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Excavations at the Prehistoric Burial Tumulus of Lofkënd in Albania: A Preliminary Report for the 2004–2005 Seasons

JOHN K. PAPADOPOULOS, LORENC BEJKO, AND SARAH P. MORRIS

Abstract

Exploration of an Early Iron Age burial tumulus at Lofkënd in Albania offered a unique opportunity to examine the formative period immediately preceding the founding of Greek colonies on the coast and how such a prominent burial place functioned in relation to a particular group, or groups, of people in Illyria. We anticipated that the investigation of a major burial site predating both the colonial foundations and the majority of the so-called protourban centers in the region would lead to a better understanding of the processes that contributed to the rise of urbanism in Illyria. This report presents a preliminary account of the 2004 and 2005 excavation seasons, during which time more than 60 burials were cleared. Mortuary customs are discussed and a brief account of a DNA study is presented. Various finds from the fill of the tumulus and a soil analysis provide important new evidence on tumulus formation. We review the chronology of the site and present the preliminary results of a fully textured three-dimensional model of the mound and its tombs.

Comparison with sites to the north and south, particularly in Epirus, may have far-reaching implications for Early Iron Age Albania and Greece.*

INTRODUCTION AND AIMS OF THE PROJECT

The burial tumulus of Lofkënd lies in the Mal-lakastra hills, which rise to the southeast of the modern regional center of Fier, not far from the village of Lofkënd (sometimes Lafkënd) (figs. 1, 2). As one of the oldest villages in the region, modern Lofkënd, which lies on a prominent ridge almost 3 km to the east, gave its name to the ancient tumulus. Several more recent villages now ring the site: Ngrancija, a short distance to the southeast, Gjinoqara to the northwest, and their various offshoots.¹ Despite its relatively small size, the Lofkënd tumulus, situated 318 m above sea level, dominates the landscape and is visible from

* The Lofkënd project has been generously funded by the Steinmetz Family Foundation, Kress Foundation, Mellon Foundation, Cotsen Institute of Archaeology at UCLA, Friends of Archaeology at UCLA, and Ahmanson Fund of the Cotsen Institute. The physical anthropology discussed in this report is the work of Lynne Schepartz of the University of Cincinnati, assisted by Sarah Stoutamire. The DNA analysis was carried out by Laura Menez on-site and in the laboratory of the Henry Wellcome Ancient Biomolecules Centre at the University of Oxford, and was partly funded by the Wellcome Trust. The project was initiated with the director of the laboratory, Alan Cooper. An examination for possible postmortem treatment of skulls was performed by Michelle Bonogofsky. Sampling and on-site analysis for the soil report were carried out by John Foss, who coauthored the preliminary report with Mike Timpson of Soils International, Inc. The Lofkënd three-dimensional mapping project is led by Chris Johanson and Itay Zaharovitz of UCLA. Technical advice on bitumen and resin was provided by Caitlin O'Grady. The participants of the 2004 season, in addition to the authors, were Muzaffer Korkuti (lithics expert); Max Farrar (surveyor/architect); Ilir Zaloshnja (draftsman); Schepartz, Bonogofsky, and Stoutamire (physical anthropologists); Menez (DNA analyst); Richard MacDonald (photographer); Sarah Cleary and Naoko Fukumaru (conservation); Albana Meta (archivist); Jamie Aprile, Rexhep Halili, Rovena Kurti, Jessica Langenbucher, Surja Lela, John (Mac) Marston, Seth Pevnick, and Rudenc Ruka (trench supervisors); Arjan Dimo, Kushtrim Kuçi, Artan Hoxha, Ilir Koço, and Sonila Meta (excavation assistants);

Sami Hasa (logistics); Arben Malaj, Adriatik Malaj, Baki Ymeri, and Edlir Ymeri (workmen). The 2005 team included, in addition to the authors: Korkuti (lithics expert); Farrar (surveyor/architect); Zaloshnja (draftsman); Schepartz and Stoutamire (physical anthropologists); Foss (soil scientist); Richard MacDonald and Anna MacDonald (photographers); O'Grady and Alma Bardho (conservation); Johanson and Zaharovits (three-dimensional imaging); Meta (archivist); Esmeralda Agolli, Aprile, Kurti, Lela, Marston, Ruka, and Lyssa Stapleton (trench supervisors); Dimo, Rahman Hasa, Sonila Meta, and Laura Steinmetz (excavation assistants); Sami Hasa (logistics); Shkëlqim Beqiri, Artur Dervishi, Sazan Dervishi, Barjam Kapllani, Arben Malaj, Adriatik Malaj, Denis Malaj, Baki Ymeri, and Albana Ymeri (workmen). The authors are grateful to all the team members of the Lofkënd project, and also wish to express their gratitude to Muzaffer Korkuti for initiating this collaboration and for taking part in the project from its inception. Our thanks are also due to Jack Davis for advice and assistance in the early stages of the project and for his continued interest in our work. We also thank Curtis Runnels for assistance with the Lofkënd lithics, Marston and Johanson for their help in preparing the illustrations for this report, Stanislav Parfenov for the maps (figs. 1, 2), and the anonymous *AJA* readers, whose comments have greatly improved this paper. The project Web site may be accessed at <http://ioa.ucla.edu/staff/papadopoulos/lofkend/index.html>.

¹ The villages of Ngrancija include Ngrancija Sinaj and Ngrancija Arizaj. The offshoots of Gjinoqara include Gjinoqara Laçaj, Gjinoqara Berhamaj, and Gjinoqara Mashkullorë.



Fig. 1. Map of Albania and region (drawing by S. Parfenov).



Fig. 2. Map of the immediate region around the Lofkënd tumulus (drawing by S. Parfenov).

substantial distances. It is most conspicuous when seen from the lower stretches of the surrounding valleys to the east, west, and south of the site (figs. 3, 4), and particularly from the valley of the Gjanicë River, a few kilometers to the south. This is one of the richest archaeological areas of Albania, now more clearly understood through the work of the Mallakastra Regional Archaeological Project (MRAP), although the tumulus itself lies outside the area covered by the MRAP survey.² The site is ringed by several of the most significant fortified protourban and Classical/Hellenistic centers (Margëlliç to the west-northwest, Gurëzezë and Mashkëzë to the south and west,³ Byllis and Klos-Nikaia to the south,⁴ and Dimal to the northeast),⁵ and lies east of the ancient Corinthian colony of Apollonia (see fig. 2).⁶ Important prehistoric sites in this region include the Bronze–Iron Age tumulus at Patos 14 km to the west-northwest (which, like Lofkënd, overlooks the valley of the Gjanicë),⁷ the open-air Bronze Age site and

tumulus at Drenovë,⁸ and the Neolithic settlement at Cakran, which is especially important for the Middle Neolithic period.⁹

The aim of the Lofkënd project as conceived in 2003 was to initiate protohistoric investigations in south-central Albania, specifically in the region around the tumulus of Lofkënd, in order to investigate a number of interrelated phenomena. The chronological range of the tumulus offered a unique opportunity to explore the formative period immediately preceding the colonial foundation on the coast at Apollonia (the other principal colonial Greek foundation was Epidamnos-Dyrrachium);¹⁰ surface materials collected in 2003 and 2004 appeared to be primarily Early Iron Age, but materials of the Bronze Age and earlier were clearly present. The exploration of a tumulus such as this encourages a link to a particular group, or groups, of people (the region, according to Greek sources, was part of the tribal territory of the Bylliones),¹¹ as

²The MRAP survey was codirected by Davis, Korkuti, Bejko, Skënder Muçaj, Michael Galaty, and Sharon Stocker. For preliminary accounts of the MRAP survey, see Korkuti et al. 1998 (http://river.blg.uc.edu/mrap/MRAP_en.html); for Mallakastra, see also Praschniker 1922–1924. The MRAP survey does not, strictly speaking, lie in the Mallakastra hills but in the broader *chora* of classical Apollonia. Mallakastra, with the modern regional center at Ballsh and in which Lofkënd is located, lies well to the east of the MRAP survey area.

³The primary bibliography on Margëlliç includes Ceka 1977–1978, 1983a, 1985a, 1986a, 1987, 1990a, 138–41; Praschniker and Schober 2003, 76–8. For Gurëzezë, see esp. Praschniker 1922–1924, 64–8; Anamali 1949; Ceka 1983a, 1985a, 1990b. For Mashkëzë, see Ceka 1977–1978, 1983a, 1983b.

⁴There is little at the site of Byllis that clearly predates the Hellenistic period. For the identification of Klos as ancient Nikaia, see Robert 1928, 433. For excavations and investigations at the site at Klos, see Papajani 1974, 1976; Ceka 1977–1978, 1985a, 1990a.

⁵For Dimal (Kalaja e Krotinës), see Praschniker 1922–1924; Dautaj 1965, 1971, 1973, 1974, 1976; see also Myrto 1998, 73–5.

⁶For preliminary reports on the recent work at Apollonia, see Cabanes et al. 1994, 1997, 1999, 2000; Amore et al. 1995; papers in Cabanes and Lamboley (2004) and in the memorial volume for Leon Rey in *Ilira* 31 (2003–2004), esp. Gjongecaj and Picard 2003–2004; Lamboley and Vrekaj 2003–2004; Mano 2003–2004. *Atlas of Apollonia* (forthcoming) will provide an important overview of the site. For a useful summary of the ancient literary sources on Apollonia, see Mano 2003–2004. For work in the tumuli necropolis of Apollonia, see Rey 1932; Mano 1971, 1974; Amore 2003–2004, 2004. For the hinterland of Apollonia, see Davis et al. 2003–2004. For the recent excavations at the site of the Archaic sanctuary at Bonjakët, see Davis et al. 2006. Apollonia, according to Strabo (8.316) and Ps.-Scymnus (439), was a joint foundation of Corinth and Korkyra. Thucydides (1.26.2) describes it as a Corinthian apoikia (cf. Stephanus Byzantinus [s.v. “Apollonia”] who only mentions 200 Corinthians under the oikist Gylax), whereas Pausanias (5.22.4) refers to Korkyra as the sole metropolis (Graham 1964, 130).

⁷For the excavation of the burial tumulus at Patos, see

Korkuti 1981.

⁸For Drenovë, see Ceka 1976, 366; 1985a, 1990b.

⁹For Cakran, see esp. Korkuti and Andrea 1974.

¹⁰Only Apollonia and Epidamnos were colonies in the true Greek sense (i.e., formal apoikiai of a sponsoring mother-city [metropolis]). For the colony and mother-city in the Greek world, see Graham 1964. Epidamnos boasts a Korkyran and Corinthian pedigree; the Greek colonists were Korkyrans with some Corinthians and other Dorians (Hammond 1967, 425–26). The colony was at first a mixture of Greeks and Illyrians, specifically the Taulantii, who had called in the Korkyrans. The Greek founder was Phalius, a Corinthian of Heraclid descent (Hammond 1967, 425). Other sites on the coast of Illyria are only linked with legendary Greek settlers returning from Troy. Bouthrotos (Buthrotum, Butrint) was thus founded by Helenos, one of the sons of Priam, who established there “a little Troy,” which was visited by Aeneas (Hammond 1967, 385, 474). It is worth stressing that there is no tradition of any historical Greek colony at Bouthrotos. Another example, Orikon, according to Ps.-Scymnus (442–43) and later authors (Hammond 1967, 385 n. 1), was founded by Lokrians and Euboians, whose ships were driven there by storms on their way home from Troy. The site of Thronion/Thronium (Kanina), in the Bay of Vlora, features in legend as an early foundation of the time of the Nostoi, and is also linked with Lokrians and Euboians (see Paus. 5.22; Hammond 1967, 384–85, 494, 515–16, 523). Other sites on the Bay of Vlora include Orikon and Aulon (Treporti). Hammond (1967, 428) observes that the Corinthians settled Apollonia and not the shores of the Bay of Vlora, with the best harbors, which implies that this coast was already occupied. For a brief introduction to the Greek colonies on the Illyrian coast, see Hammond 1967; D’Andria 1990; Wilkes 1992. See also Franke’s (1983) richly illustrated overview. For a circumscribed account of the relations between Illyrian Albania and the Greeks and Romans, see Hammond 1992. Myrto (1998) provides a good bibliographical overview. For Epidamnos (Durrës), the recent archaeological survey by Davis et al. (2003) is indispensable.

¹¹The Greek sources are primarily Hecataeus and Strabo (see Hammond 1967, 443–69, 464, map 14; 674–75, map 16; Galaty 2002, esp. 110, fig. 1).



Fig. 3. View of the burial tumulus of Lofkënd from south (R. MacDonald).



Fig. 4. View of the Lofkënd tumulus from west (R. MacDonald).

well as the rethinking of the nature of settlement in south-central Albania, and more particularly, the role of historical pastoralism vs. agriculture. In this respect, the relationship between the people who were buried at Lofkënd and the colonists at Apollonia takes on added significance when contrasted with the Greek polis and its citizens, and with the tribal, clan-based political and social organization based primarily on kinship.¹² In addition, one of the most critical material developments in this region was the establishment of a new type of site in the Illyrian hinterland during the developed Iron Age (contemporary with the Archaic period in central and southern Greece). It is not yet fully understood whether this type represents true towns, hilltop refuges, or regional trading and meeting places, such as Margëlliç, Klos-Nikaia, Gurëzezë, and Mashkjezë.¹³ Also unclear is the development process, as well as the relationship of these centers with one another and with the coastal colonies.

The development of “cities” in Illyria should be seen in a broader context, and here the precept of urbanization on the Italian peninsula offers a useful comparison. In his overview of the Early Iron Age, Snodgrass states: “In one large area of the Greek world there were special reasons for the absence of a school of Protoegeometric: this was Sicily and southern Italy, where permanent settlement only began in the eighth century.”¹⁴ Although one could question whether Sicily and southern Italy during this period were part of the Greek world, the assumption that urbanization came to Italy as a result of Greek colonization during the historic era has been remarkably long-lived, though it may be overstated. Some scholars have suggested that Mycenaean trade was in part responsible for the urban development of Apulia.¹⁵ In dealing with the

Late Bronze Age, particularly in Mycenaean times, Ridgway points to a basic distinction in the Italian peninsula between primary (coastal) and secondary (inland) reception points.¹⁶ A similar pattern is seen in the historic period, when there is a difference between the coastal Greek poleis and the indigenous hinterland on both the Ionian and Tyrrhenian coasts of Italy.¹⁷ Similarly, in Illyria in the Archaic period, the poleis of Apollonia and Epidamnos differ significantly from the indigenous hinterland. The question of how prominent burial places like Lofkënd functioned in such a contested landscape takes on added significance when seen in the light of these contemporary settlements.

It was anticipated that the exploration of a major site in this region predating (and partly chronologically overlapping) both the foundation of the colonies and the protourban centers would lead to a better understanding of the historical processes that contributed to the rise of urbanism in Illyria. Habitation sites of this period in the area are virtually unknown, though one possible site spanning the Late Bronze and Early Iron Ages is located at Kraps, not far from the Patos tumulus.¹⁸ There may be similar sites closer to Lofkënd that have not yet been found. However, the MRAP survey has brought to the fore the paucity of settlement sites spanning the Late Bronze and Early Iron Ages in this part of south-central Albania. Consequently, in the absence of clearly visible settlement sites in the area, we decided to explore through systematic excavation what was most apparent in the landscape. The Lofkënd tumulus, like most tumuli, is a monument in every sense of the word: a structure deliberately designed and built over an extended period of time that was part of a landscape socialized through

¹² See Galaty (2002, 109), who follows Hammond’s (1967, 1972, 2000) view that the *ethne* of Epirus and Upper Macedonia were “tribal states” based on kinship (see esp. Hammond 2000, 345).

¹³ The absolute chronology of the so-called protourban phase at many sites remains problematic, and conclusive evidence for the initial stages of the period is often lacking. At Mashkjezë, the earliest cultural layers are dated to the Archaic period on the basis of imported Greek ceramics. A similar date is suggested for Margëlliç, though the exact chronology of Gurëzezë is unclear. At Klos-Nikaia, there is little that clearly predates the fifth century B.C.E. Looking at the rise of population centers throughout Albania, the development from occupied hilltops to protourban sites has been mapped out by Korkuti 1982; Ceka 1985a, 1985b; Harding 1992, 22–7. The earliest of three phases belongs to the Late Bronze Age and is often named after the type-site of Badhër, while the second, preurban phase is characterized by the sites of Gajtan and Trajan. The third, full-fledged protourban phase sees numerous fortified hilltop sites all over the country, generally dated to the seventh–fifth centuries B.C.E. It is debatable, however,

whether the preurban sites such as Gajtan were in any way “urban” during this period; evidence for occupation within the walls is scant, and the sites are better characterized as hill-forts than poleis. In this respect, they are not unlike some of the “Fluchtburgen” of the Halikarnassos peninsula studied by Radt 1970, esp. 104–18.

¹⁴ Snodgrass 1971, 91.

¹⁵ Whitehouse 1973.

¹⁶ Ridgway 1992, 7.

¹⁷ This is well treated by several papers in Descoedres 1990. For a discussion of these issues, particularly in the critical period of the Late Bronze and Early Iron Ages, see Papadopoulos 2001.

¹⁸ Originally reported by Ceka (1990b, 142–43, pl. 4), Kraps was test-excavated by MRAP but awaits final publication; for a preliminary report, see <http://classics.uc.edu/mrap/mrap01.html>. Although material of the later Bronze Age is known from the site, the quantity of Early Iron Age material contemporary with both the Patos and Lofkënd tumuli appears to be more circumscribed.

human action, and a focus of memory and identity.¹⁹ The location of cemeteries is a conscious and carefully conceived activity on the part of the living.²⁰ This applies particularly to tumuli, which, as monuments of some permanence, dominate the landscape of later generations.²¹ It is this visibility of the Lofkënd tumulus (see fig. 3) that makes it such an obvious target of investigation; to understand the landscape, one must understand the tumulus.

The implications for the nature of settlement in this region may be more far-reaching and may contribute to a clearer understanding both of the transition from unwallled “villages” (*komai*), which are characteristic of an *ethnos* in classical sources, to fortified “cities,” and to what extent these cities relied on, or differed from, the Hellenic model.²² At two Molossian cemeteries in Epirus in northwest Greece, Vitsa Zagoriou (Early Iron Age through the fourth century B.C.E.) and Liatovouni (Late Bronze Age through late fifth century B.C.E.),²³ unwallled “villages” to which the cemeteries belong have been excavated, while the Korçë-Kolonjë region of southeastern Albania in the Late Bronze Age, and especially in the Early Iron Age, saw new settlements created on naturally defended hilltops, fortified with walls.²⁴ At both Vitsa and Liatovouni, the chronological conclusions seem clear enough: both cemeteries extended through various stages of the Classical period, and it was only at the end of the fifth or during the fourth century B.C.E. that both cemeteries went out of use and their settlements were abandoned. Questions include: What brought about these changes? How did tumuli function in relation to a settlement, or group of settlements, and what was their contemporary significance in the region? What were the patterns of settlement and/or partial mobility in the era before cities? And what can we learn about the city outside the historical contours of the classical polis? These questions are not limited to the formation of the city in Illyria. What is the nature of Early Iron Age settlement in many parts of Greece

during the period before the Classical era, especially in Macedonia, Thrace, and even parts of Thessaly? Despite the numerous burials in the cemetery of the tumuli at Vergina, for instance, little is known of the contemporary settlement.²⁵

In a similar vein, the recent discovery in Tumulus 10 at Apollonia of prehistoric graves yielding Bronze Age ceramics, bronze and bone dress-pins, a bronze sword and knife, as well as a terracotta violin-shaped figurine perhaps dating to the Early Bronze Age, together with tombs of the Classical period, has started a new chapter in the history of the city and territory of Apollonia. In their preliminary report on Tumulus 10, the excavators note that the “new challenge is now to locate the settlement of this early population.”²⁶ As in neighboring Greece in the Early Iron Age, cemeteries are much more conspicuous than settlements. The discovery of 52 prehistoric graves in Tumulus 10 out of 75 burials (the rest being Classical), whereas the other 10 tumuli explored in the necropolis of Apollonia date to the Colonial period, is an important development in the context of tumulus burial in Albania.²⁷ The similarities and differences among tumuli in the colony and those in the hinterland will form an important avenue of inquiry in our ongoing study of the Lofkënd tumulus. Addressing these questions is the long-term goal of the Lofkënd project. The preliminary nature of the evidence to date is such that there are no firm answers to many of the posed research questions.

Another focus of the excavations at Lofkënd is to explore mortuary customs in south-central Albania from a regional and contextual approach, incorporating the results of excavations at nearby and more distant tumuli. Hundreds of tumuli excavated in Albania, including Barç, Mati (where numerous tumuli have been located and explored), Pazhok, Dukat, Kukës, Kuçi i Zi, Piskovë, Vajzë, Vodhinë, Dropull, and Bajkaj, can be found in readily available overviews of Albanian prehistory.²⁸ Moreover, several more recently excavated tumuli, such as Tumuli 9–11 at Apollonia and the large

¹⁹ The visibility of the Lofkënd tumulus within the landscape is more fully discussed in Papadopoulos 2006; see further Bender 1993, 11; Alcock 2002, 28.

²⁰ Parker Pearson 1999, 124.

²¹ In dealing with the earth-constructed monuments in the landscape of the British Neolithic, Bradley (1985, 9) stresses the permanence of such monuments: “They dominate the landscape of later generations so completely that they impose themselves on their consciousness.”

²² For *komai* in classical sources, see, among others, Thuc. 1.5, 1.10, 3.94; Herod. 5.98 (cf. 1.96); Arist. *Poet.* 1448a.36; *Pol.* 1261a.28. For *ethnos* denoting a tribal state based on kinship, see Hammond 2000, 345; Galaty 2002, 109.

²³ For Vitsa, see Vokotopoulou 1986; for Liatovouni, see Douzougli 1996.

²⁴ For a useful overview of the fortified hilltops in the Korçë area, see Karaiskaj 1976. For some of the tumuli in the region, see Aliu 1984, 1987, 1995, 1996, 2004; Andrea 1985; Bejko 2004. See also Bejko et al. (2005) on the Korça Basin Archaeological Survey Project.

²⁵ Petsas 1961–1962; Andronikos 1969.

²⁶ Amore et al. 2006.

²⁷ Amore and Bejko have excavated two other tumuli at Apollonia, Tumuli 9 and 11, in addition to the eight others excavated earlier; see the Apollonia Necropolis Project: http://www.gshash.org/index_files/Page1285.htm.

²⁸ See Hammond 1982, 624–25. For a useful overview of tumuli in Albania through the early 1980s, see Hammond 1982, 627–36; Prendi 1982, 189, 211, 214, 216–18, 222, 235.

tumulus at Kamenica in the Korçë basin, have been, or are being, excavated using methods similar to those employed at Lofkënd and thus provide an even better opportunity for comparison.²⁹ Another aim of the Lofkënd project is to explore funerary customs from a theoretical and methodological approach that is cognizant of the latest developments in demographic studies, particularly issues of age, gender, pathology, and kinship traits (the latter using DNA analysis). The project also examines the rituals and philosophy of death, issues of ethnicity, and social organization, which is not limited to the establishment of “social status” but the inclusion or exclusion of certain groups on the basis of age, gender, deviancy, and other factors. A particular focus of this project is the full and detailed analysis of all the skeletal remains, whatever their state of preservation, and a comparison to other excavated populations in Albania, thus allowing more robust results of demography and human population in the region. Since one of the primary purposes of this paper and our project is methodological, much of the report that follows describes methods and associated results.

THE 2004 AND 2005 EXCAVATION SEASONS

In 2004, excavations were initiated at the burial tumulus at Lofkënd as a collaboration of the Cotsen Institute of Archaeology at the University of California, Los Angeles, and the Institute of Archaeology, Academy of Sciences, Tirana, with the International Center for Albanian Archaeology, and was codirected by the authors. The season extended from 20 June through 30 July 2004.

Following the preliminary mapping of the area and the establishment of a grid (figs. 5, 6), the tumulus was divided into four sectors, or trenches, separated by baulks of 0.5 m.³⁰ A variety of picks, trowels, and scrapers were used in the excavation of the tumulus fill, which was often dry and very hard-packed. Burials were excavated almost exclusively with wooden tools to minimize damage to the human remains. Brushes and a range of dental tools were used for more detailed cleaning. All material was dry-sieved using different screen-size meshes, and samples of each soil unit were water-sieved. Samples for flotation and subsequent paleo-

ethnobotanical analysis were approximately eight to 10 liters in volume, except for smaller discrete samples, such as the contents of particular vessels deposited in graves. Samples were taken from each grave and all other identified features in the mound, as well as from each stratigraphic layer. All visible burned patches or lenses, ashy areas, and areas with visible charcoal flecks were sampled. As anticipated, burned plant remains were negligible. Of the samples water-sieved in the 2004 season, only a solitary carbonized seed was recovered. All small finds from the tumulus fill, including scraps retrieved from dry-sieving, were examined, recorded, and stored. Metal finds, pottery fragments preserving painted decoration, or those in need of mending, were treated directly in conservation. All other objects of clay or stone were washed, sorted, and inventoried either as individual objects or as bulk finds, with sherds counted and weighed for each unit. The material retrieved was entered in the project database. Human bone was lifted in the field and packed in absorbent paper and aluminum foil to be subsequently cleaned and sorted by the physical anthropologists; many of the tombs were lifted with the assistance of a physical anthropologist. In addition, skeletal material was examined in the field and laboratory for possible signs of postmortem treatment (in particular, skulls) for purposes of burial.³¹ Shells of land snails were ubiquitous throughout virtually every level of the tumulus fill and often in the graves, representing two common land mollusks often attracted to human remains. Animal remains were relatively infrequent. The faunal remains thus far recovered await detailed analysis.

One of the aims from the outset of the 2004 season was to test, using DNA analysis, for any consanguinity or relationship between individuals buried in the tumulus using mitochondrial and, if possible, nuclear DNA. A further goal was to develop a method for sampling human remains from an archaeological context that is both effective and practical for fieldwork. To this end, a pilot project was initiated with Alan Cooper of the Henry Wellcome Ancient Biomolecules Centre at the University of Oxford. Laura Menez, one of the center's doctoral students, joined the Lofkënd project for two weeks in July 2004, and oversaw the sampling of the excavated skeletons and conducted

²⁹ For the tumulus of Kamenica, see Amore and Bejko 2001; http://www.gshash.org/index_files/Page1157.htm; http://www.gshash.org/index_files/Page1541.htm provide a broader overview of the Korçë survey.

³⁰ The excavation of each sector was cosupervised by American and Albanian graduate students and archaeologists.

³¹ Human skeletal remains from 24 burials excavated during the 2004 season were viewed under natural light by Bonogofsky using an 8x handheld lens to examine the human bone for evidence of cutting, defleshing, and sanding, as well as

postmortem applications of plastic modeling substances such as those found on skulls in the Neolithic Near East (Bonogofsky 2001a, 2001b, 2003, 2005). This material was, in many cases, highly fragmented, with soil adhering to all exposed surfaces, and extensive root action had severely eroded the cortical bone. An unidentified black substance was noted adhering to hand, wrist, and various bones from the multiple interment in Tomb 17. Bonogofsky found no clear evidence of postmortem modeling on human skeletal remains.

found in Tombs 17, 52, and 55 could yield potentially interesting results.

A total of 28 burials were uncovered during the first season in the uppermost meter of the tumulus. With the continuation of excavations at the tumulus in late June and July of 2005, the number of cleared graves increased to 62, and a further four burials were uncovered but not excavated by the conclusion of the second season.

The excavated burials belong to two primary phases. A modern phase was largely confined to the north-eastern portion of the mound and was characterized by inhumations of infants (including neonates or pre-term infants) and several adults, all oriented east to west, with the crania to the west (facing east), as well as several animals. Small finds associated with these graves were scarce, but in a few, a solitary and much disintegrated bronze or copper alloy coin was associated with the deceased. None of these coins is legible enough to provide a firm date, but on the basis of their fabric, weight, and what is visible on their surfaces, they appear to date to the modern era, perhaps as early as the 17th or 18th centuries, according to Shpresa Gjongecaj who inspected some of them in 2004. However, an earlier or later date for these coins cannot at this stage be dismissed.

Typical among the numerous infant burials was Tomb 11, particularly in the positioning of the body and the lack of grave goods. The uppermost part of the tomb consisted of a stone covering (fig. 7a), below which a fragmentary roof tile covered the burial (fig. 7b). Such a tile covering was rare in the other infant burials. The tile is of a type common on houses in modern traditional villages in the area, particularly those in and around the village of Lofkënd. The deceased (fig. 7c, d), described as a full-term infant that may have survived up to one month after birth, was oriented southwest to northeast, with the cranium to the southwest (210°). Only two adult graves were encountered in 2004 among the modern burials (Tombs 22 and 23), though three more adult tombs of this period (Tombs 39, 45, and 48) were excavated in 2005 in the area immediately north of the cluster of tombs uncovered in 2004. Another infant burial, Tomb 36, was covered by several stones and partially lined by at

least four more stones. The only object associated with the grave was a small bronze clasp, which probably served as a dress fastener.

The two adult burials excavated in 2004 belong to this late phase and consisted of a pit dug into the earth of the tumulus, lined with stones and covered by larger stones to define a neatly constructed cist. We illustrate Tomb 23 in three states: covered (fig. 8a), with the cover stones removed (fig. 8b), and the cranium after cleaning (fig. 8c). Oriented nearly east–west, with the cranium to the west, facing east, the skeleton was of a male aged 45–55. The deceased was laid out in a fully extended position, with the arms folded across the lower torso. Two more infant burials, Tombs 21 and 25, can be seen to the north of the tomb in figure 8a.

The existence of these modern burials was not expected because of the presence of a modern Muslim cemetery located on a prominent bluff immediately below the prehistoric tumulus and associated with the nearby village of Ngrançija.³² This later cemetery was established in the 20th century, whereas the modern burials on the tumulus were earlier. All the modern burials in the tumulus were clustered together in the northeast sector of the mound, almost exclusively in the area of trench 1. All shared a similar orientation, though some, such as Tomb 11, were oriented more southwest–northeast, while others, such as Tomb 22, were oriented west–east. Assuming that the east–west orientation followed the position of the sun, it is possible to determine the time of year at which the individuals were interred. Thus, the adult male of Tomb 22 was likely inhumed in the high summer, whereas the infant buried in Tomb 11 probably perished in the winter. The eastward-facing orientation of these graves is particularly common for Christian burials, though the identity of these people remains to be determined.³³ Most of the villagers of nearby Ngrançija and Gjinoqara had no knowledge of these modern burials and thought of the tumulus as the collective grave of foreign soldiers, casualties of World War I or the Balkan Wars, events just beyond the grasp of memory.³⁴

At least two animal burials were encountered in 2004, both immediately over the cover stones of the

³²Papadopoulos 2006, 50, fig. 5.

³³The Ottoman *defter* (tax register) for Hicrî 835 (i.e., 1431 C.E.) lists “Lofkende,” according to İnalçık (1954, 58, no. 148), as a “*hassa çiftlik*” (private farm of a cavalry member who holds a *timar*), with registered produce including a vineyard, olives, figs, and walnuts, with a total tax of 1,032 akçe (silver coins). The name of the village is transcribed into modern Turkish as “Likofoni.” It was a *timar* (a “prebend in the form of state taxes in return for regular military service” [Zarinebaf et al. 2005,

xxxii]) of a certain Angelos, apparently a Christian. According to the Austrian census of 1916–1918, Lofkënd (subsuming the villages of Bregasi, Granci, Merkanji, and Verkanji) consisted of 55 dwellings, with 390 inhabitants, all of whom were Albanian Muslim, except for one Vlach, who was Eastern Orthodox. We are grateful to Davis for pointing us to this information. For a useful glossary of Ottoman Turkish terms, see Zarinebaf et al. 2005, xxiii–xxxii.

³⁴This is more fully discussed in Papadopoulos 2006.



a



b



c



d

Fig. 7. Views of Tomb 11: *a*, as first encountered, showing stones covering roof tile, from above southeast; *b*, roof-tile cover after removal of stones, from above northwest; *c*, the skeleton of the tomb as exposed, from northeast; *d*, the skeleton after cleaning in the laboratory (R. MacDonald).



a



b



c



d

Fig. 8. *a*, Tomb 23 (with Tombs 25 and 21 to the north), covered, from the east; *b*, Tomb 23, uncovered, from the east; *c*, composite views of the cranium of the individual in Tomb 23; *d*, animal head, probably sheep, excavated as Tomb 19 located immediately above Tomb 23, from above west (A. MacDonald and R. MacDonald).

well-preserved Tombs 22 and 23. Tomb 8 was an inhumation of a fairly well-preserved young animal, probably a lamb, immediately above the southwest portion of Tomb 22. The animal was found below a large round stone.³⁵ The other animal burial, Tomb 19, was located above the central area of Tomb 23 and consisted of the head of an animal, probably a sheep (fig. 8d), pointing northeast, with the lower legs and feet piled on top of it. The close connection of these animal burials with Tombs 22 and 23 is of interest and may suggest that the animals were sacrifices or offerings associated with the deceased in both tombs.³⁶

The four modern tombs encountered in 2005 (Tombs 36, 39, 45, and 48) are among the northernmost graves encountered on the tumulus, and as bedrock was reached in the northern half of the tumulus, it is highly unlikely that there are any further graves to the north. All four of the late burials were laid out in a supine position and shared the east–west orientation with those encountered in 2004. The arms of each individual interred in these late tombs were, in one way or another, slightly bent at the elbows, the hands resting over the lower torso or pelvic region.

The largest number of tombs belong to the Early Iron Age. Most of them were in the characteristic flexed position, with several of the tombs containing more than one individual. Tombs 5 and 18 were two typical burials of the period. Although both tombs shared an east–west orientation with the crania to the east, the burials of the Early Iron Age had no fixed orientation, as was the case with the modern burials. In Tomb 5, most of the major bones of the deceased were fairly well preserved, although the ribs, scapulae, upper vertebrae, and feet were only identifiable as stains in the earth. Analysis of the physical remains suggests a female aged 20–22 years. The only grave offering was an iron pin, heavily corroded, found near the left hand and immediately above the right shoulder, and therefore likely to have been worn by the deceased as an item of personal decoration and a dress fastener. A cutting for the pit of the tomb was discerned, though in many other cases, including Tomb 18 (fig. 9), a distinct tomb cutting was not visible during excavation. Although the general outline of Tomb 18 was fairly



Fig. 9. Tomb 18 as exposed, from west (R. MacDonald).

clear, its state of preservation was extremely poor; remains consisted of the skull, the greater parts of both legs as well as some of the arms, and very small pieces of a scapula and the pelvis. Small fragments of iron (unidentified and perhaps intrusive) were found when cleaning the skull, but no formal grave offerings were discovered. All the burials excavated in 2004 were inhumations. Finds deposited in individual tombs include whole vessels of the handmade matt-painted style of the Early Iron Age, several so-called spectacle fibulae of a type familiar in sanctuaries and tombs in Greece, Italy, and the Balkans in the 10th through

³⁵Large stones may have been placed over the animals (and humans) to discourage scavengers such as wolves and dogs from digging up the remains. Such a possibility was first raised by Casson in his excavations at Tsaousitsa in Macedonia, where inhumations in simple pits were covered by a cairn of stones thought to have been piled over the body to “preserve them from wolves” (Casson 1923–1925, 3). Although stones were placed above several of the infant and animal graves at Lofkënd (whereas the adult inhumations tended to be in bet-

ter-constructed stone-lined and covered tombs), there was no evidence of the more substantial cairns discussed by Casson.

³⁶Tombs 22 and 23 disturbed earlier, prehistoric burials. Tomb 22 cut across the eastern portion of Tomb 30, and Tomb 23 disturbed the eastern extent of Tomb 10. It is possible, therefore, that the deposition of interred animals was to appease the earlier disturbed burials rather than being associated directly with the later tombs.

eighth centuries B.C.E. (fig. 10),³⁷ as well as various other bronze, iron, and bimetallic objects.

Among the most richly furnished of the graves is Tomb 17, a multiple burial with the remains of as many as four individuals, including an adolescent aged 14–17, perhaps a female, and an older male aged at least 40. Scattered and fragmentary bones of two other individuals were also discerned. The order of burial of the individuals was difficult to determine, but it is likely that the scattered remains of the two less well-preserved individuals were the first to be interred, and that their remains were moved when the tomb was reopened to accommodate the better-preserved adolescent and older adult male. The small finds deposited in the grave were all associated with the possibly female adolescent (fig. 11). A handmade, matt-painted stemmed goblet was placed over the lower torso and upper legs (fig. 12a),³⁸ a large bronze spectacle fibula was found over the left shoulder (fig. 12b), partly overlain by the head of the deceased, while a bimetallic iron pin with bronze head was found over the right shoulder (fig. 12c); an iron fibula was over the chest (fig. 12d). In addition, a fragmentary and very heavily corroded diadem of thin-hammered sheet copper or copper alloy was found in situ around the head, and a small bead of sardonyx or carnelian was found near the cranium (fig. 12e). Of these, the large spectacle fibula (see fig. 12b) is of particular interest, as it is the first fibula with triple-coiled spirals between the larger spirals to be found in Albania.

Only the uppermost meter or so of the tumulus was excavated during the 2004 campaign. To protect the underlying levels and to prevent looting of the site during the winter months, the entire tumulus was backfilled. This was not just a protective measure; the removal of part or all of the tumulus would have irrevocably destroyed one of the most prominent features of the landscape. The Lofkënd tumulus, like tumuli in general, was an important focus of memory and identity within a socially constructed landscape.³⁹ As part of this landscape for more than 3,000 years, the

tumulus could not be removed, in our view, and for this reason one of the long-term goals of the project is to restore the mound as close to its original state as possible at the conclusion of excavation.

At the beginning of the 2005 season, the backfill was removed and excavations were resumed where they had left off in 2004. By the end of the season, a total of 62 tombs were cleared. Figure 13 shows all the burials excavated by the conclusion of the 2005 campaign.

Perhaps the most enigmatic of all the graves excavated, and thus far the only burial that cannot be dated on the evidence of tomb type, associated finds, or stratigraphy, is the triple inhumation in the northwest sector of trench 4 (Tomb 29) (fig. 14). The comparatively good state of preservation of the bone of all three individuals and the lack of any flexing of the body, particularly the legs, are features that are not seen in Early Iron Age burials. Moreover, where more than one individual is buried in an Early Iron Age tomb, the position of the various individuals is usually one on top of the other; often the earlier human remains were pushed to one side to make room for a later interment. That the individuals of Tomb 29 were neatly laid out side-by-side is a feature not found in any other tomb thus far uncovered in the tumulus. This combination of features suggests a late date for the tomb, but the orientation of Tomb 29 and that three individuals were interred together in the one grave stands in stark contrast to the other late (modern) graves encountered in the northeast sector of the mound. The only point of comparison with the established modern burials is a supine position and that the arms of all three individuals were found slightly bent, with the hands resting on the lower torso or pelvic region. The general form of the grave, however, bears a likeness to a series of burials in Greece thought to be for prisoners or slaves (bound together with iron fetters), especially two mass burials at Phaleron near Athens and Akanthos in Chalkidike.⁴⁰ Whatever their identity, the individuals interred at Phaleron and Akanthos,

³⁷For spectacle fibulae, see esp. Blinkenberg 1926, 253–62 (Type XIV); Benton 1950, 1952; Alexander 1965; Alexander and Hopkins 1982. For more specific bibliography on related fibulae from various parts of Europe, see Laux 1973; Betzler 1974, esp. pls. 20–71; Bader 1983, 41–71, pls. 5–23, nos. 25–127, esp. pls. 11–22; Gergova 1987, pls. 18, 19; Říhový 1993, esp. pl. 12, nos. 106–13A; Vasić 1999, pls. 8–22; Novotná 2001, pls. 14, 15; Glogović 2003, pls. 14–34; Gedl 2004, pls. 42–8. For close comparanda from Early Iron Age Albania and Epirus, see, among many others, Aliu 2004, pls. 1, no. 7; 2, no. 27; 3, no. 30; 8, nos. 114, 115; 10, nos. 130, 138; 15, nos. 197, 198; 27, no. 318; Vokotopoulou 1986, pl. 211β, T46, inv. no. 2323; fig. 109α, ιβ.

³⁸We know of no exact parallel in the shape and decora-

tion of this vessel. For a related form with high-swung ribbed handle, see Aliu 2004, pl. 4, no. 64 (5.45).

³⁹This is more fully discussed in Papadopoulos 2006; see further Alcock 2002, 1–35. For an interesting discussion of memory and the landscape, see Galaty et al. (1999), who discuss the Fier district as a test case focusing on the reuse of spolia and the meaning of the bunkers of the Communist era.

⁴⁰The first of such graves was the famous tomb of the so-called *sideródetoî* bound together in the cemetery at Phaleron and thought to be ancient, though the lack of any grave goods led Young to question both the identity of the individuals and their date; see esp. Kourouniotis 1911, 246–51; Pelekidis 1916, 49–64 (with full discussion and references); Keramopoulos 1923, 19–20. For Young's suspicions about this grave,

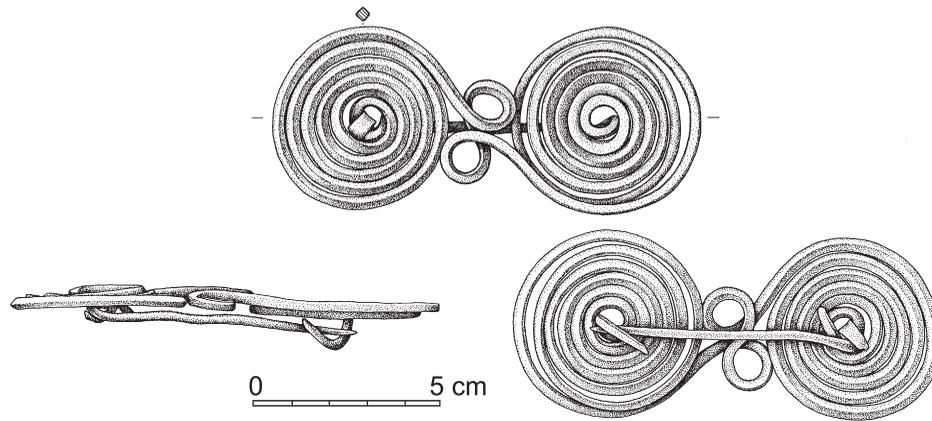


Fig. 10. Bronze spectacle fibula (SF 106) from Tomb 13 (drawing by I. Zaloshnja).

like the three in Tomb 29 at Lofkënd, died and were buried at the same time, but those of Tomb 29 lacked fetters. It is hoped that closer analysis of the anthropological remains will cast some light on the issue of the three individuals in this tomb.

On the basis of the diagnostic materials associated with graves, all the prehistoric burials thus far encountered can be dated to various stages of the Early Iron Age. As already noted, the northeastern quarter of the tumulus (trench 1) yielded a heavy concentration of modern burials. Several Early Iron Age tombs were encountered in the sector, including some poorly preserved graves that lay near the eastern extremity of the tumulus, with part of each tomb lost due to its proximity to the edge of the mound (these included Tombs 33, 53, and 58 from 2005, and Tomb 26 from 2004; see fig. 13). Additional graves uncovered closer to the center of the tumulus in 2005 included Tomb 30, the east part of which was destroyed by the cutting for the modern Tomb 22. Much better preserved were Tombs 52 and 60, which shared a similar southeast-northwest orientation and contained the remains of more than one individual. Of the two, we illustrate only Tomb 52, which, like Tomb 17 from 2004, contained a younger female with whom the majority of grave goods were associated (fig. 15). As can be seen from the photograph, there is a cranium at the east and another at the west end of the grave. Two pots were placed on either side of the eastern cranium, including a kantharos to the south and a one-handed



Fig. 11. The western portion of Tomb 17 during excavation (R. MacDonald).

see Young 1942, 24 n. 8. For further discussion of this and similar graves, particularly the eight males buried in the cemetery at Akanthos in Chalkidike, each with iron fetters on his feet, see Little and Papadopoulos 1998, 394; Trakosopoulou 2005. The mass burial of 115 individuals of the fourth century B.C.E. at Pydna in Macedonia (some with iron shackles) has been viewed as evidence of ancient slavery, though the deposition of the bodies, on the basis of stratigraphy, appears to have taken place in four distinct episodes, in contrast to the Lofkënd, Phaleron, and Akanthos burials (see Triantaphyllou and Bessios 2005).

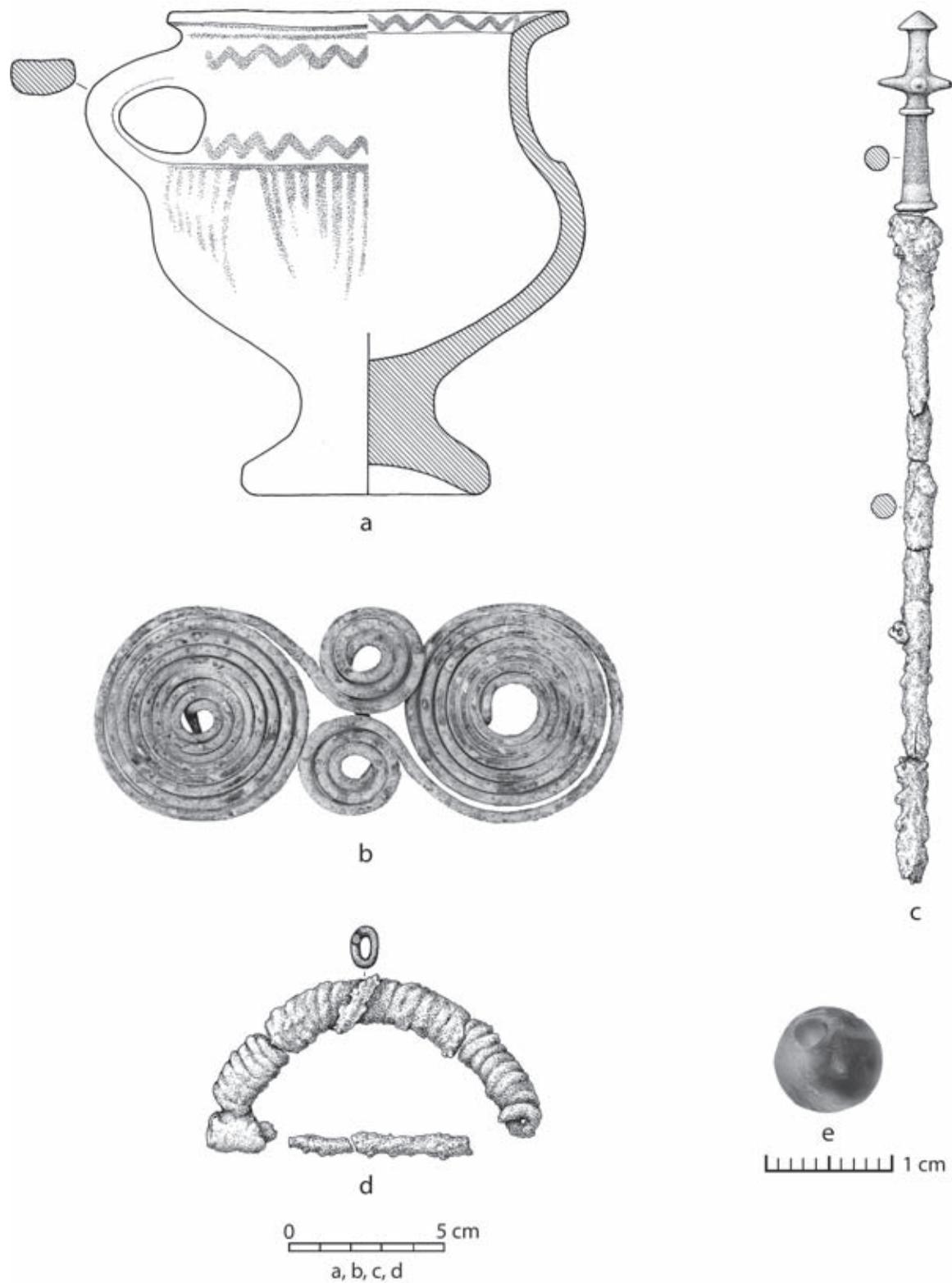


Fig. 12. Selected small finds deposited as *hterismata* in Tomb 17: *a*, handmade, matt-painted stemmed goblet (P 82); *b*, bronze spectacle fibula (SF 107); *c*, bimetallic pin with bronze head and iron shaft (SF 111); *d*, iron fibula (SF 110); *e*, small sardonyx or carnelian bead (SF 113) (photographs by R. MacDonald, drawings by I. Zaloshnja).

bowl or cup/kyathos.⁴¹ Once these pots were removed, two gold disks were found, one in situ on either side of the cranium and more or less at the position where the ears of the deceased would have been. The gold disks were decorated with repoussé concentric circles and finely incised strokes (fig. 16).

In the northwestern quarter of the tumulus, in the area of trench 4, the Early Iron Age burials included Tombs 31, 35, 38, 43, 46, 51, 55, and 56.⁴² The northernmost of all the Early Iron Age burials on the tumulus was Tomb 43, which was the burial of two individuals that yielded a kantharos with ribbed decoration (fig. 17) and an iron spectacle fibula with a bronze boss at the center of each spiral. Two complete and two fragmentary examples of exactly this type of fibula were found in Tombs 1, 3, and 5 at Marmariane in Thessaly that are securely dated to the Protogeometric period.⁴³ Although it is possible that the fibula from Tomb 43 may be later than the Thesalian parallels, there is no compelling evidence to suggest a date that is significantly later in the course of the Early Iron Age.

One of the most interesting of the Early Iron Age burials uncovered in 2005 was Tomb 55, encountered at the southwest end of the trench (fig. 18). Preliminary analysis of the human remains indicates an almost complete skeleton of a robust male aged 18–23, together with the cranium of what may be an adolescent female of 14–16 years. Most, if not all, of the *kterismata* in the grave were associated with the individual thought to be a younger female, and included a diadem made

of thin sheet-bronze (clearly visible in situ), which was found with two tubular iron beads,⁴⁴ an iron spiral, and a bead of glass paste. There was also a bronze fibula of the type with asymmetrical violin bow⁴⁵ and a small handmade vessel. Less than 1.5 m to the southwest of Tomb 55 was Tomb 35, which was located in the baulk separating trenches 4 and 1, and partly extending into the baulk separating trenches 4 and 2/3. Associated with Tomb 35 were two iron pins, as well as an Early Iron Age handmade, matt-painted one-handled bowl or cup/kyathos (fig. 19). A few centimeters north of Tomb 35 was a virtually intact coarse vessel (P 283), broken in situ, evidently containing nothing except pieces of bitumen (fig. 20).⁴⁶ The vessel was found on its side, its base toward the west and its mouth stopped by a stone. As no formal grave cutting for Tomb 35 was found, it was difficult to associate the vessel containing bitumen with Tomb 35, but its location next to the deceased suggests that the vessel may have been intended for this tomb. Although a number of sherds with adhering traces of bitumen were not uncommon in the fill of the tumulus, the circumstances of a pot containing lumps of the hydrocarbon were unique. The only other burial where bitumen was encountered in any significant manner was Tomb 50, in trench 2/3 (discussed below).

The southern portion of the tumulus yielded a rich array of Early Iron Age burials, including some of the best-preserved prehistoric burials thus far encountered.⁴⁷ As the ground sloped sharply to the south, this was the most exposed portion of the mound. From the

⁴¹ Mended in 2006 as P 276 (resembling P 228, fig. 17) and P 277 (resembling P 166, fig. 19), respectively.

⁴² Of these, Tomb 35 was first encountered in trench 1; it extended through the baulk and mostly lay in the area of trench 4.

⁴³ Heurtley and Skeat 1930–1931, 35–7, fig. 15, nos. 13A–B, 14, 15. The only parallel of an iron spectacle fibula cited by Heurtley and Skeat is a fragmentary example from Tomb 3 at Sesklo that was originally misinterpreted by the excavator as breast ornaments. The bronze boss of the fragmentary iron fibula (no. 15) from Tomb 3 was plated with gold leaf. The four Marmariane fibulae are further discussed, with another Protogeometric example from a tomb at Platykampos, near Larissa in Thessaly, by Kilian (1975, 148–49, pl. 58, nos. 1711–14A), with comparanda from Serbia, Croatia, southern Italy, and Sicily, corresponding to Sundwall (1943) Type E Ik and Alexander (1965) Types Ic and Id. Although the general type in Hungary and other parts of central Europe can date as late as the sixth century B.C.E., the closest parallels to the Lofkënd fibula come from Protogeometric Marmariane, which can be as late as the ninth century B.C.E.

⁴⁴ Cf. Aliu 2004, pl. 15, no. 199 (5.171). The form of these beads is not unlike a series of related beads known from several contexts in Early Iron Age Greece made of a variety of material, including bone and glass paste (Young 1949, 297, pl. 72, no.

30 [Early Geometric Athens]; Papadopoulos 2005, 89, 565, fig. 69;g, pl. 474, inv. no. T10-7 [Protogeometric Torone]).

⁴⁵ For the general type in Greece see Blinkenberg 1926, 54–5, Type I 10–12 (esp. I 12 a); the illustrated example comes from Kydonia on Crete, with comparanda from Glasinac and elsewhere; see further Sapouna-Sakellarakis (1978, 40–1, pl. 2, nos. 43–6), who dates the general type to the end of the 12th century B.C.E. The addition, however, of a coiled loop at the apex of the fibula places the example from Tomb 55 closer to Sundwall's *Schlangenfibeln*, particularly of Type D IIa c (Sundwall 1943, 143, fig. 210), which he dates to the ninth century B.C.E. (the illustrated example comes from Sicily); see also Nava 1990, 565, fig. 5b (lower left). For a useful discussion of bronzes of Italian type in Greece and Crete at the end of the Bronze and the transition to the Early Iron Age, see Bietti Sestieri 1973.

⁴⁶ Samples of bitumen from both artifacts and trench features were tested microchemically to identify their composition using the Raspail test described in Odegaard et al. 2005, 158–59; see also *infra* n. 64.

⁴⁷ The southern portion of the tumulus was excavated in 2004 as trenches 2 and 3, but the decision was made at the beginning of the 2005 campaign to amalgamate the two sectors and to excavate them as one.

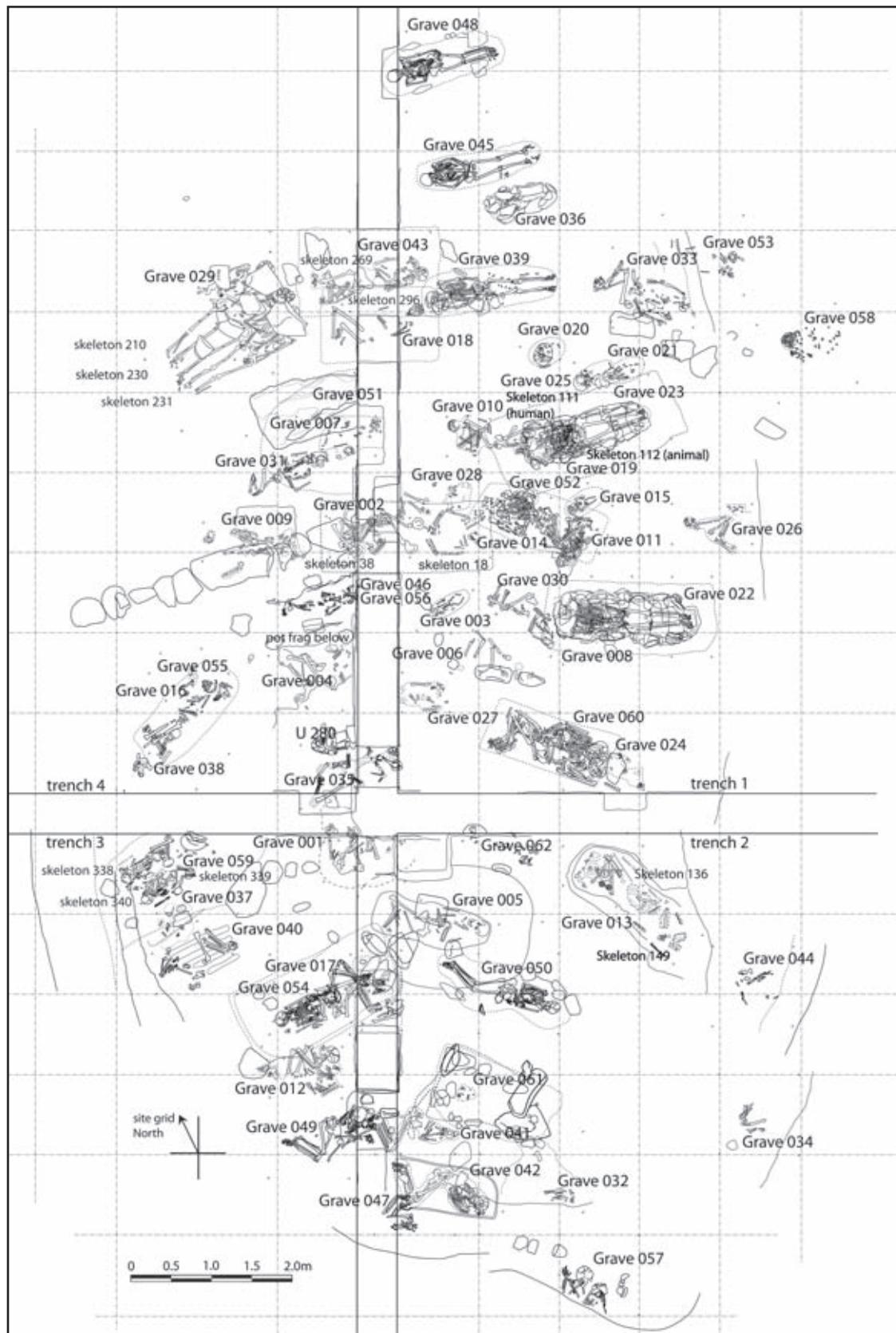


Fig. 13. Plan of all burials as excavated at the conclusion of the 2005 campaign (drawing by M. Farrar).



Fig. 14. Tomb 29 from southwest (R. MacDonald).



Fig. 15. Tomb 52 from west (R. MacDonald).

very beginning of the excavations in 2004, substantial quantities of human bone were found in the eroded southern slopes of the tumulus. It soon became clear that a number of tombs were partly or substantially destroyed because of their proximity to the tumulus edge. Among others, Tombs 34, 44, 47, and 57 were largely lost to erosion, while at a slightly higher level, Tombs 12 and 32 were also poorly preserved.

A few graves were in large, clearly defined pits, sometimes with a partial stone covering, such as Tomb 54 (fig. 21). In other cases, a distinct grave cut was not discernible, and it appears that in certain circumstances the area of the intended grave was simply leveled and the deceased was laid out and then covered with a mound of earth, which in time formed into the greater earth fill of the tumulus.

All burials in trench 2/3 were in the characteristic flexed position. The view of Tombs 41 and 42 as they were encountered shows the level of flexing in some cases (fig. 22). The individuals in both tombs were laid out in almost a fetal position. The slightly darker earth to the south of Tomb 42 represents the looser soil associated with the tumulus edge, and the lighter-

colored earth to the north of Tomb 41 represents the fill of the cut for Tomb 61, which destroyed a portion of the cranium and spine of the individual interred in Tomb 41 (it was therefore clear that Tomb 41 was earlier than Tomb 61). Although a number of tombs of the Early Iron Age were stratigraphically located one on top of the other, largely because a considerable layer of fill had formed or had been piled above the earlier tomb, effectively separating the two stratigraphically interrelated burials, the instance of one prehistoric tomb cutting into another was rare.

The legs of the individual interred in Tomb 50 were somewhat less flexed, and the arms were folded across the lower torso (fig. 23). Tomb 50 was remarkable for the bitumen associated with the skeletal remains, which is illustrated in figure 23. What appeared to be a “lump” or patches of bitumen was encountered near the left side of the pelvis, extending, in the form of a thin strip, over the lower arms and onto the ribcage; a small isolated patch of bitumen was also noted on the right pelvis. What this bitumen represents was difficult to ascertain during excavation. When first discovered near the left pelvis, the possibility was raised that this

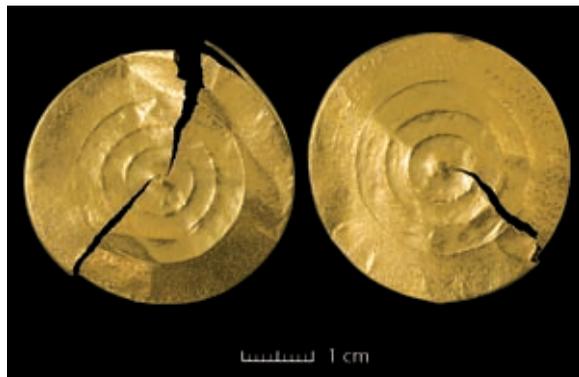


Fig. 16. Gold disks (SF 290, 291) found in situ on either side of the eastern cranium of Tomb 52 (A. MacDonald).

was an object, a grave good, made of bitumen.⁴⁸ Further excavation, however, rendered this possibility unlikely, and given that small patches of bitumen were found over the ribs and lower arms, it is possible that the material represents the remnants of a partial bitumen lining of a shroud or some other item of clothing or ornament worn by, or placed with, the deceased. Alternatively, the strips of bitumen were perhaps used as an adhesive in some kind of organic jewelry, such as leather or bark, otherwise not preserved.⁴⁹

The flexed position of the skeleton is traditionally explained by the fact that the body was laid out with the torso in a supine position, the arms normally folded across the lower torso or pelvic region but with the legs bent at the knees and thus drawn up. In time, the weight of earth above the tomb causes the legs to collapse or fall to one side, thus resulting in the typical flexed position. In the case of Tomb 50, if the legs were drawn up, they were only slightly bent, and this, in addition to the cranium facing to one side, was the result of a tomb pit that was only slightly smaller than the deceased. The difference in the degree of flexing could, in some cases, be rather marked, so much so that in the case of a few tombs (particularly Tomb 31), the degree of flexing was so pronounced that it raised the possibility that the deceased was intentionally bundled not only for burial but also for transportation to the tumulus site. This possibility (particularly if the death occurred at any distance from the tumulus),

⁴⁸ For a variety of objects from the ancient Near East made of bitumen, see Connan and Deschesne 1996. For the export of bitumen from Mesopotamia to southeast Anatolia in the Neolithic period, see Stein 2002, 47, 51–2.

⁴⁹ In prehispanic Mesoamerica, bitumen was used for a variety of purposes: for decoration, as a sealant, as an adhesive, as a building construction material to coat walls or floors and to waterproof canoes and other watercraft. See Wendt and Lu (2006, esp. 89, 91–2), who discuss and source archaeological

will form part of our ongoing assessment and analysis of the Lofkënd tombs.

In addition to the inhumed bodies of adults and adolescents, the remains of several Early Iron Age infants or children were excavated. The skulls of three infants/children were found in Tomb 62, which was located in the northern portion of trench 2/3, and the tomb thus contains the remains of at least three young individuals buried together. As these were encountered late in the 2005 season, the age of the individuals is yet to be determined. The relatively small number of infants in the tumulus thus far encountered among the premodern burials can only represent a minority of the infants/children of the Early Iron Age burying group. To what extent this low number reflects the rate of child mortality is beyond the scope of this discussion. It is, however, interesting to note that in most Early Iron Age cemeteries in neighboring Greece, where infants/children were buried in the same cemetery as adults, the normal proportion of children to adults is usually around 50% or more.⁵⁰ The relatively small proportion of infants to adults in the Lofkënd tumulus should be compared with 47% at Asine and an estimated 62–77% preadult population at Lefkandi (at both sites the fig-

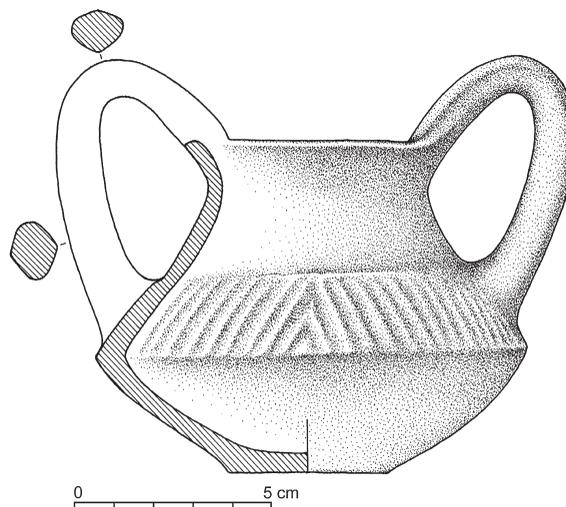


Fig. 17. Kantharos with ribbed decoration (P 228) from Tomb 43 (drawing by I. Zaloshnja).

bitumen in the Olmec region of southern Mexico.

⁵⁰ In this context, the evidence from tombs at Eleusis, compiled by Mylonas (1975, 208, 224, 256, 268–70), is particularly noteworthy: Middle Helladic, 23 children, 43 adults; Late Helladic, 11 children, 39 adults; Geometric, 11 children, 9 adults; Archaic (seventh to sixth centuries B.C.E.), 20 children, 1 adult; Classical, 82 children, 33 adults; Hellenistic, 3 children, 10 adults; Roman, 2 children, 9 adults.



Fig. 18. Tomb 55 from above northwest (R. MacDonald).

ures are for Early Iron Age burials).⁵¹ The low preadult population at Lofkënd establishes that infants and children were buried, or otherwise disposed of, elsewhere. This will form an important component of our ongoing analysis of the demography of the individuals buried at the site.⁵² Unfortunately, too little is known about the possibility of intramural burial for infants/children in southern Albania and Greek Epirus in the Early Iron Age; there were no intramural burials of infants in those parts of the settlements of Vitsa Zagoriou and Liatovouni that have been excavated.⁵³

Although there was no evidence of cremation among the tombs uncovered in 2004 and 2005, a number of graves indicated some burning in situ. Traces of blackened material, often intermingled with calcareous earth, were noted in Tomb 46 (for a child about four years old) and in trench 4, Tomb 51 (also for a

child), but in neither case was any of the bone cremated in the normal sense. Perhaps the most interesting grave yielding clear traces of burning was Tomb 37 in the northwest sector of trench 2/3. Unfortunately, much of the southwest part of the grave was lost due to erosion; what survived was a poorly preserved scatter of human bone, mostly found in tiny pieces. The cranium, located to the north-northeast, and the right arm of the deceased were the only recognizable skeletal remains found in situ, while most of the lower body must have washed down the southwest slope of the tumulus. A small bronze spectacle fibula (SF 170) was found in the chest area, and an iron pin (SF 171) was discovered on the right shoulder. The disposition of the grave goods, as well as the articulated nature of the preserved skeletal remains, established that this was a primary burial. The evidence for burning was

⁵¹ For Asine, see Wells 1976, 21; for Lefkandi, see Popham et al. 1979–80, 205. For further discussion and references, see Papadopoulos 2005, 396–97. The exception to this rule is the Early Iron Age cemetery at Torone, where the low number of infants/children within the burial ground formed the basis of arguing for the intentional exclusion of a portion of the community (Papadopoulos 2005, 345–407).

⁵² In Crete during 1935, 50% of all deaths were children aged under five years, while in Mexico, infants and children accounted for 75% of all deaths in the period 1939–1943 (Popham et

al. 1979–1980, 381 n. 27; cf. Snodgrass 1983, 168).

⁵³ For Vitsa, see Vokotopoulou 1986. For information on Liatovouni, the authors are grateful to Angelika Douzougli and Konstantinos Zachos. For a general discussion of intramural as opposed to extramural burial in the Greek world farther south, especially in the case of infants/children, see Papadopoulos 2003, 299–300 (and further references cited there); see also Young 1951; Nilsson 1955, 175; Burkert 1977, 295; Sourvinou-Inwood 1995, 433–39.

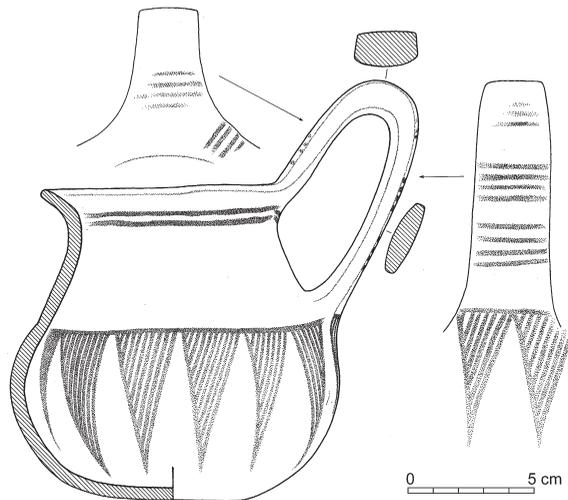


Fig. 19. Handmade, matt-painted one-handed bowl or cup/kyathos (P 166) from Tomb 35 (drawing by I. Zaloshnja).

limited: part of the cranium and upper torso were covered by fire-affected clay. Because of the poor condition of the bone and the friable nature of the ceramic material, the burial was block-lifted. During cleaning in the laboratory, two more metal objects were found: a second iron pin (SF 226) and what resembled a chain of linked iron rings (SF 172), both of which were found associated with the torso of the deceased. Based on Lynne Schepartz's preliminary analysis of the skeletal remains, the individual found in Tomb 37 was aged 15 ± 3 years. According to Muzafer Korkuti, the burned ceramic material closely resembled similar material found on top of what was thought to be a partially cremated burial in the Patos tumulus excavated in 1976.⁵⁴ Preliminary analysis of this material in Lofkënd Tomb 37 showed that fragments of it were characterized by oxidized layers sandwiched between nonoxidized layers that created fragments similar to fired clay. The more detailed analysis of the material from this tomb is not yet complete. Although it is too soon to speculate on the nature of burning associated with this particular grave, Korkuti, on the analogy of his experience with the burial tumulus of Patos, believes that clay was thrown onto burning material during the funerary ritual, resulting in this characteristic fire-affected clay.

At the conclusion of the 2005 season, Alket Islami took low-level aerial photographs of the site from a engine-powered paraglider (often referred to as a

paramotor) (fig. 24).⁵⁵ Of the many aerial views taken of the site, we illustrate here only two. The first (fig. 25, top) shows the tumulus during the final day of excavation from the north-northeast. The second (fig. 25, bottom) was taken from slightly higher up and west. The only visible burial is Tomb 52, more or less in the center of trench 1. The photograph shows the level reached at the end of the 2005 season. At the conclusion of the campaign, an additional four tombs, some of which extend into one or other of the baulks separating the trenches, were discovered and would be investigated in the 2006 season.

The only architectural feature found was a line of large stones, forming a curve, extending from trench 4 into trench 1. This line of stones, designated Wall 1, can be clearly seen in both aerial photographs. In trench 1, immediately to the south of Tomb 52, the line of stones is broken, but it continues farther to



Fig. 20. View from west of coarse vessel (P 283) containing pieces of bitumen immediately to the north of Tomb 35 (R. MacDonald).

⁵⁴ Korkuti 1981.

⁵⁵ A two-person paramotor (as opposed to our one-person

version) was used to great effect for a more comprehensive aerial survey of Armenia (Faustmann and Palmer 2005).

the east, near the edge of the tumulus. What this wall represents will have to await further excavation, but it is clearly a significant feature that intentionally demarcated one part of the tumulus from another. It will be interesting to note, for example, any demographic patterns among the deceased buried north and south of the wall once the analysis of the skeletal remains is complete. It is clear that the wall was overlain in part by several of the latest Early Iron Age burials. Tombs 2 and 9 were laid out directly over the central and western portions of the wall. Moreover, it is clear that the wall was not laid out at the very beginning of the preparation of the tumulus, as it rests on tumulus fill rather than on bedrock or on sterile preexisting deposits, and numerous Early Iron Age graves in all sectors of the tumulus are located at a level significantly lower than the base of the wall.

In the northern part of the tumulus, north of Wall 1 and Tomb 52, sterile natural rock was revealed at the end of the 2005 season. In parts of this area, we excavated into the bedrock to ensure that no tombs were overlooked; this process continued in 2006. South of Wall 1, tumulus deposits continued. According to John Foss, who sampled with an auger at several points on and off the mound, there is as much as 0.75–0.80 m of tumulus fill remaining, particularly in the southernmost sector of the mound.

THE FILL OF THE TUMULUS

Two of the most important issues addressed by the Lofkënd project are the character of the fill of the tumulus and the issue of tumulus formation. Much human-made material was recovered from the general fill of the mound. Some of this material must represent objects that were displaced from tombs, such as the small bronze spectacle ornament and the bronze pinhead with traces of adhering iron corrosion (fig. 26a, b). Other objects, such as the terracotta spindle whorls, beads, or buttons seen in figure 26, are less certain. These may have been displaced from tombs, or they may represent material brought in with the earth from somewhere else. The quantity of such material, however, was not great. One of the largest components of material found throughout the tumulus fill was fragmentary pottery. Most of the diagnostic material recovered so far dates from various stages of the Early Iron Age, with some fragments dating perhaps to the closing stages of the Late Bronze Age or earlier. Only a small selection of the fragmentary pottery recovered from the tumulus fill is presented here, including a



Fig. 21. Tomb 54 from northeast (R. MacDonald).

large number of sherds from matt-painted vessels, predominantly from of the Early Iron Age (fig. 27), and a series of characteristic articulated handles (see fig. 28) that appear to be earlier (Late Bronze Age); the latter tended to be more prevalent in the lower levels of the tumulus but were found throughout the fill of the mound.

Prominent among the finds from the fill of the tumulus, as well as material that was picked up on the surface of the mound prior to excavation, were chipped stone tools, a small selection of which is illustrated here (fig. 29). Korkuti, who conducted a preliminary study of the material, has discerned examples dating from the later Bronze and Early Iron Ages and types that are characteristic of the Neolithic period and the earlier stages of the Bronze Age, as well as some that he assigns to the Paleolithic and Mesolithic eras; the early date for many of these lithics has been verified by Curtis Runnels.⁵⁶ The presence of such early lithics

⁵⁶Of the pieces illustrated in fig. 29, Korkuti, followed by Runnels, would assign SF 7/22 and SF 8/23 as possibly Paleolithic (the former with Levallois core). SF 9 could be Mesolithic and is similar to examples from the Kryegjata site. SF 5 is Neolithic or Early Bronze Age, whereas SF 6 and SF 41 cannot be precisely dated.



Fig. 22. Tombs 41 (*left*) and 42 (*right*) from above west (R. MacDonald).

should not come as a surprise, since Middle and Early Upper Paleolithic and Mesolithic finds are now well attested in the region of Apollonia and Fier, particularly at the Kryegjata B open-air site, and elsewhere in the MRAP survey area, though it is useful to remember that Lofkënd lies well east of the area covered by MRAP.⁵⁷ Nevertheless, the quantity and chronological range of these tools are such that they cannot be easily accounted for, and it seems likely that the chipped stone tools derive from the strata of earlier sites that were intentionally brought to Lofkënd, presumably with the deceased, to be used as fill.⁵⁸ Although there has been no systematic survey of sites in the immediate vicinity of the Lofkënd tumulus, the only known sites that exist nearby are post-Classical in date, essentially Hellenistic and later.

The other prominent type of find from the tumulus fill was entered into the Lofkënd database as “fired

clay, not pottery.” Figure 30 presents a few selected examples. Many of these pieces and lumps of clay are amorphous, but several preserve reed, rod, or stake impressions, suggesting that the clay had been used as a lining material in wattle-and-daub architecture.⁵⁹ Similar pieces of fire-affected or hardened clay were found at the Neolithic site at Cakran.⁶⁰ Whether such material was used in the Early Iron Age remains unknown, as there are to date no verified Early Iron Age sites in the Mallakastra region that are contemporary with the Early Iron Age tombs in the Lofkënd tumulus and that have yielded any significant evidence of habitation of the period.

The combination of chipped stone tools and remnants of wattle-and-daub architecture raises the intriguing possibility that those burying the dead intentionally brought material from distant sites for tumulus fill. If this was the case, however, the material was not

⁵⁷ For an important overview of the Paleolithic and Mesolithic in the Fier district, see Runnels et al. 2004; for earlier overviews of the state of knowledge of the Paleolithic and Mesolithic in Albania, see Korkuti and Petruso 1993; Korkuti 1995; 1998, 21–3, 40–1. For other recent projects in northern and central Albania focusing on the Paleolithic and Neolithic, see Galaty 2006; Gjipali 2006.

⁵⁸ On this aspect see further Papadopoulos 2006.

⁵⁹ Although much of this material is daub, we have retained the term “fired clay not pottery,” since not all of it derives from architecture (e.g., there is the fire-affected clay associated with Tomb 37).

⁶⁰ M. Korkuti, pers. comm. 2005; for the excavations at Cakran, see Korkuti and Andrea 1974.

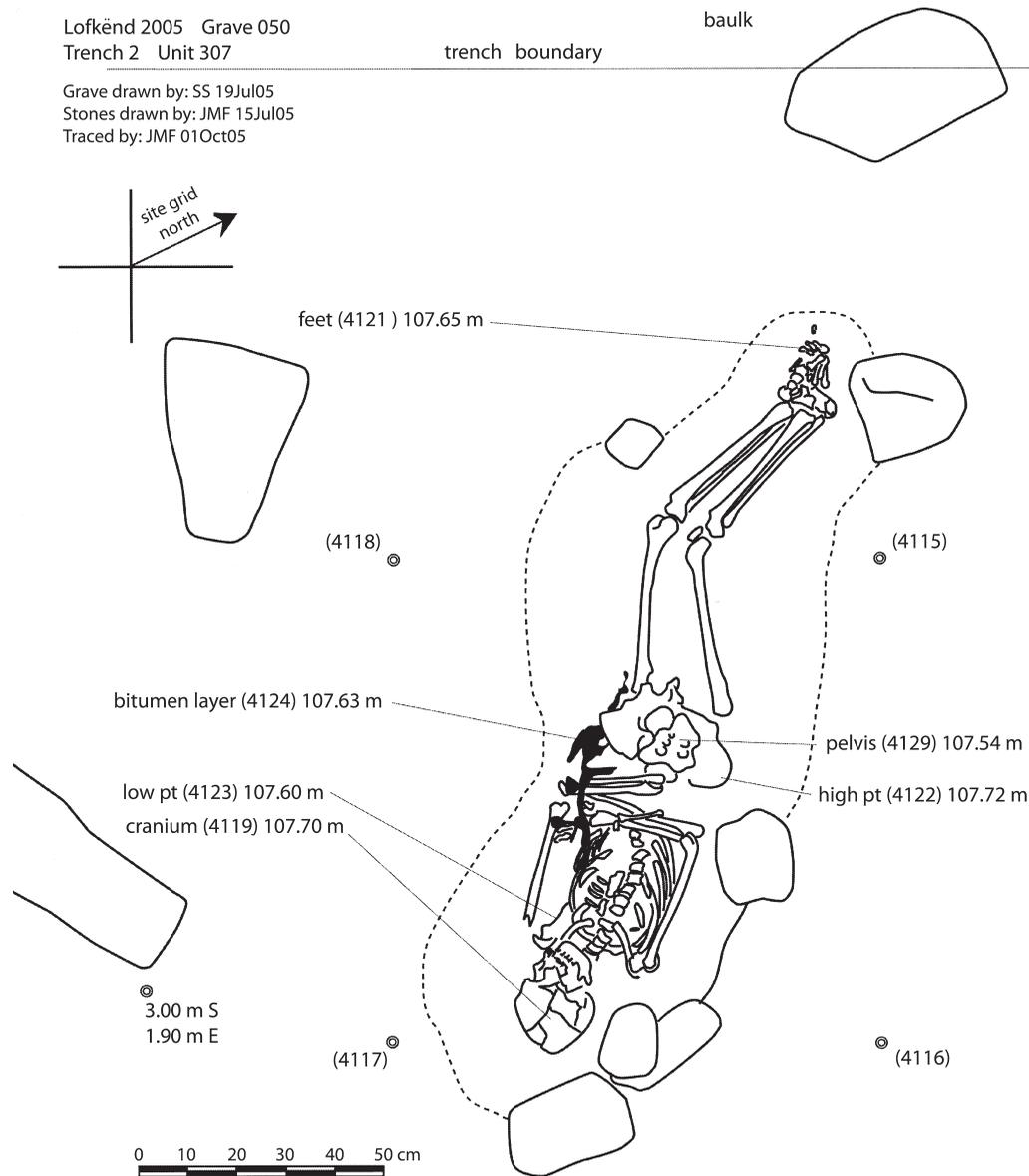


Fig. 23. Tomb 50, showing bitumen in situ (drawing by S. Stoutamire and M. Farrar).

consistent with what might be expected from normal prehistoric habitation sites. Although our excavations are ongoing, and we are in the process of sorting and analyzing the material from the 2004 and 2005 seasons, it is reasonably clear that the fill of the tumulus does not contain any quantity of carbonized floral remains or significant quantities of animal bone. The bone that does exist seems to be primarily of animals that were associated with individual tombs or funerary customs,

or from turtles and rodents that had burrowed into the side of the tumulus. Unfortunately, relatively few habitation sites in this region have been systematically excavated to determine the nature of what constitutes a settlement site. Moreover, it is not possible at present to confirm or disprove that the earth brought to the tumulus was ever subject to curation, meaning that the earth was intentionally chosen or even screened for the presence/absence of certain materials.⁶¹ But

⁶¹The process of the construction, repair, and maintenance of mounds is a feature noted at several mound sites along the Mississippi; see, most recently, Saunders et al. (2006), who deal with the site of Watson Brake.



Fig. 24. View of the tumulus at the conclusion of the 2005 season from north–northwest, showing aerial photography of the site using a paramotor (J. Papadopoulos).

the possibility that material was brought to Lofkënd purposely from other sites that were already ancient in the Early Iron Age raises an important precept that will form part of our ongoing study of the mound and that can be tested at other tumuli. For now, we can only speculate that if the earth used as tumulus fill was brought from other sites, such a phenomenon only bolsters the memorial aspect of the tumulus.⁶²

⁶²Papadopoulos 2006.

⁶³A few of these fragments are illustrated in Morris 2006, fig. 4. In the Greek and Roman world, wine-storage amphoras (also smaller amphoras and occasionally jugs) were lined with a resinous substance, which, in the few cases where it has been analyzed, is often identified as mastic. The substance is described by Robinson as “generally black in color, with a glossy surface, and very brittle; when chipped, it flakes away readily; when heated, it gives off a pungent odor.” He adds that it is often found settled in a thick mass at the bottom of the vessel and in a thin coating over the wall (see Robinson 1959, 8, pl. 35, M 99). Robinson (1959, 8 n. 2) notes the 1937 analysis by Earle R. Caley that identified the substance in a sample of fourth-century C.E. amphoras from the Athenian Agora as mastic gum. Robinson also summarizes the use of mastic and other resins by the ancients for the flavoring of wine in extant literary sources. Although various tree resins were used for a

We have discussed the large pot containing lumps of bitumen associated with, or near, Tomb 35 (see fig. 20), as well as the bitumen found over and around part of the skeletal remains of the individual in Tomb 50 (see fig. 23). In addition, many sherds recovered from the fill of the tumulus (including P 15, P 18, P 25, P 138, P 144) were coated, or partially coated, with a brittle black substance with a characteristic surface craquelure that was thought to represent bitumen on the basis of visual inspection.⁶³ To identify the composition of these sherds, Caitlin O’Grady employed the Raspail test, which uses simple solutions of sugar and acid to determine the presence of pine resin. Fragments coated with material visually identified as bitumen tested negative for pine resin. In the majority of cases, the coating was found on the interior of the vessel, but on one piece it appears on what must be the exterior of the pot (P 144). In all cases, the black coating consistently tested negative for the presence of plant resin; the same was true for other samples of suspected bitumen from tomb contexts.⁶⁴ The preserved bitumen on these sherds varies in thickness, depending on the state of preservation and the original thickness of the coating. The bitumen was presumably applied as a viscous liquid after heating, and in most cases it appears to have been finished to create a smooth surface with no visible toolmarks. The importance of bitumen in the prehistoric, and particularly the historic, context of this part of Illyria, especially as associated with the colonization of Apollonia, is discussed by Morris in greater detail elsewhere, and the exploitation of bitumen in this area will also form part of our ongoing study of the mound.⁶⁵

The stratigraphy of the tumulus is indicated on figures 31 and 32. As both the north–south and the east–west sections through the tumulus indicate, the mound was formed over a period of time by a relatively limited number of distinct soil units, which tended to

variety of purposes in antiquity, too few samples have been systematically analyzed in archaeological contexts to determine whether the substance is resin or bitumen (but see Koehler 1986, 50–2; see also *infra* n. 65).

⁶⁴The suspected bitumen samples were insoluble in deionized water, ethanol, acetone, and hydrochloric acid but soluble in toluene, thus identifying them as bitumen. These identifications, however, should be confirmed with other means of analysis, such as Fourier Transform Infrared Spectroscopy (FTIR) or Gas Chromatography-Mass Spectrometry (GC-MS). As for other black accretions on sherds, only one fragment (P 041) was identified as having manganese dioxide accretions when viewed under magnification.

⁶⁵Morris 2006. Resin present inside Corinthian pithoi reused as burial containers in the Apollonia necropolis (Tumulus 9) was sampled in 2006 for future analysis.



Fig. 25. Aerial views of the tumulus at the conclusion of the 2005 season: *top*, from north–northeast; *bottom*, from above west (A. Islami).

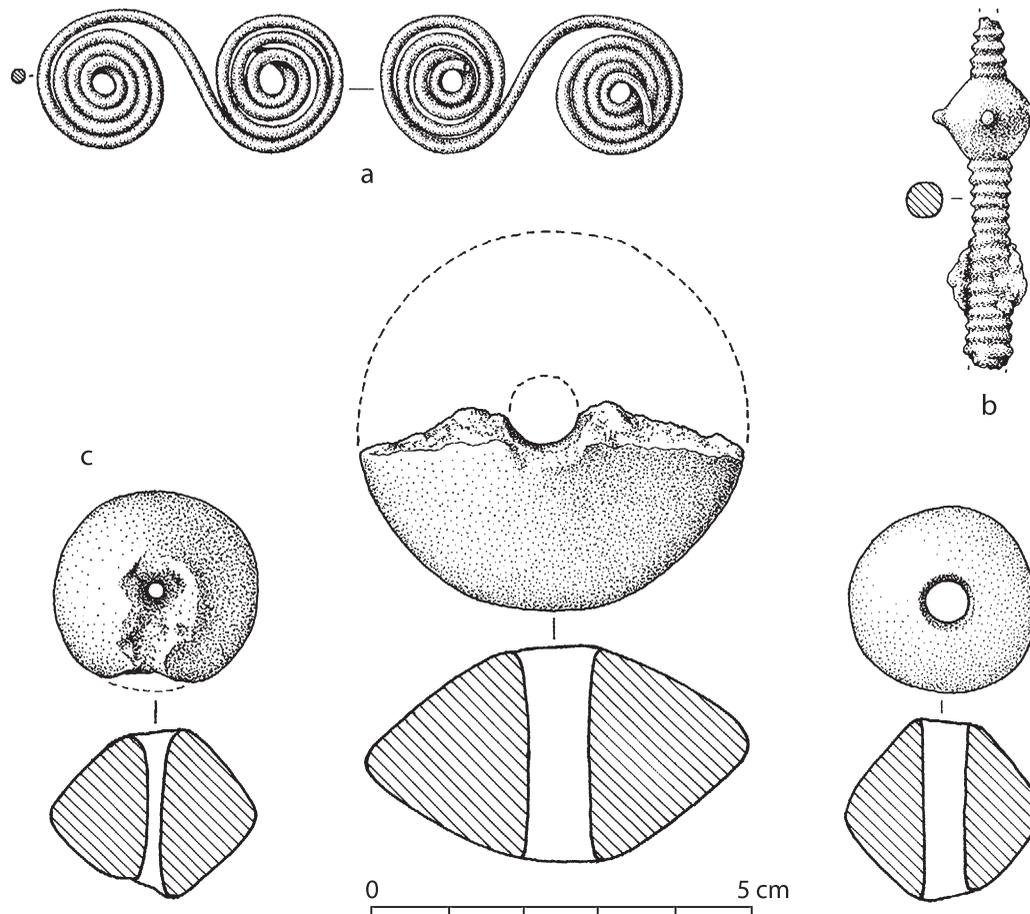


Fig. 26. Small bronze objects from the fill of the tumulus, probably displaced from disturbed tombs: *a*, bronze spectacle ornament (SF 157); *b*, bronze pinhead with adhering iron corrosion (SF 67); *c*, terracotta spindlewhorls, beads, or buttons from the fill of the tumulus, possibly displaced from tombs or brought in as part of the earth fill (from left to right: SF 65, SF 130, SF 138) (drawing by I. Zaloshnja).

be characteristic over large areas of the tumulus. The process of mounding appears to have begun fairly early in the creation of the tumulus, as the east–west section perhaps shows most clearly (see fig. 32). The contours of the surface prior to excavation were to an extent followed stratigraphically as we proceeded through the mound, revealing that a smaller tumulus existed during an earlier stage of its history. It is also fairly clear that in some areas and time periods, the ground had been leveled to receive a burial, and earth was subsequently piled on top of the tomb, or series of tombs. Consequently, many tombs were encapsulated or enveloped within a particular level. At certain points, clear examples of tomb pits cutting through an existing level or levels were encountered (a phenomenon more frequent with the modern burials than with the ancient). However, the quantity of prehistoric tombs with these noticeable cuttings was not only limited but rarely substantial, even when visible (e.g., Tomb 55;

see fig. 18), and were in some cases only partial (e.g., Tomb 52; see fig. 15). Comparatively deep Early Iron Age tomb pits, such as that for Tomb 54 (see fig. 21), were the exception not the rule.

The other feature of the tumulus that can be partly ascertained from the sections (see figs. 31, 32), but was also clear in the process of excavations, was that in certain areas throughout the tumulus, there were distinct localized dumps of earth (perhaps more visible in the north–south section; see fig. 31). The process of following these variations—sometimes slight, sometimes prominent—in the color and texture of the earth proved frustrating and in cases elusive. Occasionally, a clearly distinct type of fill could be followed for some depth, whereas elsewhere it would disappear, only to reappear within what proved to be a larger matrix of fill. What seemed to be a most confusing stratigraphy was, to some degree, clarified inadvertently by backfilling. Because the tumulus was backfilled at

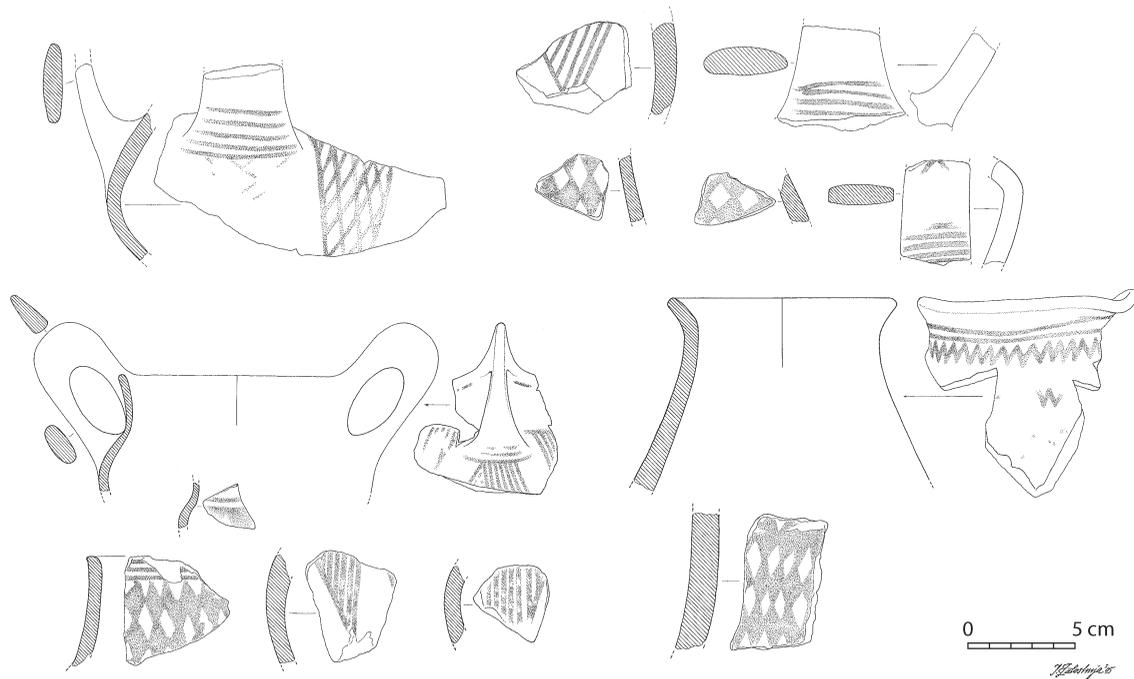


Fig. 27. Matt-painted pottery fragments from the fill of the tumulus (P 30, P 112, P 115, P 114, P 107, P 221, P 167, P 193, P 195, P 168, P 234) (drawing by I. Zaloshnja).

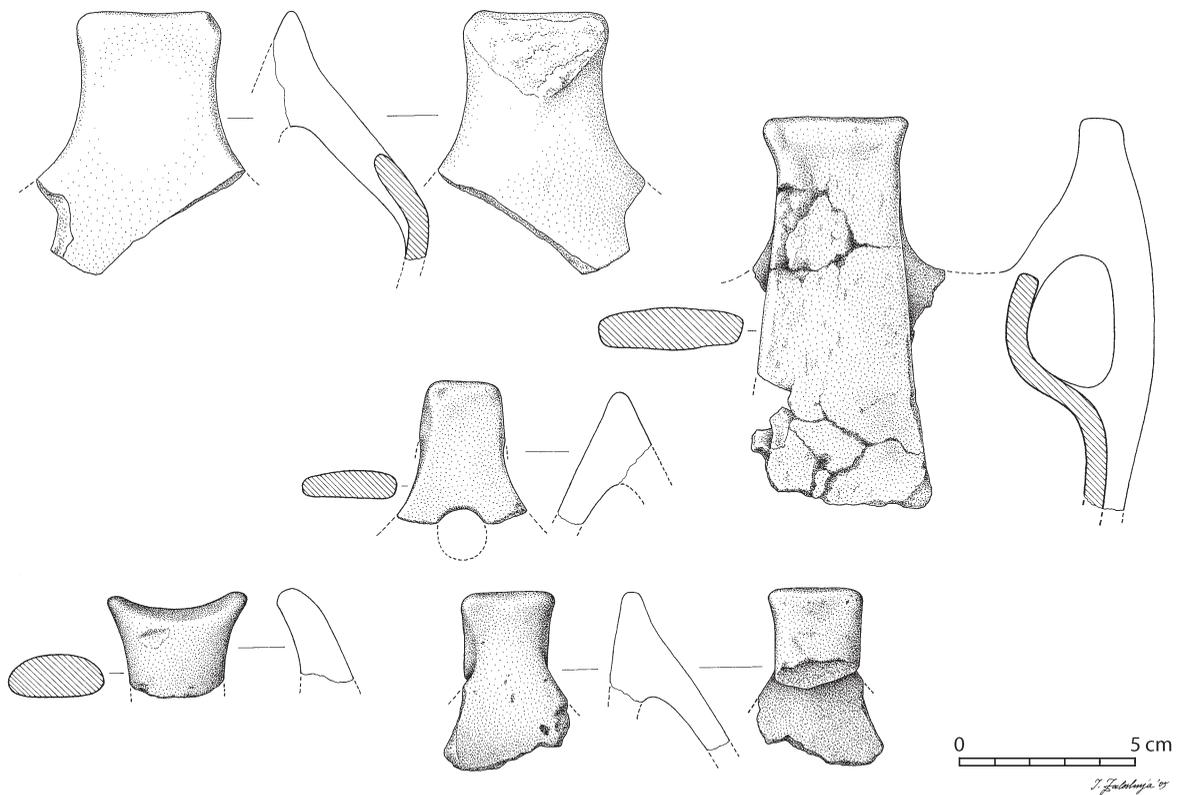


Fig. 28. Pottery handle fragments from the fill of the tumulus (P 98, P 127, P 140, P 136, P 205, P 203) (drawing by I. Zaloshnja).

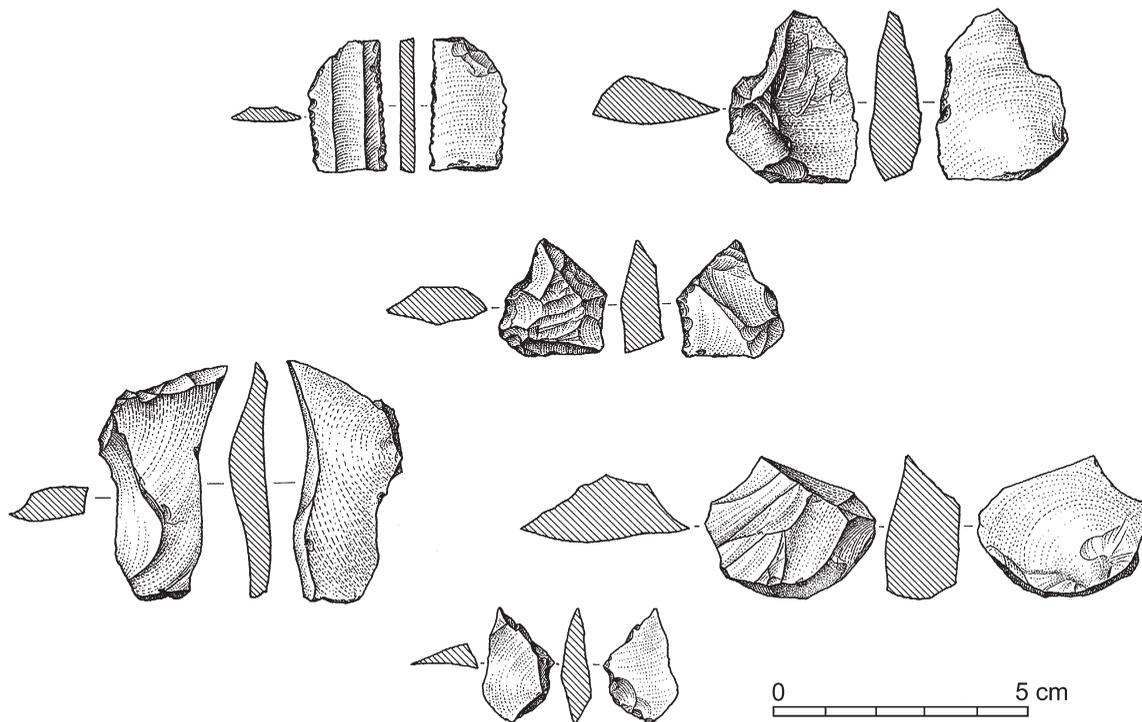


Fig. 29. Chipped stone tools from the fill and surface of the tumulus: *top row*, SF 5 and SF 6; *second row*, SF 8/23; *third row*, SF 7/22 and SF 9; *bottom row*, SF 41 (drawing by I. Zaloshnja).

the conclusion of the 2004 campaign and reopened at the beginning of the 2005 season, certain parts of the baulk that needed to be cleared because of the location of a grave were left backfilled while the trenches were cleared (these niches, together with cuttings through the baulk, are visible on fig. 25). Looking at the backfilled sections, one could observe a stratigraphy not unlike that of the tumulus itself, and in these cases the process of formation was clear enough, as it consisted of variations in the soil that were the result of separate loads of earth piled on top of one another. Although it was often possible to see these different loads as distinct strata, they were nevertheless part of a single event.

Consequently, the broader outlines of the stratigraphy seemed to be more telling than the minor variations, and the most significant realization was that the mound existed as a tumulus fairly early in its history. In this way, a burial tumulus differs not only from a normal cemetery, which consists of tombs dug through relatively flat earth, but in some respects, also from a settlement mound, which only takes on the appearance of a mound with time. It will be interesting to determine the final stratigraphy of the tumulus once the excavations are complete, but it was no accident that the burying group chose this most prominent of locations on a naturally dominant ridge of land.

Given its dominating position in the landscape, on such a naturally imposing spot, it is noteworthy that the mound was essentially intact for well over two and a half millennia after its period of primary use. Because it did not collapse or erode more than it has, or wash away in the periodic storms that can be ferocious in this part of Albania, we suspected early on in our excavations that something in its composition assisted in holding it together. Perhaps this was nothing more than the existence of an underlying structure there, if not from the very beginning, then certainly from fairly early in its history.

To explore the composition of the soil more systematically, Foss, with Mike Timpson, was invited to collaborate on our project. Their preliminary report, presented in appendix 2, confirmed our suspicions. They suggest that a fine-textured sediment from off-site (the source of which appears to be the clayey soils derived from shale that occurs ca. 30 m north of the site) was added periodically to help prevent erosion of the tumulus.

The composition of the fill of the tumulus and the question of where this fill came from will form part of our continuing analysis of Lofkënd. What can be said at present, on the basis of the preliminary analysis of the soils, is that the majority of the earth of the fill is identical to the various sterile soils surrounding the

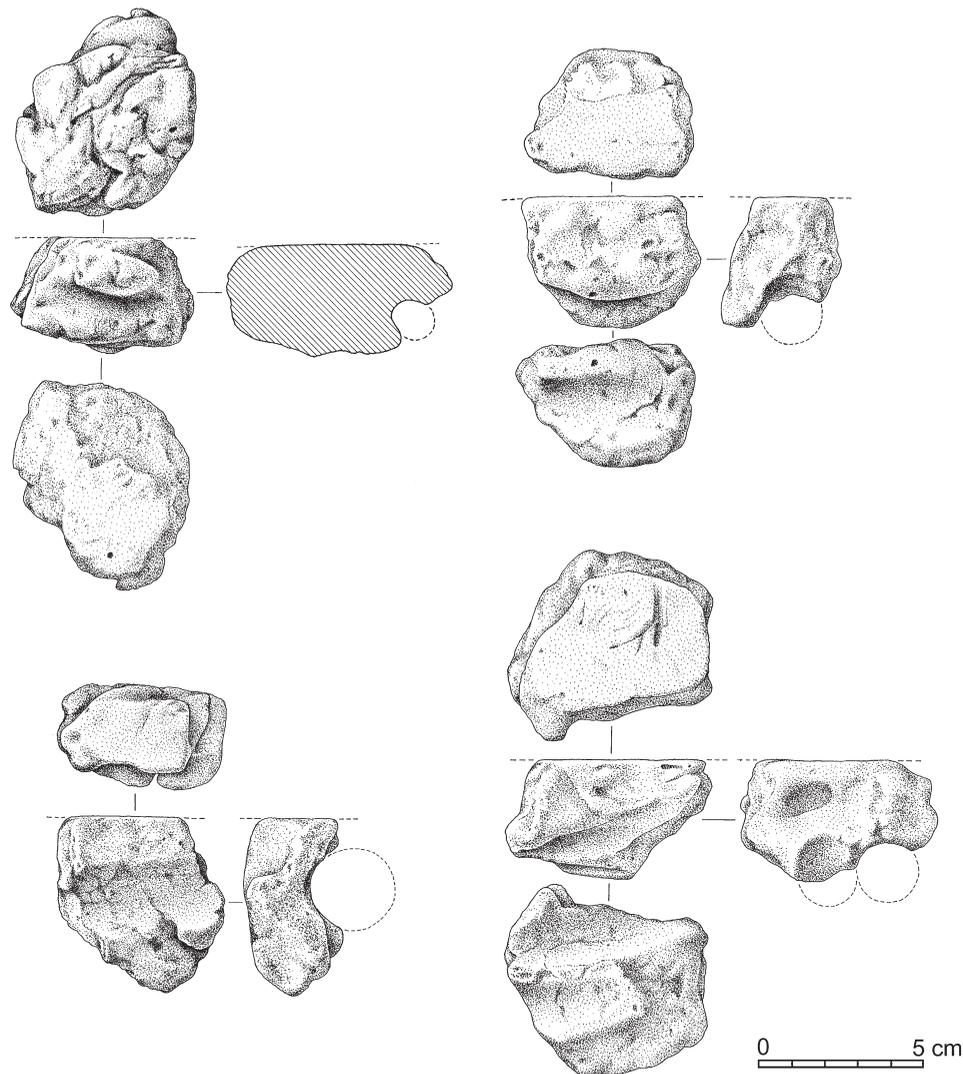


Fig. 30. Pieces of fire-hardened clay from the fill of the tumulus preserving reed, rod, or stake impressions used as lining in wattle-and-daub architecture (SF 77, SF 37, SF 78, SF 38) (drawing by I. Zaloshnja).

tumulus, while the presence of chipped stone tools, pottery sherds, and daub suggests that some of the fill may have been brought in from a distance.

THREE-DIMENSIONAL IMAGING OF THE TUMULUS IN ITS LANDSCAPE (C. Johanson and I. Zaharovitz)

One of the aims of the project was not only to record the tombs within the mound in such a way that a three-dimensional model could be made but to place the tumulus within the broader landscape of the region to explore its relationship to other known sites. To this end, a project was initiated in 2005 with the Experiential Technologies Center (ETC) at UCLA, and two ETC Research Fellows, Chris Johanson and Itay Zaharovitz, visited the site in July 2005.

A tumulus excavation is difficult to represent visually. Plan and section can depict the spatial layout of the burials within the mound, but because graves overlap and are situated at different elevations, composite two-dimensional representations can be difficult to read (see figs. 13, 31, 32). The spatial layout is necessarily three-dimensional, but building a three-dimensional representation is somewhat problematic. Unlike sites that are defined architecturally, a visualization of an excavated tumulus is defined by a mound of now excavated soil and the graves within. Most architecturally based reconstructions ignore the initial state of the site before excavation has begun and instead focus on the architectural forms within. Moreover, the architectural elements are inorganic forms, reproducible

by computer modeling software. A visualization of a tumulus, however, demands representation of the initial form of the surface cover. Neither the grave pits nor the organic skeletal remains are easily recorded in three dimensions without the use of sophisticated and currently expensive three-dimensional scanning technology. Therefore, the model and its purpose is limited by the data collected. The model cannot be a digital recording of the site that preserves as much detailed spatial data as possible. It can, however, represent three-dimensional data schematically, expand the field of view of the project, and offer a means of organizing and accessing the various data types traditionally recorded during an archaeological project.⁶⁶

Building the fully textured, real-time model was largely an assembly process. Key to this process was the methodology employed by the archaeological project. Many excavations record survey data in two-dimensional, vectorized form. The X and Y coordinates are embedded in the survey point recorded in a master computer-aided design (CAD) file, but the elevation data are recorded only as an annotation. In anticipation of later three-dimensional representations, Max Farrar, the excavation surveyor, attached three dimensions (X, Y, and Z) to all data collected over the first two field seasons. Therefore, survey points, contour lines, grave-bounding boxes, and drawing-frame data were all defined by points and polylines. The ETC team used a variety of programs and methods to build upon these data to create the three-dimensional, real-time model of the tumulus. Rhino 3D was used to derive a three-dimensional surface mesh from the contour lines in the original CAD file. The textured, three-dimensional graves were built in MultiGen Creator. The surveyed point data from the drawing frames were used to create the base polygon for each grave. The drawings were applied as textures to the polygon by mapping the surveyed points marked on the drawings to the polygon in the model. The polygon was then trimmed to fit the correct orientation of the grave as represented by the drawing.⁶⁷ A photograph of each grave was aligned to the drawing and applied to an overlay polygon. The extruded height was derived from the measured distance between the highest and lowest recorded points on each skeleton. The combined model (topographic mesh and individual

graves) was transferred into SketchUp to create the print images (fig. 33). The real-time model, which provides six degrees of freedom navigation, is run by an open-source, real-time system, vrNav.⁶⁸

Archaeological projects initially live within a narrowly defined spatial world but must eventually connect to a shared global system.⁶⁹ At Lofkënd, all recorded measurements adhere to an arbitrarily defined coordinate system (see figs. 5, 6). Upon initiating survey work, Farrar installed concrete markers at the boundaries of the site to serve as control points for the CAD model. The ETC team acquired GPS coordinates at each marker. These points were used to transform the digital model from the arbitrary coordinate system to a projected geographic coordinate system. (The Lofkënd tumulus is located in UTM Zone 34T, Easting 391927, Northing 4500348.)

Once the digital model was transformed and geo-located, the unified geographic coordinate system could be exploited by combining the model with other geo-referenced data. For example, the ETC team conducted two geo-referenced photographic surveys of the site. The internal clock on a Bluetooth-equipped GPS device was synchronized to that of the digital camera. As the team photographed the site, the Bluetooth GPS transferred a continuous stream of coordinates to a Bluetooth-capable data recorder. In the laboratory, a shareware program, RoboGEO, was used to match the timestamp of each photograph to the corresponding timestamp on each set of geographic coordinates and embed the coordinates into the EXIF data of the photograph. Through the use of geographically aware software, the photographs now form a spatially arranged photographic database embedded directly into the model and the geographic context.

The next step, and the broader aim of the project, is to insert the tumulus and its high-resolution surveyed topography (see fig. 33) into a lower-resolution, regional and countrywide geographic context. Creator Terrain Studio will be used to generate 30 x 30 km medium-resolution topography (30 m Digital Elevation Models [DEM] plus satellite imagery) and countrywide, low-resolution geometry. It is hoped that in time it will be possible to use this technology to incorporate the results of all excavations and surveys in Albania into a nationwide model.⁷⁰

⁶⁶Techniques of representation in real-time models are only now being discussed (Favro 2006). Abernathy (2005) notes: “[Digital models] allow . . . the participants to experience the project above the excavation trenches, looking up and around rather than down, or floating above the site rather than on the ground.”

⁶⁷The drawing frame used was 1 x 1 m, and it was not always aligned to the same axis as the grave.

⁶⁸Developed at UCLA Academic Technology Services.

⁶⁹This methodology for transforming and contextualizing digital models benefited from exploratory work performed by the UCLA Cultural Virtual Reality Laboratory (UCLA CVR-Lab); Abernathy and Johanson 2005.

⁷⁰Other global data sets and interfaces are being considered (e.g., Google Earth or NASA World Wind).

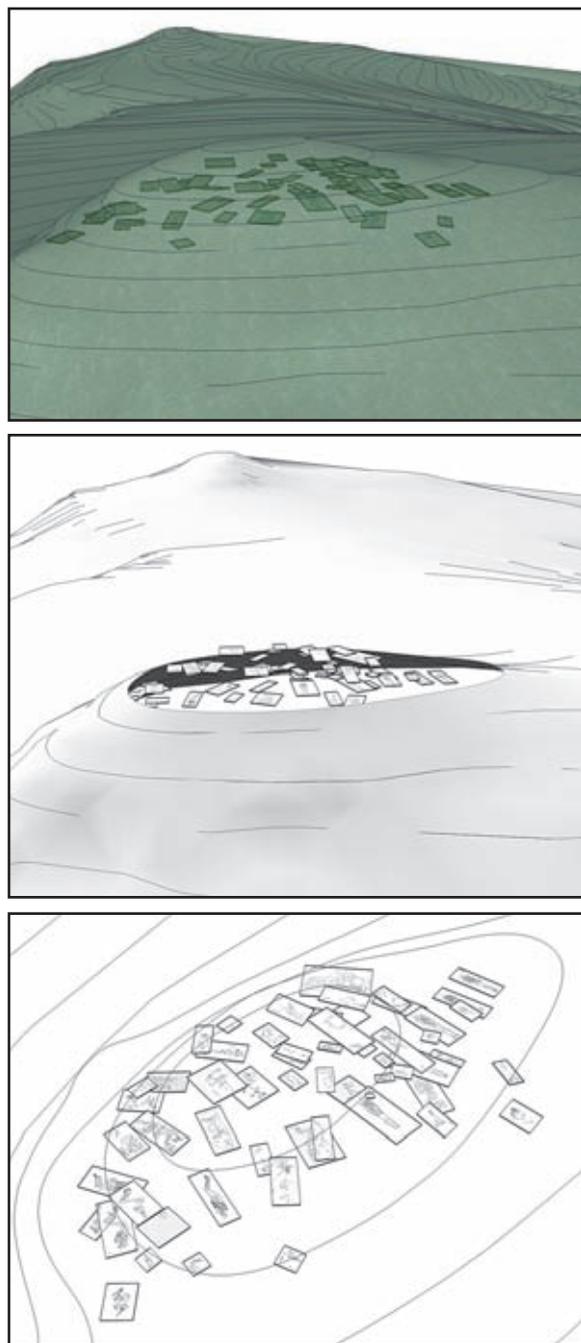


Fig. 33. Three renderings of the tumulus (looking west or west-northwest) from a three-dimensional model prepared by the Experiential Technologies Laboratory at UCLA (C. Johanson and I. Zaharovitz).

After the field seasons have been completed, we will explore ways to connect the real-time model to the project database, which provides spatial information for individual tombs and the stratigraphy, with links to images of graves and objects deposited in tombs.⁷¹

THE CHRONOLOGY OF THE TUMULUS

Surface materials collected on and immediately around the mound suggest a date spanning the Bronze and Early Iron Ages. The Iron Age material consists of a variety of pottery, including diagnostic matt-painted sherds characteristic of different phases of the period, whereas the diagnostic material of the Bronze Age consists largely of chipped stone tools, some of which appear to predate the Bronze Age (Neolithic and Paleolithic). Of the 62 excavated burials, there are two primary phases. One is a modern phase, confined to the eastern and northern portions of the tumulus, which yielded a few coins from perhaps as early as the 17th or 18th centuries, though an earlier date cannot be categorically dismissed. The remainder of the burials, and the majority thus far uncovered, date from various stages of the Early Iron Age. As the excavation of the Lofkënd tumulus is ongoing, the date of its earliest use awaits verification. On the basis in the fill of fragments of Corinthian pottery evidently of the sixth century B.C.E., it is clear that the mound was, at least for a short time, contemporary with the newly founded coastal colony of Apollonia that may have been established sometime around 600 B.C.E.⁷² These fragments of Corinthian pottery, almost exclusively from a few kotylai, are among the latest securely dated material from the tumulus prior to the modern reuse, and it seems tempting to suppose that the character of human activity in the landscape of Lofkënd was disrupted by the coming of the Greeks.⁷³

The fragmentary Corinthian pottery was encountered in the fill and topsoil. It was not clearly deposited into tombs, though it is possible that the fragments represent disturbed and displaced tomb offerings. It is too soon to speculate on the date of the earliest burials. On the basis of the material deposited in tombs thus far excavated, the majority of tombs date to the developed Early Iron Age (eighth–seventh centuries B.C.E.), though several tombs (including Tomb 55) contain material that may be earlier. Even among the

⁷¹The Lofkënd database is in Filemaker Pro, with fields developed for the International Center for Albanian Archaeology by Bejko and John Wallrodt of the University of Cincinnati. The survey information is currently only in AutoCAD files.

⁷²There is no internal evidence in the Greek sources to establish the foundation date of Apollonia. For the traditional date of 588 B.C.E., see Hammond 1967, 134, 470–71, 515. Van Compernelle (1953, 56 n. 1) was the first to suggest that the 588 B.C.E. foundation date was invented in the 18th century

by Désiré Raoul-Rochette and was uncritically accepted; this is now fully discussed in Stocker and Davis 2006. Graham (1964, 130), citing van Compernelle (1953), judiciously states: “The date of the foundation may be calculated as c. 600.” Thucydides (1.26.2) refers to Apollonia as a colony of Corinth (also Dio Cass. 41.45; Plin. *HN* 3.23); Strabo (7.5.8) and Ps.-Scymnus refer to the city as a joint foundation of Korkyra and Corinth.

⁷³Although the traditional date of the foundation of Apollonia cannot be regarded in any way as an absolute date, the pres-

earliest tombs, iron objects are common. It is believed that objects of iron appear for the first time in Albania in the 11th century B.C.E.⁷⁴ Perhaps the earliest tombs encountered by the end of the 2005 season are from as early as the 10th or ninth centuries B.C.E., if not the 11th century. Certainly, the asymmetrical violin-bow fibula from Tomb 55 finds good parallels in the earlier stages of the Early Iron Age in Italy and Crete, while the iron spectacle fibula with bronze bosses has close comparanda from Protogeometric Thessaly. It is clear, however, that many of the tombs are later.

More importantly, carbon samples gathered from throughout the tumulus will be ¹⁴C dated. It is hoped that the radiocarbon dates from these samples, in addition to those from individual tombs, as well as the stratigraphic interrelationship of tombs, will help to provide a baseline for the absolute chronology of the Early Iron Age in this part of Albania.

THE FUTURE

In the summer of 2006, most of the tumulus was cleared to bedrock, except for a small section at the southeast. By the end of the 2006 campaign, the total number of tombs discovered is 92. The remaining part of the tumulus and the baulks will be excavated in 2007. A project to rebuild the tumulus to its original appearance, using locally made mudbricks to reconstruct the baulks, was initiated and will be complete in 2007, along with a plan for providing information on the site for visitors. In a future study season, we hope to explore many of the issues that have been raised in this report. It is clear that the careful excavation of an undisturbed burial tumulus such as Lofkënd will provide much new information on the processes of tumulus formation, as well as the role of such a prominent monument in the constructed landscape. We may also learn more about its relationship with the series of fortified protourban centers that ring the site and the colonial foundations on the coast, particularly Apollonia. The excavations will certainly reveal much new data on pre- and protohistoric mortuary customs in this part of Albania. It will also allow us to undertake a comparison of burial customs with tumuli and other types of cemetery sites from a broader region, drawing on results from all over Albania, as well as neighboring countries.

It is hoped that the exploration of an important burial site that predates the colonial foundations, as

well as predating and, in part, chronologically overlapping the fortified protourban centers in the region, will contribute to a better understanding of the rise of urbanism in Albania. Comparison with sites especially to the south, in the Korçë-Kolonjë region and the Drina plain, as well as Molossian sites in Epirus in northwest Greece, such as Vitsa Zagoriou and Liatovouni, may have far-reaching implications for the nature of settlement in Early Iron Age Albania and Greece by providing a model that lies outside the historical contours of the classical polis.

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Appendix 1: DNA Analysis (2004)

LAURA MENEZ

The aims and objectives of the DNA analysis as originally conceived were twofold: (1) to establish relationships between buried individuals using mitochondrial and, if possible, nuclear DNA; and (2) to develop a method for sampling human remains from an archaeological context that is both effective and practical for fieldwork.⁷⁵

There were four levels of sterility under which the samples were collected. Level 1 was a completely non-

ence of archaic Greek material at Apollonia and at sites farther inland, such as Margëlliç, Mashkjezë, and perhaps Gurëzezë, argues that the effects of archaic Greek travelers and settlers were felt not only on the coast.

⁷⁴Prendi 1982, 229; for an overview of the Early Iron Age in Albania, see Prendi 1975.

⁷⁵Samples of saliva were voluntarily provided from virtually

all those involved in the excavations. DNA extracted from the samples would serve as an exclusion control for DNA extracted from excavated bone (i.e., if a DNA sequence that looked like that of a fieldworker was extracted from ancient bone, it could be excluded as a modern contaminant rather than be erroneously included as endogenous DNA to the bone).

sterile sampling, and level 4 represented the maximum sterility possible.⁷⁶ The idea behind the varying levels of sterility was to determine and monitor the minimum amount of protective clothing to be worn to maintain sterility of the samples and, at the same time, minimize the necessary equipment and protocols. Multiple samples were taken from individual skeletons, with varying levels of sterility. Typically, a combination of samples from the long bones and teeth of an individual in a tomb was taken.

Following preparation in the laboratory, the samples were powdered using a freezer mill, microdisintegrator, or similar homogenization equipment. The samples were then decalcified for up to 72 hours in ethylenediaminetetra-acetic acid (EDTA) and were extracted twice, either with equal volumes of phenol or once with phenol and once with a mixture, in equal proportions, of phenol and isoamyl alcohol. Once extracted from the sample, DNA was amplified using Polymerase Chain Reaction (PCR), which was carried out on heating blocks at an annealing temperature of 62°C for 45 cycles. Each PCR that produced a band when viewed on an agarose gel was cloned; eight colonies were picked for each and sequenced. The sequences thus obtained were analyzed using Seqman and Se-AL. Each variation contributed to categorizing that individual as a certain haplotype.

Unfortunately, the ancient bone was already quite contaminated with modern DNA for a variety of reasons, such as the exposure of the site and practical limitations in controlling sterility. The results were less than satisfactory and were not reproducible enough to be accurate. It would require more work and expense to obtain data of any value, and even then, there is no guarantee that this would produce results on the consanguinity of the individuals buried in the tumulus.

Appendix 2: Preliminary Report on the Soils of the Lofkënd Archaeological Site

JOHN E. FOSS AND MIKE E. TIMPSON

INTRODUCTION

The investigation of the soils and landscapes at the Lofkënd site was initiated in July 2005. The study consisted of two phases: (1) characterization of the soils at the site, and (2) evaluation of the general distribution of soils and landscapes in the area. The study included

identifying the geologic sediments for the parent material of the soils and the morphological characteristics of the soils at the excavation. The major soils occurring at the site were described according to standard methods and nomenclature. The description of the soils includes color, texture, structure, consistency, boundary of horizons, and relative content of carbonates. Based on these characteristics, the various layers were assigned horizon designations, which indicate the development and history of the soils.

Soil samples were taken to represent those at the excavation. Three profiles were selected for laboratory analysis; these analyses will include chemical properties (elemental composition) and physical characteristics (texture). Several samples from the baulks were taken for micromorphology to examine some unknown materials (tables 1–3).

RESULTS AND DISCUSSION

General Setting

According to the geologic map, the site is located in Pliocene sediments that are characterized as clays, aleurolites (silt stones), and sandstones. The site itself occurred in sandstone that was loosely cemented by carbonates. The bedrock was easily dug in most cases, although some strongly cemented beds occurred at the site and in the surrounding region. The lithic beds were generally less than 0.5 m thick. The bedrock had many bands (>1 cm thick) of calcium carbonate; this may provide a method of detecting undisturbed bedrock during excavation.

In looking for the source of the fine-textured sediment covering the tumulus and interbedded with the sandstone, soils with clayey surfaces and subsoils were located just north of the site. A traverse was conducted using an auger to examine soils to depths of 1 to 2 m. Approximately 30 m north of the site, shale became the parent material for soils, and this formation continued for at least 120 m north. Thus, there were ample source areas available to obtain the clayey sediments near the tumulus.

In the surrounding area, the more moderate slopes seem to be dominated by shale bedrock. West of the site, shale-derived soils were noted in the cornfield located in a saddle position and up the hill toward the site to perhaps 70 m from the top of the hill. The soils derived from shale are more productive than those weathered from the sandstone. This was evident in observations of the crop production in the region.

⁷⁶Level 2 involved the sampler wearing gloves and a mask but not using instruments that had been cleaned with ethanol. Level 3 involved the wearing of gloves and the use of cleaned tools but not the wearing of a facemask. Level 4 entailed the wearing of gloves and a facemask, as well as the use of tools that had been cleaned with ethanol.

Table 1. Profile Descriptions of Soils Examined During Excavations at the Lofkënd Site.

Horizon	Depth (cm)	Color	Texture ^a	Structure ^b	Consistency ^c	Boundary ^d	Carbonates ^e
Profile S05AL1 ^f							
A1	0–16	2.5Y 4/3, 4/4	sicl	2fabk	vh dry	gs	vst
A2	16–30	2.5Y 5/4, 5/3	sicl	2msbk	vh dry	gs	vst
A3	30–43	2.5Y 5/3, 5/4	sicl	2msbk	vh dry	gs	vst
AB	43–56	2.5Y 5/4	sicl	2mabk	h dry	gs	vst
C1	56–68	2.5Y 5/4	sil	1mabk	vh dry	cw	vst
2A	68–83	2.5Y 4/3, 5/3 (20%)	sicl	1mabk	h dry	cw	vst
2C2	83–96	2.5Y 5/3, 5/4	l	1cpl, 1fabk	fr moist	cw	vst
3A	96–104	2.5Y 4/3	sil	1vfabk	h dry	cw	vst
3C3	104–112	2.5Y 5/4	vfsl	1mpl	h dry	cw	st
4A	112–130	2.5Y 5/4, 6/4	fsl	2mabk	h dry	–	st
4C4	130–160	2.5Y 5/3	vfsl	–	–	–	–
4C5	160–180	2.5Y 6/3	vfsl	–	–	–	–
4C6	180–195	2.5Y 6/3, 6/2	vfsl	–	–	–	–
Profile S05AL2 ^g							
A1	0–22	2.5Y 4/3	sil	2fabk	vh dry	gs	st
A2	22–33	2.5Y 4/3	sicl	2mabk	vh dry	gs	st
A3	33–46	2.5Y 4/3	sicl	2msbk	vh dry	cs	vst
AB	46–60	2.5Y 4/3–4/4	sicl	2mabk	vh dry	cs	vst
2BC	60–72	2.5Y 5/3–5/4	fsl	1msbk–0m	vh dry	cs	vst
2C	72–92	7.5YR 6/3	vfsl	1mabk	vfr moist	–	st
Profile S05AL3 ^h							
Ap	0–27	10YR 4/3	sicl	1fpr–2msbk	vh dry	cs	st
A1	27–44	10YR 4/3–4/2	sicl	2msbk	vh dry	gs	vst
A3	44–60	2.5Y 4/3–3/3	sicl	2mabk	vh dry	gs	vst
A4k	60–78	2.5Y 4/3	sicl	3msbk	vh dry	as	vst
2C1	78–93	10YR 4/4	fsl	1cpl	vh dry	as	vst
3Ab	93–118	2.5Y 5/3–5/4	fsl	1cpl	h dry	as	st
3C2	118–130	2.5Y 5/3–5/4 (5%)	fsl	1cpr	fr moist	aw	st
4Ak	130–147	5Y 4/3	sicl	2fsbk	h dry	as	vst
5C3	147–165	10YR 5/3–5/4	fsl	1cpl–1mabk	fr moist	gs	st
5C4	165–188	10YR 5/3–5/4	fsl	1cpl	fr moist	–	st

^aUSDA classes: sicl = silty clay loam; sil = silt loam; l = loam; vfsl = very fine sandy loam; fsl = fine sandy loam

^bGrade: 0 = structureless; 1 = weak; 2 = moderate; 3 = strong. Size: vf = very fine; f = fine; m = medium; c = coarse. Type: abk = angular blocky; sbk = subangular blocky; pl = platy; pr = prismatic; m = massive. Mottles: fld = few, fine, distinct; m2d = many, medium, distinct; cld = common, fine, distinct; mld = many, fine, distinct

^ch = hard; vh = very hard; fr = friable; vfr = very friable

^dg = gradual; s = smooth; c = clear; w = wavy; a = abrupt

^eReaction to HCL acid: st = strong; vs = very strong

^fSampled and described 20 July 2005 (auger used for description below 130 cm); burial present at base of profile at 130 cm; three block samples taken of dark-colored (stratified) region for micromorphology; shells common in A1–A3 horizons

^gSampled and described 20 July 2005; few to many fine (<1 mm thick) calcium carbonate filaments in upper 72 cm; many filament bands (0.5–1.0 cm thick) in C horizon; shells common in A2 and A3 horizons

^hSampled and described 22 July 2005; filaments: A1, 2%; A3, 5–10%; A4k, 30% and masses of carbonates; 2C1, 3%; 3Ab and 3C2, 3%; 4Ak, 50% filaments and some masses, plus thin carbonate coatings on ped faces; 5C3 and 5C4, 5% filaments

Table 2. Description of the Soil Profile Below Tomb 54 at the Lofkënd Site.

Horizon	Depth (cm)	Color	Texture ^a	Additional Notes
Profile S05AL5 ^b				
1	0–180			section was removed during excavation
C1	180–200	2.5Y 6/3	fsl	some coarse carbonates
C2	200–215	2.5Y 6/4, 6/3	fsl	
C3	215–230	2.5Y 6/3	fsl	mottles ^c (c1f), 2.5Y 5/6
C4	230–250	2.5Y 6/3, 6/4	fsl	mottles (flf), 2.5Y 5/6
C5k	250–270	2.5Y 6/3, 7/3	fsl	some cementation, carbonate concretions
C6	270–290	2.5Y 6/3	fsl	mottles (m1d), 2.5Y 5/6
C7	290–310	2.5Y 5/3, 6/3	sl	mottles (m1d), 2.5Y 5/6 > med. sand
C8	310–320	2.5Y 6/3	sl	mottles (m1d), 2.5Y 5/6 > med. sand
C9	320–330	2.5Y 6/2	sl	mottles (flf), 2.5Y 5/6

^aUSDA classes: fsl = fine sandy loam; sl = sandy loam

^bAuger used to sample below Tomb 54, near south end of site (2 m from escarpment edge); estimate was made of amount of sediment removed during excavation; carbonate concretions (max. 1–2 cm lgth) present similar to “loess puppies” found in the Midwest (soil described and sampled 22 July 2005)

^cMottles: c1f = common, fine, distinct; flf = few, fine, distinct; m1d = many, fine, distinct; flf = few, fine, distinct

The clayey soils weathered from shale typically have higher plant-available water content and more plant nutrients than soils weathered from sandstone.

Additional observations west of the site yielded evidence of slope failure occurring at the contact between the sandstone and shale layers. In one area, a shale soil was observed occurring above the sandstone, but the profile had been displaced from the slope above. The soil derived from shale had not been disturbed or mixed to any great degree, suggesting it had moved en masse down the slope. This type of landscape process is probably common in the region.

Soil Morphology

The soils at the site were developed primarily from calcareous sandstone, but additional clayey sediments had been added to the surface of the tumulus and in various layers throughout the profiles. Because of the erosive nature of the fine sands at the site, this clayey material would be useful in stabilizing the structure and minimizing susceptibility to erosion. The dark-colored surface encountered in the profiles is either a silt loam or a silty clay loam with moderate blocky structure. This clayey material is believed to have been placed on top of the tumulus to protect it from erosion. Similar material is also found in thin bands throughout the burial zones for perhaps the same reason (i.e., to temporarily control erosion).

Tables 1–3 provide the detailed descriptions of soils examined at the site and in the general vicinity of the tumulus. The profiles consist of either A horizons (surficial accumulation of organic substances

and inorganic sediments) or C horizons (relatively unweathered sediments). The area has not been stable for sufficient time to develop any further horizonation. Further, the calcareous nature of the sandstone tends to inhibit the weathering processes of clay and iron translocation in the soils.

The parent material of calcareous sandstone is characterized as: (1) very fine sandy loam grading to sandy loam; (2) color of 2.5Y 6/2, 6/3 (light brownish gray to light yellowish brown); (3) calcareous with bands (0.5 to 1.5 cm thickness) of calcium carbonate; and (4) some layers of strongly cemented sandstone occurring at depths below 2 m.

SUMMARY

The basic parent material for soils occurring at Lofkënd is weakly cemented Pliocene sandstone. Fine-textured sediment derived from soils weathered from shale was, however, added to the top of the tumulus. This clayey sediment also occurs in thin bands within the tumulus. We believe that the fine-textured sediment from off-site was added periodically to help prevent erosion of the tumulus during various stages of building. The fine and very fine sands weathered from the calcareous sandstone are quite erosive and thus would be a problem in stabilizing the landscape during the individual burials, as well as for the completed tumulus. The source of the fine-textured sediment appears to be the clayey soils from shale that occurs about 30 m north of the site.

Soil morphology at the tumulus generally consists of silt loam or silty clay loam, dark-colored (olive brown

Table 3. Soil Profile Descriptions Along Traverses North and West of the Excavations at the Lofkënd Site.

Horizon	Depth (cm)	Color	Texture ^a	Additional Notes
Northern traverse ^b				
Auger 1				
Ap	0–15	2.5Y 5/3	sil	
Bw	15–30	2.5Y 5/3, 5/4 (10%)	sil–sicl	
C1k	30–50	2.5Y 5/3	vfsl–si	
C2	50–80	2.5Y 5/3	vfsl	
C3	80–100	2.5Y 5/3, 5/4	vfsl	
Auger 2 ^c				
Ap	0–25	2.5Y 5/3, 5/4 (10%)	sicl	mottles ^d (f1d), 10YR 5/8
Bwk1	25–50	2.5Y 5/3	sicl	mottles (m2d), 10YR 5/8
Bwk2	50–65	2.5Y 5/3	sicl	mottles (m2d), 10YR 5/8
BCK	65–90	5Y 5/3	sicl	mottles (m2d), 10YR 5/8, shale pieces
C	90–100	5Y 5/3	sicl	
Auger 3				
Ap	0–25	2.5Y 5/3	sicl–sic	
Bw	25–50	2.5Y 5/3	sicl	
Bwk	50–70	2.5Y 5/3; 5Y 5/3	sicl	
BCK	70–80	5Y 5/3	sicl	mottles (c1d), 10YR 5/8
Auger 4 ^c				
Ap	0–25	2.5Y 5/3	sicl	
C1	25–40	2.5Y 5/3	sil	mottles (f1d), 2.5Y 6/8
C2	40–80	2.5Y 5/3	sil	mottles (f1d), 2.5Y 5/8
2Bwb	80–90	5Y 5/3	sicl	mottles (f1d), 5Y 5/8
West profile ^f				
Ap	0–20	2.5Y 3/3, 5/3, 5/4	sicl	
Bw	20–50	2.5Y 5/3	sicl, fsl	mixed materials, some rounded gravels
Ck1	50–70	2.5Y 5/3	sicl, fsl	mottles (f1d), 10YR 5/8, mixed materials
Ck2	70–100	2.5Y 5/3	sicl, fsl	mottles (m1d); 10YR 5/8
2C3	100–120	2.5Y 5/3, 6/3	vfsl	sandy bedrock

^aUSDA classes: si = silt; sil = silt loam; sicl = silty clay loam; vfsl = very fine sandy loam; sic = silty clay; fsl = fine sandy loam

^b>15% calcium carbonate in C1k; platy bedrock encountered in C3; reaction to diluted acid strong throughout profile

^cPieces of bedrock and silt stone present in test

^dMottles: f1d = few, fine, distinct; m2d = many, medium, distinct; c1d = common, fine, distinct; m1d = many, fine, distinct

^eLocated in a saddle position, so deposition of sediment evident in the upper 80 cm

^fLocated on a hill ca. 300 m west of site; a tree located (4 m east) near test; 10% slope, northern aspect

to light olive brown), blocky A horizons underlain by fine or very fine sandy loam C horizons. The C horizon color ranges from light olive brown to light brownish gray. The entire profile is calcareous and thus indicates a minimal amount of leaching. As a result of the calcareous nature of the parent material and the minimal

age and conditions for weathering to take place, the soils at the site show little horization, except for the depositional episodes associated with the burials.

Agriculture is the main land use in the region, with soils and landscapes having a wide range of capabilities for crop production. Numerous areas north and

west of the site appear to have very low potential for crop growth as a result of domination of sands. The most productive areas seem to be dominated by shale-derived soils. This was obvious in the immediate area around the tumulus. Additional regional study is needed to delineate soils and landscapes based on quality for crop production.

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