

‘Profane’ Activity amongst Pious Villagers: In Pursuit of Identity amongst Smelting Communities in Byzantine Serres and Drama, Macedonia

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The current paper seeks to investigate the organisation of production at three smelting sites in Serres and Drama, Macedonia of the Late Byzantine period. An integrated methodology comprising site survey, historical accounts and materials analysis is proposed as a means to approach issues of labour mobilisation and the social status of the workforce. Documentary evidence from Athonite monasteries refer to local iron production in the region while in various Decrees it is stated that two distinct modes of production have been applicable concerning mining operations. These could be described as large scale operations managed by the state and smaller scale private ones managed by landowners or more rarely by villagers who owned a communal village territory. To cope with their remote situations miners-smelters adopted either a strategy of opportunity to secure a maximization of their resource gain, or a strategy of resiliency to survive under sudden environmental or politico-economic change. The corresponding archaeological evidence shows an apparent distinction between small scale, production at Katafyto and Vathytopos against large scale at Angistro. Such a picture might reflect significant differences in the administrative systems under which the smelters worked. These cases represent remarkable examples of identity expression through organising communal undertakings and despite their differences in practice, all smelters shared a common low social status of people pursuing a profane activity.

Keywords: metallurgy, smelting, mining, Byzantine, identity

Introduction

The Byzantine world is often conceived as a world in stasis, with the Empire being seen to accommodate long established economic practices, exchange systems and craft production, which had been developing within the eastern Mediterranean basin since Classical and Roman times. Notions of historical continuity in political organisation from a Greco-Roman past and technological stasis have had a profound effect on the development of research frameworks within traditional Byzantine studies (see Cantor 1963; Mango 1980; Guillou 1959). Additionally such ideas of stagnation have contributed to an image of backwardness in relation to a flourishing Western Europe and have strongly influenced the work of many scholars (Browning 1980; Jenkins 1966; Ostrogorsky 1968). Manifest in contemporary documents (Forbes 1950; Kirby *et al.* 1990; Usher 1959) is the idea that the medieval west promoted innovative technology from an integrated theoretical and practical stance whilst the Byzantine east ostentatiously ignored changes and innovation and is thought to have relied on traditionally established technical systems (Harvey 1989; Brown 1996).

It has become increasingly acknowledged that certain technical and ideological aspects

apparent in literary tradition, iconography and material culture clearly differentiate antique from medieval systems of social and economic behaviour and thus ideas of continuity could no longer be sustainable (Laiou *et al.* 2002). Whereas ancient economies had to rely on surpluses to export through trade, Byzantine agrarian economics were based on small peasant property. Economy in provincial territories relied heavily on agricultural produce and animal husbandry as well as the acquisition and trading of raw materials and up to the 7th century, craft production was restricted among rural communities (Laiou *et al.* 2002; Cameron 2007). During the following centuries more workshops were being established in rural contexts so that in the 12th century peasants with names of trades reached 8-10% of the total population in Macedonia (Lefort 2002).

Interestingly the middle ages heralded a break in Greco-Roman and Eastern notions of harmony between humanity and nature through a process of assigning dignity and spiritual value to labour. Medieval monastic orders in Europe identified labour with worship, as has been lucidly summarised in the phrase ‘*laborare est orare*’ (Oikonomaki-Papadopoulou 2006). Additionally a number of Italian and German technical manuals for various crafts underline the importance of a

systematic and specialised approach to technology in medieval states of the west. Byzantine treatises, although rare, do exist but have been overshadowed by a plethora of patristic religious documents. Nevertheless ideas of a supposedly static Byzantine culture and society transmitted by a popularising historiography about the empire, has been strongly criticised in later years mainly through the works of Kazhdan and Cutler (1982), Haldon (1990), Harvey (1989), Lefort (1993), Turner (1998), Ahrweiler (2000), Cameron (2007) and Herrin (2007).

Farms and mines in the 14th and 15th centuries

The last two decades have seen sensible critiques of studies which have sort to study technological activities disarticulated from their organisation, and have empathised that change cannot be disarticulated from concurrent political and social issues (Lemonnier 1992; Pfaffenberger 1996; Dobres 2000). Thus in order to approach concepts of social engagement with technological systems, a historically informed anthropological methodology should be applied. It is through such an anthropological approach to technology that insights into Byzantine economy and the social identity of craftsmen and workers can be gained.

In the twilight of Byzantine power (15th century), state-run mining became divorced from the local economy as the mines were administered independently while labour and skilled personnel were often imported from remote locations as was the case with the Late Roman empire (Edmondson 1989; Knapp *et al.* 1998). The small-scale mining practiced during late Byzantine times was closely associated with an agriculturally based economy as more frequently landowning farmers and monastic institutions were often the only people with the resources available to exploit mineral deposits (Nerantzis 2006, 66). Alternatively rich estate holders were able to lease contracts to operate mining shafts in imperially owned mining districts. In such political conditions a conservative strategy with no margins for experimentation would appear ideal for optimising production to benefit the estate holders.

The case study presented here was based on three smelting sites in northern Serres and Drama, Macedonia of the Late Byzantine period. Smelting activities in the region have left behind large accumulations of metallurgical waste, which represent discrete

production centres in the vicinity of highland mines (Papastamataki 1985; Photos 1987; Koukouli-Chrysanthaki 1990; Vavelidis *et al.* 1997). Although the mainstay of the metallurgical traditions seems to be iron metallurgy, analyses of slag from these sites, particularly high arsenic concentrations, suggests that precious metal extraction could have been an important but peripheral activity. As demonstrated by the archaeological record decentralised production at Katafyto and Vathytopos aimed to satisfy local demands, while smelters at Angistro were more specialised and worked for a broader network. Such a picture might reflect significant differences in the administrative systems under which the smelters worked and associations with agrarian populations in each case.

Historical documents concerning metals

Historical documents indicate that state owned mines were in operation across the eastern provinces in metal-rich regions such as Egypt, Armenia and the Pontus but the development, articulation and interactions of such industries have not been thoroughly studied in the past. The Northern Greek mines of antiquity are supposed to have fallen into idleness or became a secondary source of iron and precious metals compared to the rich mines in Egypt, Asia Minor and Serbia. Historical sources however provide a more accurate picture for metal production in northern Greece. The Theodosian Code of AD 370-386 mentions the presence of gold miners in Illyricum, Macedonia and Thrace during the 4th century (Pharr 1952: 284). It also contains regulations for the appointment of *procuratores metallorum* among the curial class in Macedonia, Dacia, Moesia and Dardania and includes vague references to *metallarii* in Italy and Gaul (Pharr 1952: 284).

In reference to northern Greece the Code clearly states the problems faced by the state to keep itinerant Thracian miners prospecting for gold outside the boundaries of the Diocese of Macedonia, a situation that worsened by the defection of the former, who were expert in following veins of gold, to the Gothic army (Vryonis 1962). Such references suggest the depletion of ore bodies and might be taken as proof that some Macedonian and Thracian mines were idle at least in the proto-Byzantine period. Other legal documents such as the decree of Valentinian and Valens dated 365 and the decree of Theodosius II dated 424

provide guidance on the transferring of miners according to place of origin and discuss the advantages gained from mining on individual and communal level (Pharr 1952: 283).

Medieval metallurgical activity in Eastern Macedonia is recorded in a manuscript from the Athonite monastery of Aghia Lavra dating to 1347. As mentioned in the chrysobulle large amounts of smelted iron estimated to 600 ingots (*mazia*) per annum were coming from the mines of Trilision and Bronte north of Serres (Lemerle *et al.* 1979). Revenue of 30 hyperpyra per annum was coming from Trilision according to a second document from Aghia Lavra, a Chrysobulle of Stefan Uroš dating to 1361. Other relevant documents include the Xeropotamou monastery and Aghios Ioannis Prodromos monastery archives, where iron production in the highlands north of Serres is mentioned.

Historical sources rarely comment on production technologies but where they do so it is mainly for political reasons such as demonstration of control over resources and the workforce or as a means of record-keeping for taxation purposes (Hendy 1970; Harvey 1982; Kazhdan 1982). As far as the agrarian economic infrastructure is concerned there appears fluctuation of control through time with a numerous population in the 7th and 8th centuries due to Slav invasions and predominance of small property, followed by decline concurrent with the rise of large estates and private landholders (Lefort 1993). When mining and metallurgy is referred to there is a manifest tendency to ascribe all metals rich districts as property of the state and rights of exploitation under strict state control, either direct or remote. The earliest references of the 4th century (Theodosian Code) tend to concentrate on expressions of power relations over resource and labour force without any information on the scale and extent of operations. The later documents of the 14th century provide approximate data about the output gained from the region of Serres, which is very useful for estimating organization and significance of the smelting activities in the region under study.

Archaeological evidence for smelting across Drama and Serres

Numerous studies have focused on the renowned mines of Pangaeon as the major gold source for the Macedonian kingdom of Philip II (Lazaridis 1972; Koukouli-

Chrysanthaki 1990; Shepherd 1993; Vavelidis *et al.* 1997). The region was in deed rich in minerals and extraction started during Archaic times by the Thasian colonists. Archaeological surveys have located some of the metal production centres characterised by substantial slag deposits and furnace debris. Byzantine pottery among the spoil heaps indicated that at least some of the sites were reused between the 11th and 14th centuries. The iron producing district referred to in the Mount Athos manuscripts has been identified with the region of northern Serres extending between the Vrontou range and Mount Angistro where mining activity, significant deposits of metallurgical slag and remains of furnaces have been recorded (Nerantzis 2006).

Two of the examined production sites, Katafyto and Vathyopos are located at the foothills of the Vrontou range close to streams. They consist of slag heaps forming approximately 200 tons of material in each case and remains of furnace installations (Photos *et al.* 1986). The production site of Katafyto consists of an extensive mound formed by slag deposition by the banks of a stream while remains of a mill facilitating a horizontal waterwheel that was applied for the hydraulic operation of the bellows survive at Vathytopos. In these sites efficiency was not an overbearing concern, which might suggest that smelters did not have to justify output in terms of input and instead aimed at satisfying local demands in iron.

Considering the textual information of late Byzantine times, there is supportive evidence for the use of water power in northern Greece, if not in the 15th, then surely sometime later in the 16th century. For instance, a letter of 1444 by Cardinal Bessarion, a Byzantine scholar based in Italy, underlines the significance of water power for numerous applications in the west. The Cardinal advises Constantine Palaeologos to learn from the technical achievements of the west and describes how water mills were being used to drive the bellows for the smelting of iron (Keller 1955; Oikonomaki-Papadopoulou 2006).

The third site is Angistro, which represents a major production centre, since the volume of slag has been estimated around 150,000 tons (Chiotis *et al.* 1996). The smelters appear to have operated under royal initiatives, as the high yields probably reflect controlled enterprises for providing large quantities of iron and most probably gold as well, which is indicated by the presence of by-products of precious metal extractions on the site. This

duality of organisation in production is an important concept indicative of the structuring of the workers' social identities.

Organization of production and social engagement of the workforce

Contemporary documents hold testimony that two distinct modes of production have been applicable since late Roman times concerning mining operations. These could be described as large-scale operations managed by the state and smaller scale private ones managed by landowners or more rarely by villagers who owned a communal village territory (Harvey 1989). As Edmondson (1989: 98) has noted 'mining, where it was organized as a state-run district was divorced from the local economy in that mines were administered independently of the local city, while labour might be brought from far outside the mining area'. On the other hand mining on a small scale was more integrated with the local agriculturally based economic pattern of a region. Landowners had the capital investment to exploit mineral resources on their estates or the right to mine in imperially owned land under contracts and also possessed a ready source of labour in their agricultural workers. This mode of production required less centralized control and economic support from the capital and gave landowners economic power by pursuing income from diverse resources throughout the annual cycle. Evidence for the existence of both state and privately owned mines comes from law codes such as the *praestatio auraria*, *aeraria* and *ferraria* levied from owners of metalliferous land (Edmondson 1989). State-owned mines became scarcer as the 5th century progressed and the preferred situation involved private individuals in the running of the larger mining regions.

A dynamic economic strategy to ensure a steady inflow of metals for consumption in the royal court would dictate the centralization of production. One central region with a single infrastructure would suffice for the same mechanisms, facilities and technical expertise of a coordinated mining community (Bryer 1983). Such a strategy could also enhance the social control sought for by Byzantine authorities towards the labour force. Transfer of manpower to a mining zone from a recently conquered land or the usual workforce, formed from condemned criminals, functioned as an instrument of social control encouraged by the central authorities of the Capital. Within

conditions of close control by state officials, the problem of security was often countered by the use of military force to secure labourers and facilities as well as to help avoid disruptions in production (Knapp *et al.* 1998).

One significant change in socio-economic life apparent from the early Byzantine period onwards is the fixing of professions and trades among urban and rural contexts as implied in the Book of the Eparch. It is possible that non-slave miners were also included in the new scheme. Official permits from the state encouraged private individuals to engage in mining, a practice that is recorded in the Basilica in an extract concerning the private ownership of mines (Vryonis 1962). Undoubtedly the Gothic attacks and invasions caused confusion and instability across the Balkan Peninsula and reduced the output of the mines. However unlike the attacks in the former western provinces where mining was dramatically affected, mines in the Balkans seem to have continued operating, albeit with a smaller output, up to medieval times (Harris 2003).

The social organization of mining communities was affected partly by the physical and/or socio-cultural isolation and the harsh working conditions and labour requirements. To cope with their remote situations miners adopted either a strategy of opportunity to secure a maximization of their resource gain or a strategy of resiliency to survive under sudden environmental or politico-economic change (Knapp *et al.* 1998). The maximizing strategy would reduce variability in material culture by adoption of most effective, standardised tools and technology. On the other hand the resiliency strategy would increase variability as miners experimented with ways to cope under stress or ways of changing the organization of labour to cut mining costs.

These modes of production appear consistent with the chaotic political environment of 15th century disintegrating Byzantium when mining is not only reduced in output but also demonstrates greater prevalence in small-scale units of production. Given the harsh economic situation, the central government appears reluctant to bear administrative efforts, involved in mining districts directly and so devolved responsibility on the provincial aristocracy (Edmondson 1989). Local landlords in turn had to cope with available resource and choose amongst a conservative organization mode with standard returns or an innovative one promising profit in the long run.

Defining identities

The marginal upland zone of Eastern Macedonia was a vital source of mineral and martial resources, crucial for the survival and security of the Byzantine state. Until recently it was thought that the development of the region's infrastructure was the result of exclusively royal initiatives implemented by local officials (Ahrweiler 2000; Cameron 2007). However the apparent site-to-site interdependence in modes of production presents a different picture, one where state control is present but only rarely. Regional politics and technical franchising of a local

character played a greater role in the development of networks for procuring and processing raw materials through a pattern that demonstrates the inadequacy of a monitoring centralised power. Such practice was probably widespread because central authority did not need to dominate contexts of production as long as they controlled contexts of consumption or exchange in urban markets. Therefore the question becomes not how did the state control resources but why were choices made to change the context in which power was exercised. This could be because of concerns with efficiency, martial threat, or other symbolic forms of domination.



Figure 1: Curved ivory box of late 10th century date. Part of the decoration depicts Adam and Eve forging iron.

This feeling of marginality and isolation, at times beneficial due to a lack of state control but more too often precarious due to external threats forged an identity of the region's inhabitants. Although being dynamic agents of a valued craft essential for local communities and the demanding broader networks, miners and metallurgists remained at the fringes of peasant society as indicated by their domestic and working spaces. Their craft materialised in social relationships featured the insignia of a profane activity carried out at the precincts of settlements (Cortese and Francovich 1995). An evaluation of the 'structured' deposits of their workspaces and interpretation of the technical choices behind the performance of smelting can be understood in light of choices in other

spheres of life. More broad issues of social formation should be considered in that respect such as human agency, landscapes of action and perception, and chains of technical operations. Technology is unavoidably involved in many other areas of production and consumption as it shares common technical operations with agriculture and animal husbandry, in other words it involves an entanglement of *chaînes opératoires*.

Within the landscape of Byzantine life, constellations of action oriented towards spiritual completion, ignoring materiality as a potentially obstructing force. The scarcity of technical treatises overtly outnumbered by patristic writings and saint's lives serving

indoctrination practices, springs out from a socially constructed stance that technology as a dehumanising force, radically materialistic is bound to corrupt the spiritualist and religious development of man (Clarke and Norris 1962). Thus technical knowledge came to be identified with vulgar and profane activity, described as banausic arts (brutal) which should at all instances be reined in to accommodate sustaining goals (i.e. civil infrastructure).

Manifestations of the role of technology in Byzantine society are demonstrated through iconographic motifs on wall paintings and portable artwork such as bronze work, silver ware and ivory boxes. There are two striking examples of late 10th to early 11th century ivory boxes depicting Adam and Eve involved in a forging operation (Figure 1). Both depictions show Adam who holds an iron rod, using tongs, which he hammers on an anvil, while Eve is operating the bellows to direct a blast of air into the hearth (Oikonomaki-Papadopoulou 2006). Such depictions seem to emphasise the everyday struggles Adam and Eve had to endure such as ploughing, weaving or building. Given their first state of living in constant joy, there appears to be a rather nostalgic element for the loss of paradise when at the same time common Byzantine activities are illustrated through the use of biblical figures. It seems that such imagery underlines the seriousness and moral weight of tasting the fruit of knowledge for which the first couple on earth had been condemned to hard labour. Metalworking is thus seen as part of undesirable, laborious activity, a 'necessary evil' or even a punishment for those who have faltered, while such depictions inform us on the socially constructed viewpoint for technical operations as well as the division of labour and the role of women in metalworking activities during the Byzantine period.

Conclusion

An evaluation of the major historically determinative elements of Byzantine culture such as non-economic behaviour, notions of Eucharistic communion as regards materiality, extended temporality and debasement of labour should help at approaching an understanding of agency-structure relationship. As demonstrated by the archaeological record, decentralised production at Katafyto and Vathytopos, aimed at meeting local demands, was integrated in the economic base of the local communities and was thus intertwined with their identity (Nerantzis 2006). Iron smelting represented

part of their seasonal economic supplement and would have been pursued at their own consent. On the contrary smelters at Angistro might have been strangers brought there to work in order to provide high yields to meet demands of the imperial treasury. The workers would share a common sense of subjugation and control from central authorities, as they were probably working for most of the year, secluded from other sectors of economic subsistence. Additionally operating regulations would have been severely strict as far as gold extraction was concerned. Within a context of adversities defined by social control the smelters used innovative techniques and in particular hydraulic energy to maximise efficiency in an attempt to react against their degraded social status. Once again cultural factors, namely debasement of labour and communal scorn, forwarded changes in industrial practice towards innovation and increase in production.

These cases presented here constitute remarkable examples of identity expression through organising communal undertakings, as smelters from the three sites shared a common low social status of people pursuing a profane, by Byzantine standards, but extremely essential activity. What is needed for the future is to meticulously excavate the everyday spaces of Byzantine miners and smelters and then contrast this with agricultural communities for which more information is available. By understanding the materialisation of such entanglements, coherent conclusions can be drawn concerning the social and technical intertwined dimensions of life in medieval rural communities.

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