economically and politically.
- The sculptures at the site might have been intended to be used to build a monumental open-air sanctuary to the gods of Hattians and Hurrians.



Figure 2. General view from slopes of Karatepe (Photo: Y. Ateş, 2004)



Figure 3. Scattered sculptures at the Yesemek site



Figure 4. Sculptures at various level of finishing



Figure 5. Gate lion (from Tuğcu, 2012; Photo: Murat Akar)

2.2 Zilan Valley Historical Mining and Processing Site – A Site Waiting to be Evaluated/ Developed as a Heritage Site

The Zilan Valley Historical Mining and Processing Site is located in the Zilan Valley, close to the Hasanabdal Village, north of Lake Van (Figure 6). This historical mining area was discovered by chance in 2007 during a trip to the valley by the author and was first described in the mining/ metallurgical literature by Ates and Kılıç (2012). The mining complex is accessed by leaving the paved highway and turning west from the hot springs facilities near Hasanabdal Village to an unpaved seasonal road. This road runs through the north flank of a small valley with a creek running approximately in a west to east direction and joining the Zilan River. The remnants of the historical mining facilities are located on both sides of this small valley.

Further information about the significance of the site as an indicator to the mining wealth of the area, and its role in archeology of Anatolia is provided elsewhere (Ates, 2013a; 2013b). Here, an introduction to its potential as a heritage/cultural site and as an open museum is offered.

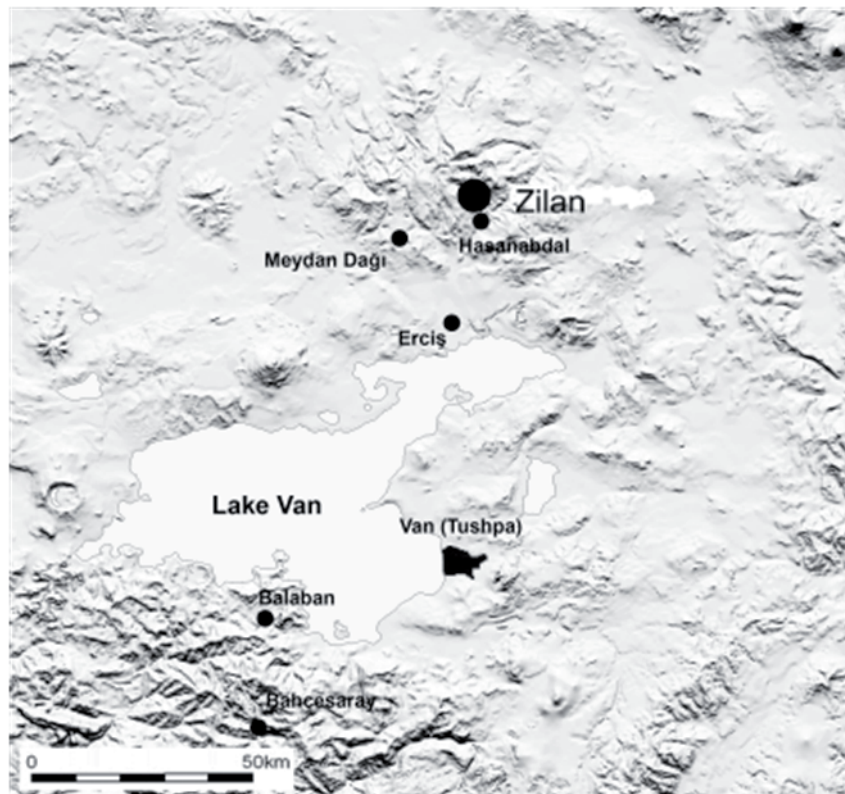


Figure 6. Location of the Zilan Valley

The Hasanabdal village is connected to the town of Erciş, near northern shores of Lake Van, via a paved highway. One of the oldest settlements known around Erciş, called “Zernişan Kale” by local people (“Zernaki Tepe” by Burney 1958), is situated at the entrance of Zilan Valley. The word “zern-” in its name, in Persian, means “golden” and “kale” means fortress. The establishment of the settlement was dated to the Urartian era by Burney (1958), but Sevin (1997) concluded that it should rather belong to the times of Shapur the Great (241-272 AD) of the Sassanid dynasty.

2.2.1. Mining and processing landscape at the site

The mine dates from some time pre-1546 to medieval times. It is highly likely that the mine

was operated during the Byzantine Empire, either by the state or privately under state control (Speros, 1962). The mine then was abandoned as the central power weakened, or during a period of confusion, either by slave workers of the state, or by the designated owners. (Ates and Kiliç, 2012).

The specific mining and processing descriptions of the facilities (Figures 7 – 9), as found today, are also given by Ateş and Kılıç (2012). Among these, there is a rectangular well, in fact a mining shaft, in one location with 1.4x2.5m cross-sectional dimensions that narrows down to a 1x1m square dimension at about 2m-depth. Another one of the rectangular shafts, sunk from a steep rock slope to follow a near vertical ore vein, gently spirals down with its bottom invisible. Its total depth could not be determined at this time but from the sound of falling debris on water, is estimated to be at least 10 m.



Figure 7. Examples of structures from the Zilan Site

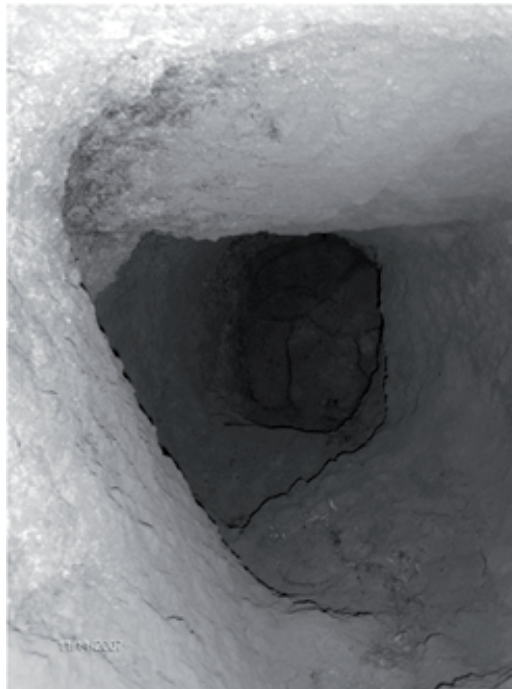


Figure 8. Examples of structures from the Zilan Site.

According to Ateş and Kılıç (2012), the Zilan Valley Mining and Processing Complex was mining and processing pyrolusite (MnO_2), barium or both. Barite is very dense and even hand sized pieces feel heavy, but easily crushed. These properties make it ideal for forming a heavy mud that is used to line the holes drilled during oil exploration today. However, barite is also used as an additive in paint, and this mineral is the source for barium which has applications in glassmaking and medicine. Therefore, in the context of an ancient mine, mining barite for use in paint making, glass-making, and for medicinal purposes is more likely.

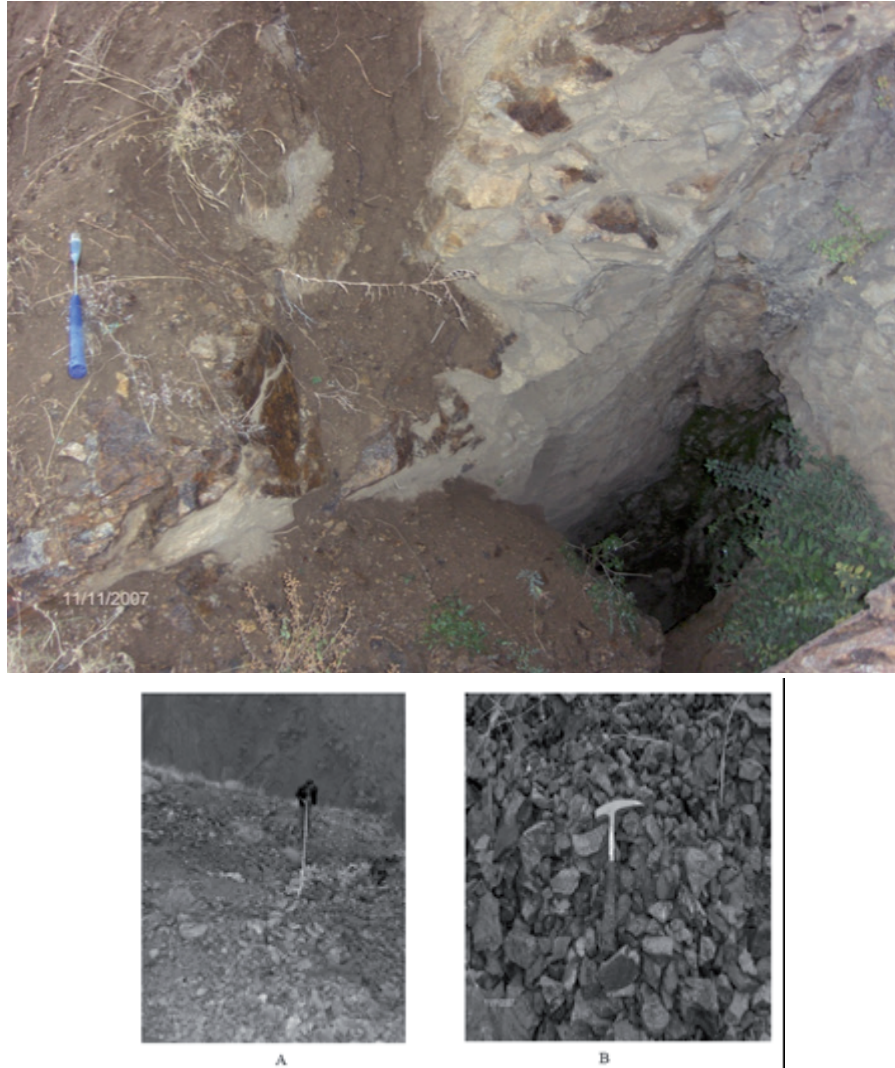


Figure 9. Examples of structures from the Zilan Site.

2.2.2. Opportunity for mining heritage tourism

A summary of the remnants and objects found at the Zilan Valley Mining and Processing Complex, suggested evaluation processes for their identification, and their significance and implications for future is presented in Table 2. The site needs to be explored further to understand its history, functionality and it's a societal context. If developed, the site offers an opportunity to benefit from rising tourism demands in the area of industrial/heritage/cultural tourism, especially if developed as a part of the rich surrounding historical sites, such as the Zernaki Tepe. The development should adhere to other policies that target the protection and development of natural and cultural resources (Külahçı, 1993).

Mining/ Processing Remnants	Objects	Evaluation Processes	Areas of significance	Implications
-Stone chips (heaps) -Tunnels -Shafts ..	None so far ..	-Dating -Historical background -Mining/processing -Archaeometry -Cosmogenic studies	- Product(s) -Demography -Technology -Economy/Trade -Social organization -Cultural organization	-Reconstructing & Understanding Urartian- Byzantine- Ottoman -Extrapolating/ understanding current -Implications for future: Museum/ Mining

Table 1. Major components of the Zilan site and their implications

3. Concluding Remarks

The historical mining and processing sites are valuable resources that must be protected from adverse effects of weather, pollution, and short-sighted industrial development. The Zilan site is valuable, because it exhibits a stage in mining-metallurgy-archeology within a cultural area of the world. It bears an exceptional testimony to a cultural tradition and a civilization. It is an outstanding example of a type of technological ensemble which illustrates a significant stage in human history and it has become vulnerable under the impact of irreversible change.

There is a recent upswing in coal mining (and in Turkey, precious metal mining, especially gold) that can impact historic mining areas. In addition, mine reclamation and clean-up efforts often threaten historically significant mines. Although well-intended, these clean-up activities could contribute to the loss of significant resources.

The sites similar to Zilan site can provide a larger and complete picture about mining-metallurgy-archeology of the region that cannot be assembled from smaller pieces at traditional museums. Having the larger picture, the origin of piece can be traced to whole at the site. Without understanding the processes of mining, processing, enrichment, smelting, transportation molding/forming to suit a particular use, the objects contained in museums cannot serve the new paradigm adopted by modern museums which is inclusive and proactive, rather than exclusive and reactive.

Such sites can also be dangerous if left uncontrolled; people are known have been killed at such sites elsewhere in the world because of presence of deep shafts and long tunnels with loose rocks and soil above (e.g.: Colorado Division of Reclamation Mining & Safety, 2015). Furthermore, there may be an environmental risk, which yet to be assessed, that may be contained by preservation of the site.

There is no known institutional control or supervision for the Zilan site. Thus, there is an urgent need for critical studies evaluating the site with a balance between preserving mining heritage, containment of environmental risks, tourism, and rural development.

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