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Abdera/ Polystylon: A Byzantine Town in Western Thrace in the Context of Historical Developments during the 6th – 14th Centuries as Depicted by its Archaeo-Anthropological Record

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ΙΝΣΤΙΤΟΥΤΟ ΙΣΤΟΡΙΚΩΝ ΕΡΕΥΝΩΝ
ΤΟΜΕΑΣ ΒΥΖΑΝΤΙΝΩΝ ΕΡΕΥΝΩΝ
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IN THE CONTEXT OF HISTORICAL DEVELOPMENTS
DURING THE 6TH-14TH CENTURIES AS DEPICTED
BY ITS ARCHAEO-ANTHROPOLOGICAL RECORD

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Preface

Abdera, the famous colony of Klazomenaeans¹ and Teians², was situated at a commercially imposing position on the northern Aegean shoreline. During the Byzantine period Abdera was progressively restricted toward the acropolis hill next to its harbor, whereas the larger domain of the ancient city was known since the 9th c. as *Polystylon*³: the etymology describes a locality

1. Herodotus, I. 168, ed. C. HUDE, *Herodoti Historiae*, Oxford ³1927; Aelian, *Varia Historia* 12.9 [Loeb Classical Library- 486], ed. G. P. GOULD, Harvard University Press, Cambridge Massachusetts, 1997, 360; Cf. A. AGELARAKIS, Klazomenians of Three Continents: Emphasis of the 7th c. BC, in: *NOSTOI. Indigenous Culture, Migration and Integration in the Aegean Islands and Western Anatolia during the Late Bronze and Early Iron Age*. Eds.: N. STAMPOLIDIS - Ç. MANER - K. KOPANIAS, Istanbul: Koç University Press 2015; ID., The Clazomenian Colonization Endeavor at Abdera in Retrospect: Evidence from the Anthropological Record, in: A. MOUSTAKA - E. SKARLATIDOU - M.-C. TZANNES - Y. ERSOY (eds.), *Klazomenai, Teos and Abdera: Metropoleis and Colony, Proceedings of International Symposium*, Thessaloniki 2004, 327-349; ID., On the Clazomenian Quest in Thrace during the 7th and 6th centuries BC, as revealed through Anthropological Archaeology, *Εὐλυμένη* 2 (2001), 161-186.

2. Strabo, *Geography* 14. I. 30 [Loeb Classical Library- 49], ed. J. HENDERSON, Harvard University Press, Cambridge Massachusetts, 2005, 236-238.

3. CH. BAKIRTZIS, Western Thrace in the Early Christian and Byzantine Periods: Results of Archaeological Research and the Prospects, 1973-1987, *BF* 14/1 (1989) [=First

with many columns. In this area a program of the Greek Archaeological Service titled “From the Ancient Polis to the Byzantine Castle”, under the aegis of which the authors served as the bioarchaeologist and draftsman respectively, conducted field and laboratory research between the early 1980s and late 1990s⁴.

This paper presents research from excavations conducted at three Byzantine sites⁵ at Abdera/Polystylon by combining reflections from the archaeologico-historical and anthropological records⁶. Emphasis is given to the study of the human skeletal remains unearthed at the three sites aiming to retrieve through interdisciplinary analysis evidentiary data reflective of the human condition, aspects of which had been permanently imprinted on dental and skeletal surfaces, hoping to elucidate and where possible offer fine-tuning on matters of value to the historical and archaeo-anthropological contexts and of our understanding of the increasingly dramatic changes and circumstances of life experienced by the people at the provincial town of Abdera/Polystylon from the Early to the Late Byzantine periods.

International Symposium for Thracian Studies “Byzantine Thrace”. Image and Character, Komotini, May 28th-31st 1987], 41-58; cf. P. GEORGANTZIS, ‘Η ἐκκλησιαστική ὀργάνωση καὶ διοίκηση τῆς Δ. Θράκης κατὰ τὴ Βυζαντινὴ ἐποχὴ, *BF* 14/1 (1989), 204-205 (and particularly the explanatory footnotes *ibid.* 28, 29, 30, and 31).

4. CH. BAKIRTZIS, *Ανασκαφή Πολύστουλου Αβδήρων, ΠΑΕ* (Athens, 1982), 18-26; *Ανασκαφή Πολύστουλου Αβδήρων, ΠΑΕ* (Athens, 1983), 13-19; *Id.*, Western Thrace in the Early Christian and Byzantine Periods [as in n. 3], 45-46; *Id.*, Byzantine Thrace, in: V. PAPOULLA – M. MERAKLIS – CH. SYMEONIDIS – TH. KORRES – P. CHIDIROGLOU (eds), *Thrace, Komotini 1994*, 158-162; CH. BAKIRTZIS – N. ZEKOS, *Ανασκαφή Πολύστουλου Αβδήρων, ΠΑΕ* (Athens, 1984), 12-17; A. P. AGELARAKIS – A. AGELARAKIS, The Palaeopathological Evidence at Polystylon Abdera, Greece, *BF* 14/1 (1989), 9-26; A. P. AGELARAKIS, Archaeological Reconstructions of the Late Byzantine Polystylon Population, *Research and Exploration, National Geographic Society* 8(1) [1992], 119; *Id.*, Excavations at Polystylon (Abdera): Aspects of Mortuary Practices and Skeletal Biology, *ΑΔ* 47-48 (1992-1993) [1997], 293-308; A. P. AGELARAKIS – CH. BAKIRTZIS, Cemeteries at Polystylon (Abdera). On Burial Customs and Practices in the Rhodopes, *Rhodopica*, 1998/1, 57-67.

5. The designations of the three sites are: ΞΑ1 (hereafter “A”), ΞΑ2 (hereafter “B”), and ΞΑ4 (hereafter “C”)

6. Earlier publications on Polystylon by AGELARAKIS have only addressed archaeo-anthropological results relative to sites “A” and “B”.

Site “A” (6th to 10th centuries)

Presented in chronological order, site “A” is located at the immediate north of Byzantine Abdera/Polystylon, outside its fortification walls and next to the southwestern gate of ancient Abdera that lead to the harbor of the city. In this area an extended cemetery site and a three-aisled basilica were discovered. The three sequential structural phases of the basilica and the absence of early Christian and Byzantine glazed pottery place the function of the basilica as a cemetery church from the end of the 6th to the 10th/11th centuries.

The segment of the cemetery excavated around the basilica revealed a total of 42 graves out of which 29 were researched extensively, as the rest had been destroyed in antiquity. Several of the graves predated the destruction of the basilica, while the others postdated its ruination. These graves comprised a segment of a larger cemetery in the same area that was excavated at the beginning of the 1970s, and was dated to the Late Roman period⁷.

The fact that this extensive burial ground was situated inside the fortification walls of the ancient city of Abdera indicates that during the Late Roman period Abdera continued to occupy the entirety or part of its original spatial extent. The three-aisled basilica and the adjoining cemetery were discovered at the southwestern gate of ancient Abdera, at a stratigraphic relation which superimposed the functional floor of the gate and which demonstrates that the gate most probably was not operational at least in its original form having yielded along with the surrounding area to funerary functions. The city of Abdera during the period of utility of the funerary basilica (6th-10/11th centuries) had shriveled up to mainly occupy the acropolis hill, where ruins of a Palaiochristian basilica with a baptistery have been located. Yet, since the 9th century Polystylon was known as a bishopric under the metropolis of Philippoi, hence commanding as a centre considerable administrative power and some autonomy⁸.

7. AGELARAKIS – BAKIRTZIS, *Cemeteries at Polystylon* [as in n. 4], 57-67.

8. Cf. P. GEORGANTZIS, *Ἡ Μητρόπολις Τραϊανουπόλεως καὶ αἱ ἐπισκοπαὶ αὐτῆς*, Xanthi 1981, 116; cf. C. ASDRACHA, *La region des Rhodopes aux XIIIe et XIVe siècles*, Athens 1976, 96-98 whereby it is assessed that Polystylon (instead of Abdera) participated

Box-shaped tombs had their walls constructed with marble or stone slabs, worded stones and other available spolia from earlier buildings or graves, materials in secondary use (Ill. 1,2). Several tombs were covered with stone lids. Often, stones and lids covering the graves beared carved crosses; they usually contained one burial. However, on eight occasions osseous remains of earlier interments were discovered carefully placed at the sides of the tombs.

Burial goods discovered were few such as earrings, necklaces made out of small glass or bronze beads and bracelets in children's burials, as well as bronze crosses. The cemetery located in site "A" represents the earliest Christian graveyard excavated at Abdera/Polystylon. This cemetery had been plundered in later time periods in antiquity as revealed archaeologically by the positioning of the structural materials comprising the graves and the location of a select number of burial goods (bronze crosses, and bracelets) that were recovered from outside the burial features. Additional evidence on the looting of the cemetery was provided by archaeo-anthropological forensic assessments in reference to non-taphonomic skeletal anatomic disturbances of the human remains⁹.

Analyses of the anthropological record revealed that eight out of the 29 graves that had preserved human remains yielded multiple interments. The human skeletal population sample comprised 40 relatively well preserved individuals. Physical anthropological studies in skeletal biology indicated that the demographic profile of this skeletal population involved five females, sixteen males, eighteen infants—the sex of which couldn't be determined forensically through inspectional and mensurational analyses subject mainly to their undeveloped skeletal structures and secondarily due to poor preservation, and one individual of indeterminate biological sex primarily due to poor preservation conditions (Figure 1, Table 1). The highest mortality prevalence was observed among the infants, followed by the male individuals, and finally the females. The age of death assessments

as a bishopric under Bishop Demetrios as recorded in the Proceedings of the Ecumenical Council of Constantinople in 879 AD.

9. *Ibid.*; cf. AGELARAKIS - AGELARAKIS, The Palaeopathological Evidence, 9-26; AGELARAKIS, Excavations at Polystylon (Abdera) [as in n. 4], 293-308; AGELARAKIS - BAKIRTZIS, Cemeteries at Polystylon (Abdera), 57-67.

indicated a range of incidences of mortality between 20 to 55 years for males, and 31 to 55 for females. Since the earliest incidences of mortality for males initiated at 20 years, whereas for females at 31, a positive buffer of 11 years was afforded for females whereas the mean value for life expectancy unveiled the ceiling at 55 years for both subgroups; for longevity averages see Figure 2. Osteometric calculations revealed that standing stature measurements of the males ranged between 163.0 to 178.0 cm, while female values fluctuated between 157.0 to 162.0 cm; yielding to males an 11.0 cm higher mean value difference in stature than females¹⁰ (Figure 3).

Studies in biological growth, epigenetic dental, and skeletal anatomic morphology established morpho-metric indicia reflective of population specific phenotypic variability. Skeletal infracranial axial and appendicular remains showed well-built, robust structures for both males and females, indicative of adequately sustained biological growth processes as well as of an effective involvement of both biological sexes in physical activities such as required by modes of food production and participation in economic output. However, although both biological sexes revealed skeletal structures indicative of well-conditioned skeletomuscular systems by means of routine involvement in *ante mortem* physical activities demanding both strength and endurance, males distinctly showed anatomic expressions of sexual dimorphism through much emphasized skeleto-muscular imprints and skeletal manifestation changes caused by long term *intra vitam* occupational and habitual strain on axial skeletal and appendicular trajectory areas of stress. This was indicative that females had been sheltered from excessively strenuous or heavy load impact activities¹¹, indicative as it may be of aspects of the cultural conditions, norms and expectations of the time period;

10. Male standing height mean value at 170.5 cm, and for females at 159.5 cm

11. As revealed by an apparent quantitative and qualitative difference in the prevalence of expression of heavy set load impact markers of habitual and occupational stress (MHOS) [for the term MHOS cf. A. AGELARAKIS, *The Archaeology of Human Bones: Prehistoric Copper Producing Peoples in the Khao Wong Prachan Valley, Central Thailand*, in: P. BELLWOOD (ed.), *The Indo-Pacific Prehistory: The Chang Mai Papers*, (*Bulletin of the Indo-Pacific Prehistory Association* 14:1, 1996), 133-139] on both axial and appendicular components, beyond and above the phenotypic variability of sexual dimorphism, a lesser prevalence of trauma impacts compared to males of comparable age subgroups, as well as a discernible favorable qualitative difference in dental hygiene.

manifestations in concert with data retrieved from earlier populations of Abdera since the early Classical period¹².

Palaeopathological assessments recorded a prevalence of early life stress conditions¹³ sustained at the first, second, and fifth years of life, within the chronological boundaries of the “Infancy I” age subgroup that ranges between birth and the 6th year of life. Such early life stressors, indicative of arrested and improved biological growth processes, overall include but may not be limited to causes rooted in a range of pathogenicity such as infections, fevers, trauma in combination with insufficient nutritional intake, and exanthemas, although in light of the site specific population palaeoepidemiologic profile emphasis is placed on the effects of contagious childhood diseases and weanling diarrhoeas.

Adult individuals revealed relatively disease-free skeletal structures with the exception of jaw and dental pathologies (contributed mainly to the nature of dietary intake, dental functional modification, and aging), degenerative osteoarthritic and spondyloarthropathic complications, and a relatively low prevalence of traumatic conditions which mainly affected axial skeletal components of the spine (chiefly due to load pressure impact) and the lower extremities (especially on tibio-fibular middle and lower third diaphyseal areas), diagnosed as well healed manifestations caused mainly by the sphere of actions relative to food production and economic output activities.

The study of dental wear patterns and overall paleopathology of the masticatory apparatus indicated that the foods consumed had been well prepared. Further, chemical archaeometric analyses on bone fractionation for dietary evaluations revealed that the bulk of foodstuffs was based on C3 pathway photosynthesizing plants (such as wheat and barley) comprising volumetrically 88% of the dietary intake, including ample starchy

12. A. AGELARAKIS, Aspects of Demography and Palaeopathology among the Hellenistic Abderetes in Thrace, Greece, *Εὐλιμένη* 1 (2000), 13-24; Id., Deciphering the Archaeological Record through Physical Anthropology: Ramifications of Social Hierarchy at Abdera During the Early Classical Time Period, *Actes 2e Symposium International des Etudes Thraciennes: Thrace Ancienne* 2, Athens 1997, 849-866; NT. KALLINTZI, Archaeological Investigations in Classical Abdera, *ΑΔ* 49 (1994), *Χρονικά* B2, 615-618; *ΑΔ* 50 (1995), *Χρονικά* B2, 641-657.

13. Based on *ante mortem* dental enameloblastic defects, permanent lines of arrested and improved growth, designated as linear enamel hypoplasias, abbreviated as LEH.

components, while a volume of about 12% was acquired from animal sources of both terrestrial and marine habitats, and from the latter of both fish and shellfish organisms (as each provide different chemical signatures), see Figure 4. The specificity of the nature of dietary resources and volume of intake proportionalities at site “A” were identical to those substantiated archaeometrically of the Classical and Hellenistic periods at Abdera¹⁴.

Site “B” (11th/12th centuries)

Site “B” is situated at the northern/northwestern bank of the low hill and inside the standing fortification walls and in proximity to the northern gate of Byzantine Polystylon. During the excavation processes, it was determined that the visible remains of the fortification walls probably dated to the 7th-8th centuries. Further, the Byzantine fortification walls and the northern gate had been based upon the lower structural components of the Classical period’s fortifications and northern gate; this gate was to function as the main gate of Polystylon and lead to the harbor. A single-aisled domed church dated to the 12th-13th centuries with a coeval cemetery bordered by an enclosure were discovered next to this main gate. During the same period the boundaries of the city were restricted and permanently confined to the low hill that had served as the Classical and Hellenistic acropolis of Abdera, adjacent to the harbor¹⁵. The ruins at the main area of the ancient city outside the Byzantine fortification walls had been used as a quarry for the recovery of refined architectural components and building materials transferred via Polystylon harbor to other destinations and urban centers during the Middle Byzantine Period. The stripping of the ancient relics and mining of spolia it is suggested could have been a mixed blessing to the safety and economic prospects of Polystylon considering the feverishness of activities and market livelihood with merchants, contractors, specialty craftsmen, sailing crews and laborers, but also the liabilities it could have caused as a pillaging destination at times of plunder by foreign powers; that

14. AGELARAKIS, *Deciphering the Archaeological Record Through Physical Anthropology* [as in n. 12], 856-857; Id., *Aspects of Demography and Palaeopathology* [as in n. 12], 17.

15. AGELARAKIS – BAKIRTZIS, *Cemeteries at Polystylon (Abdera)*, 57-67.

is for as long as the splendor of ruins that once proudly adorned the polis of Abdera could afford to be despoiled¹⁶.

Focusing on the archaeo-anthropological record of this period at Polystylon sixty-four (64) graves were unearthed and documented in various degrees of preservation, located peripherally to the church, out of which forty-five (45) graves were investigated in a systematic way having retained anthropological remains. This cemetery, in comparison with site “A”, contained less elaborately constructed graves with building materials of lesser quality and of smaller and irregular stone sizes with the exception of few monolithic sarcophagi of the Roman period, relocated from their original positioning and in secondary use. Box-shaped graves had been constructed with medium and often small sized stones, covered with stone slabs, and in few occasions sealed hermetically with calcareous based compound materials as a composite cover suspected to have served in sanitizing the activity area and minimizing the fear of lingering epidemiological dangers of contamination in instances when the occurrence of death had been thought to had been caused by feared manifestations of contagious disease¹⁷. Of importance in this cemetery site was the wide introduction of wooden coffins. Although only sporadic traces of wood fragments have been preserved, based on the location of the nails found *in situ* within the burial beds of the graves, it was possible to reconstruct the shape of the coffins (Ill. 3). Based on such assessments the coffins were made in elongated quasi-quadrangular outlines; the two short parallel sides of which were uneven and constructed with a shorter side toward the feet of the interments. A considerable amount of nails recovered from the cemetery site revealed a wide use of this burial practice introduced in Polystylon during the 12th to the 13th centuries¹⁸.

16. It isn't circumstantial it is suggested that not many single columns, if any, have ever been unearthed for the duration of extensive archaeological excavations of a site that had been named “Polystylon”, for its many columns.

17. It should be of palaeopathologic interest to identify the possibility of the spread of an epidemic that may have been recorded in historical records, during the time period the cemetery was in use. It should be noted, however that the archaeological record, based on the burial contexts of the cemetery, did not reveal but a few cases of application of such calcareous based deposits.

18. AGELARAKIS, Excavations at Polystylon (Abdera) [as in n. 4], 293-308; AGELARAKIS-BAKIRTZIS, Cemeteries at Polystylon (Abdera), 57-67.

Here, a number of fragmented and anatomically disarticulated human bone fragments were recovered from loci outside their primary contextual associations, indicative of more recent historical disturbances, specifically for the most superficial stratigraphic layer due to the consequences of agricultural activities¹⁹, whereas at the more basal strata of the cemetery partial overlap, super-positioning, compression, and truncation of burial features had caused similar results in the processes of accommodating space for subsequent interments within the boundaries of this complex and highly stratified activity area (Ill. 4). The burial offerings were few and of insignificant material value such as bronze-wired earrings and rings, as well as bronze and bone buttons found inside and outside the graves. A bronze coin of the Latin imitative type within the contextual associations of a grave dates the use of the cemetery to the first half of the 13th century.

The analysis of the anthropological osseous remains revealed that ten (10) out of the forty-five (45) graves contained multiple interments; the human skeletal collection comprised sixty (60) relatively well preserved individuals. Physical anthropological studies in skeletal biology indicated that the demographic profile of this population comprised eight (8) females, twenty-nine (29) males and twenty-three (23) infants (Figure 5, Table 2). On matters of the demographic profile the highest mortality prevalence was observed among the males, followed by the infants, and trailed by the females, reversing the relation between infants and males as seen at site “A”; females retaining their third position in sequence as at site “A”. Age assessments indicated mortality ranges between 18 to 58 years for males, and 18 to 35 for females. The mean longevity value between the male subgroups of sites “A” and “B” remained nearly steady, around 38 years, given an extend of 3 more years past 55 for older males in “Site B” yet counterbalanced by a 2 year earlier onset of demographic attrition for young males at 18 compared to site “A”; a consequential parameter to the gene pool dynamics of the population. More ominous was the picture presented by the female subgroup of site “B” that experienced a dramatic fall in its life expectancy to a mean value of only 26.5 years, the lowest female longevity score documented since the

19. Personal communication with land owners, and Antiquities Authority Chief Guard of the region Mr. Katsikas in 1983.

foundation of Abdera in 654 BC²⁰, reaching only at the 62nd percentile²¹ of the female longevity score at site “A” (Figure 6). Additional lines of evidence through osteometric evaluations revealed that both biological sexes at site “B” sustained a decrease of about 3.0 cm respectively in their mean value of standing stature scores compared to respective subgroups of site “A”. Yet, male individuals continued to grow taller by a mean of about 11.0 cm compared to females at site “B”, a proportional consistency with comparable sexual dimorphic data of site “A”²² (Figure 7). Sequencing the decline in stature growth were the morpho-anatomic manifestations revealed from the forensic evaluation of the skeletomuscular systems disclosing gracile skeletal bodies for both males and females, compared to these of site “A”. Additionally, while males were lacking the emphasis of skeletal robustness and accentuated occupational and habitual stress markers which had been observed among their counterparts at site “A”, females at site “B” had been nearly completely sheltered from the intensity of activities²³ which had been reflected by the skeletal bodies of females at site “A”. Despite the changes in biologic growth and mortality prevalence discerned at site “B” the indicia

20. R. M. COOK, *Ionia and Greece in the Eighth and Seventh Centuries BC*, *JHS* 66 (1946), 67-98; A. J. GRAHAM, *The Colonial Expansion of Greece*, in: J. BOARDMAN – N. G. L. HAMMOND (eds.), *Cambridge Ancient History*, v. III: *The Expansion of the Greek World, Eighth to Sixth Centuries BC*, Cambridge 1982, 83-162; Id., *Abdera and Teos*, *JHS* 112 (1992), 44-73; B. H. ISAAC, *The Greek Settlements in Thrace until the Macedonian Conquest*, *Studies of the Dutch Archaeological and Historical Society*, Brill Academic Publishers, Leiden 1986, Vol. 10; *Eusebii Pamphili Chronici Kanones: Latine vertit, adauxit, ad sua Tempora produxit, S. Eusebius Hieronymus*. Edidit J. K. FOTHERINGHAM, London 1923.

21. The female longevity mean of 26.5 years at site “B” represents 61.8% (rounded to 62%) of the 43 year longevity mean of females at site “A”.

22. The considerable lessening of stature potential realized at site “B”, for both males and females, signified population wide adverse changes which had impacted both their physical and social environmental circumstances when compared to site “A”.

23. Yet females had an exquisite status of dental health and hygiene, unparalleled not only to their male counterparts but of any previous period population investigated at Abdera/Polystylon. It is suspected that female home bound “sheltering”, as revealed by the absence of skeletomuscular imprints indicative of systematic lack of field engagement or even trauma from accidental conditions caused by food production processes (unlike for example females at site “A”), must have been purposefully in effect at least partially in avoidance of captivity from the ravaging effects of the Latin invasion and occupation as well as the polemic activities that pertained.

and phenotypic expressions of the population involved revealed consistent findings with these of site “A”.

Regarding aspects of the palaeopathological profile early life stress conditions that had affected the population of site “B”, which based on assessments of arrested and improved growth instances (LEH), had occurred not only at their second and fifth years²⁴ (within the Infancy I age subgroup) but also at their eighth and tenth years of life²⁵ (within the Infancy II age subgroup ranging from the sixth to the twelfth years of life); the latter conditions of biological stress unprecedented as they were in Abdera/Polystylon since the early Classical period were also substantiated by additional manifestations of enameloblastic defects in the form of hypoplastic pitting, hypocalcification and decalcification effects on the surfaces of the dental crowns, as well as a record of arrested growth processes of long bones revealed through Harris’ lines -radiographically observed on long bones’ metaphyseal and diaphyseal loci. Further, adult individuals revealed a gamut of dental pathologies and a predominance of infectious manifestations as well as serious traumatic conditions on axial and appendicular components with subsequent pathogenetic complications, leading to increased morbidity. Such paleopathological assessments clearly underlined a considerable worsening of living conditions at site “B”, when contrasted to comparable aspects of site “A”.

Bone isotopic evaluations at site “B” also revealed a first since the foundation of Abdera, the introduction of a significant intake component of C4 pathway photosynthesizing plant(s), like millet, at 30% proportionality of foods consumed²⁶, tracing a decreased consumption of cereals of choice

24. Exacting a pattern of the latter two out of the three prevalent early life morbidity instances registered at site “A”; that is missing the earliest LEH scores occurring at the first year of life as recorder in site “A”. This is suggested may not indicate an improvement in buffering morbidity at site “B” should it had occurred during the first year of life (as in site “A”) but rather the probability that any similar event of stress at the first year of life at site “B” would have rather turned fatal, hence an interrupted enameloblastic activity would not rebound for an LEH to form and thus record an improved growth process/survivorship.

25. Indicative of a new rostrum of underlying adverse causes rooted in both pathogenicity, trauma, and physical and/or social environmental stress with disadvantageous effects to population survivorship.

26. It should be noted that archaeometric dietary evaluations conducted on samples

since earlier antiquity such as wheat and barley which comprised only 60% of the bulk of food, volumetrically 32% less compared to site “A”²⁷. Such dietary changes were coupled by a considerable diminishing (by 16.667%) of animal based protein intake when compared with site “A” (Figure 8). Furthermore, dental wear and palaeopathologic assessments revealed that the quality of preparation of foods consumed was inferior compared to site “A”. The increased prevalence of pathogenicity and trauma impact, more often than not laden with grave secondary complications of a daunting prospect for the healing process combined with a diminished quality of nutritional intake affecting biological growth as reflected by the decline in standing stature across biological sex boundaries, were signalling of rampant changes with adverse effects that must have pervaded the living conditions at site “B”. Lending support to this thesis were independent lines of evidence based on the retreat of the town behind the fortified acropolis area, the receding of the mortuary activity area at a confined intramural locus and even the behavioral funerary changes reflected by the unprecedented consequences of interment placement and burial feature overcrowding in the cemetery.

Site “C” (13th/14th centuries)

Site “C” is also situated within the acropolis, at the highest elevation area of the low hill of Polystylon, where the ruins of the Episcopal church of the town were discovered. This was a church that combined characteristics of a three-aisled basilica and these of the cross church and has been dated

from the period of the Klazomenaean endeavors to found Abdera in the 7th c. BC indicated either a 19% intake of C4 plants, or a 59% intake of seafood based components; lack of gelatin (collagenous) bone components due to preservation issues hinder a cleared distinction (cf. AGELARAKIS, *The Clazomenian Colonization Endeavor at Abdera*, [as in n. 1], 329; *Id.*, *On the Clazomenaean Quest in Thrace*, 173). Yet, even in the case that C4 plants were used during the Klazomenaean period, their proportionality in the dietary intake would have only reached up to 19%. Hence the established data of C4 based foods at a 30% proportionality in the foods consumed at site “B” of Polystylon clearly presents a significant change in the dietary intake during the 10th/11th centuries.

27. At site “A” C3 pathway photosynthesizing plants such as wheat/barley, comprising 88% of the bulk of foods consumed represented the only kind of quality cereal foodstuffs ingested.

to the 9th-10th centuries. An octagonal baptistry of an earlier basilica had been incorporated at the northeastern corner of this church. Further, the western courtyard of the church was used as a cemetery during the 13th-14th centuries as indicated by the glazed pottery recovered in relative contextual associations²⁸.

Polystylon continued to operate in the Aegean shorelines of western Thrace during the Late Byzantine period as a functional harbor of a small coastal village described as *πολίχνιον παράλιον* according to John VI Kantakouzenos²⁹ and fort, *φρούριον* according to Gregoras³⁰. John VI Kantakouzenos, in strategically addressing issues of security in this important locality had carried out reinforcement works to redoubt the fortress by means of his own funds, apparently remaining in the locality for some time possibly until the completion of the construction works³¹. A gird of fortification walls with a tower, in essence a citadel internal to the peripheral acropolis walls of the small town, have been discovered³². Further, serving inherently as extramural safeguards to Polystylon³³ was the network of roadways connected to the two regional urban centers in the region, namely Anastasioupolis which was rebuilt and fortified by Andronikos

28. AGELARAKIS - BAKIRTZIS, *Cemeteries at Polystylon (Abdera)*, 57-67.

29. I. Cantacuzenus, *Histories* (ed. L. SCHOPEN, *Ioannis Cantacuzeni eximperatoris Historiarum Libri IV*, v. I-III, Bonn 1828-1832), III. 37, v. II, 226 [hereafter Cantacuzenus, *Histories*].

30. N. Gregoras, *Roman History* (ed. L. SCHOPEN - I. BEKKER, v. I-III, Bonn 1829-55), XII. 16, v. II, 626 [hereafter Gregoras, *Roman History*] (relative excerpt: *διὰ δὴ ταῦτα καὶ ἄσμενος, τὴν Διδυμοτείχου ἐπιτροπὴν παραδοὺς Εἰρήνην τῇ συζύγῳ καὶ βασιλίδι σὺν τὰδελφῶ Μανουὴλ τῷ Ἀσάν, ἀφίκετ' εὐθὺς καὶ ὠχύρου τὸ φρούριον, ὃ Πολύστυλον ὀνομαζόμενον πάλαι πρὸς θάλατταν νῦν αὐτὸς ἐξ οἰκείας δαπάνης συνεστήσατο παρὰ τὰς τοῦ Νέστου ἐκβολάς*).

31. *Ibid.*, and relative excerpt: *ἄρτι δ' εἰς πέρας ἦγοντες τῆς οἰκοδομίας, ἀφικνεῖσθαι πλησίον ἡμελλε καὶ Χρῆλης ὁ Τριβαλλός*, providing for a terminus ante/post quem of 1342 AD relative to the subsequent military engagement in Christopolis, *ibid.*, 627.

32. Ch. BAKIRTZIS, *Byzantine Thrace* [as in n. 4], 158-162. *Id.*, *Western Thrace in the Early Christian and Byzantine Periods* [as in n. 3], 45-46; BAKIRTZIS - ZEKOS, *Ανασκαφή Πολύστυλου Αβδήρων*, 12-17; BAKIRTZIS, *Ανασκαφή Πολύστυλου Αβδήρων* (1983), 13-19; BAKIRTZIS, *Ανασκαφή Πολύστυλου Αβδήρων*, (1982), 18-26.

33. The remaining stronghold at the shoreline.

III and renamed Peritheorion (*Περιθεώριον*)³⁴, at the innermost nook of the Vistonis lagoon and Xantheia³⁵, at the entry point of passage into the endoplains of the Balkans³⁶. Yet, Polystylon must have already sustained considerable socio-economic decline as a result of the military strife and administrative decentralization processes that had taken place during the period of rule under the Latin occupational forces³⁷, and to the ensuing pivotal issues of insecurity and conflict in the region. Following the Latin occupation the bishopric of Polystylon was subsumed under the dominion of the metropolis at Trajanopolis³⁸. Further, during the second civil war (1341-1347AD) it clearly appears that Polystylon placed its loyalties with the side of Emperor Kantakouzenos, hence positioned at odds and facing hostilities it is deduced with administrative and military (involving both land routes and naval operations) consequences by order of the megas doux Apokaukos. Polystylon had already derived significant benefits from Kantakouzenos'

34. Referred to as *Περιθόριον* by Gregoras, and *Περιθεώριον* by Kantakouzenos; the latter is suggested to be the proper name as Kantakouzenos was present at Peritheorion and its region multiple times both under his capacity as *μέγας δομέστικος*, and *βασιλεύς*, cf. Gregoras, *Roman History*, XIV.1: v. II, 692, and XIV.10: v. II, 728; Cantacuzenus, *Histories*, II. 38: v. I, 542, and III. 37: v. II, 225; III. 86: v. II, 533.

35. Gregoras, *Roman History*, XIV.10: v. II, 727-728; Cantacuzenus, *Histories*, I. 52: v. I, 262, and III. 86: v. II, 530-534.

36. In the middle of the 1380s with the advent of the Ottomans in the region the days of Polystylon were coming at an end, whereas a new center emerged in the region, the Ottoman settlement of Yenisea located at the center of the plains of Xanthe, cf. A. AGELARAKIS and CH. BAKIRTZIS, manuscript titled: "Physical Anthropology and Human Skeletal Remains: The Abdera/Polystylon Project (Three Cemeteries from the 6th to the 14th Centuries)". An abstract of the manuscript was submitted and printed in *Abstracts of 21st International Congress of Byzantine Studies*, British National Committee of the Association Internationale des Etudes Byzantines, London, 2006.

37. See K. M. SETTON, *The Papacy and the Levant, 1204-1572*, v. 1: *The Thirteenth and Fourteenth Centuries*, Philadelphia 1976, 12; G. OSTROGORSKY, *History of the Byzantine State*, Oxford, 1993, 417, 449-450; cf. the adjacent bishopric of Poros that was never to be reinstated having ceased to exist since the Latin occupation, GEORGANTZIS, *Ἡ ἐκκλησιαστικὴ ὀργάνωση καὶ διοίκηση τῆς Δ. Θράκης κατὰ τὴ Βυζαντινὴ ἐποχὴ* [as in n. 3], 206.

38. AGELARAKIS - BAKIRTZIS, *Cemeteries at Polystylon (Abdera)*, 57-67; cf. GEORGANTZIS, *Ἡ ἐκκλησιαστικὴ ὀργάνωση καὶ διοίκηση τῆς Δ. Θράκης κατὰ τὴ Βυζαντινὴ ἐποχὴ*, 201-219 (particularly 207 with quote "Τραϊανουπόλεως ἦτοι Μαρωνεΐας").

reparations and redoubt of its fortifications³⁹. In 1342 while advancing with his military forces toward Thessaloniki Kantakouzenos paused at the stronghold of Polystylon, having cleared Apokaukos' militias from the roadways, and acknowledging their loyalty he supplied the population with provisions of wheat and strengthened the functional abilities of the fort by allocating soldiers to assist in matters of military operations and issues of defense⁴⁰. Although a conjecture, it is suggested that Polystylon may have offered to Kantakouzenos, probably as a matter of forethought, an advantageous safeguard, a strategically located refuge, in western Thrace during certain periods of the six years of strife while he was unable to return to Constantinople.

In reference to the archaeo-anthropological record of site "C" 20 graves were recovered and studied in detail from this Late Byzantine Period. These were box-shaped graves of meagre construction quality, built with the use of small stones and bricks with the exception of six graves which revealed a more elaborate construction (Ill. 5, 6) and out of which only two were found to retain covering stones. In another case the interment was only covered with earth deposits, a simple inhumation. In two occasions secondary burials were documented, the osseous remains of which had been carefully collected at the edges of the graves, an aspect of burial customs in family graves, as also observed in sites "A", and "B", in respectfully treating the osseous remains of earlier interments. The use of wooden coffins was also determined in two cases as indicated by the iron nails used in the construction of coffins recovered at the peripheries of the skeletal bodies; this was in concert with manifestations first recorded in Polystylon at site "B".

Analyses of the anthropological osseous remains revealed that four out of the 20 recovered graves yielded multiple interments. The population sample at site "C" comprised 24 relatively well preserved individuals. Physical anthropological studies in skeletal biology indicated that the demographic

39. Not unlike the strategic considerations of security conducted in the region, at Peritheorion, while he was serving to Andronikos III as Megas Domestikos, cf. Cantacuzenus, *Histories*, II. 38: v. I, 542.

40. Cantacuzenus, *Histories*, III. 37: v. II, 226 (relative excerpt: βασιλεὺς δέ, ὡς μάλιστα ἐνήν, τὸ νῦν μὲν Πολύστυλον, ἐν τοῖς Ἑλληνικοῖς δὲ χρόνοις Ἄβδηραν ὀνομασμένον, πολίχνην παράλιον ὄν, ὑπ' αὐτοῦ τε ὠκοδομημένον πρότερον καὶ τότε διὰ τὴν ἀρχαίαν εὐνοίαν οὐκ ἀποστάν, πολλῆς προνοίας ἀξιόσας, σίτον τε αὐτοῖς ἐπιχορηγῆσας καὶ στρατιώτας πρὸς ἐπικουρίαν ...).

profile of this skeletal population sample comprised one female, eight males and 15 infants (Figure 9, Table 3). Hence, aspects of the demographic profile of this population indicated the highest mortality prevalence among the infants, followed by the male individuals, and the single female; a mortality curve in concert with the dynamics documented at site “A”, yet variant of site “B” where males prevailed in mortality scores having reversed positions with the infants. There was however a consistency among the mortality curves of all three sites in regard to female individuals who were assessed to have tallied the lowest prevalence as demographic cohorts among the respective population subgroups. Characteristically in comparing females as demographic subgroup components they comprise 12.50% of the population sample at site “A”, 13.33% at site “B”, and just 4.16% at site “C”. Further, when juxtaposed to the cohorts of their male counterparts, female numbers score only 31.25% of the male subgroup at site “A”, 27.58% at site “B”, and 12.50% at site “C”. Female mortality prevalence increases at site “B” compared to site “A”, to dramatically diminish at site “C” (see Figure 9) not as a measure of extended survivorship, it is suggested, but rather reminiscent of the census results which had carefully recorded a significant decline of the female cohorts⁴¹.

Age at death assessments indicated a range of variation between 18 to 50 years for males, at a mean value of 34 years which closely reached up to the 90th percentile (%) of male longevity mean that was nearly steady at 38 years at both previous sites “A” and “B”. The single female individual recovered from site “C” provided an age at death assessment at 40 years placing it at the 93rd percentile (%) of the site “A” female longevity mean at 43 years, while scoring at the 151st percentile (%) of the site “B” female longevity mean at 26.5 years (Figure 10). Osteometric calculations at site “C” available only from male individuals⁴² revealed that the standing stature measurements ranged between 165.5 to 175.5 cm, a mean value of 170.5 cm, identical to that of the males at site “A”, and closely at the 102nd percentile score of the males at site “B” at 167.35cm (Figure 11).

Studies in skeletal morphologic and phenotypic variability disclosed consistent indicia with these of both earlier sites. Further, evaluations of

41. A. E. LAIOU-THOMADAKIS, *Peasant Society in the Late Byzantine Empire: A Social and Demographic Study*, Princeton 1977, 267 ff.

42. A poorly preserved skeleton comprised the only female individual of this population sample.

skeletal biologic growth and development revealed a notable expression of emphasized skeleto-muscular robustness detected among the males of site “C”, of significant build up compared to these of site “B”, simulating skeletal manifestations that had been observed among males of site “A”. Yet from a scope of demographic dynamics the male cohort at site “C” comprised 33.33% of the population sample compared to 48.33% at site “B” and 40.0% at site “A”. The tapered proportionality of the male cohort, the lowest among the three sites, was tangential to the overall diminishment of the population sample at site “C”. On the contrary the mortality prevalence within the Infancy I age subgroup revealed the highest proportionality at site “C”⁴³ with an ominous record of 62.5%, clearly reflective of even an unsustainable demographic replacement. The early life stress conditions were possibly as apocalyptic based on dental and skeletal pathologic manifestations documented at site “C” which surpassed any comparable conditions observed among the populations of both earlier sites. Infectious and acquired pathogenic conditions⁴⁴, although prevalent throughout all age subgroups, were overshadowed by the prevalence and gravity of the traumatic conditions and their morbid complications that affected the adult males compared to any of the previous Byzantine populations and further diachronically to the early stages of the foundation of Abdera.

The vast majority of traumatic conditions sustained were not the result of accidental instances, for example of food production and economic output processes⁴⁵ having been caused by conditions of grievous, close encounter, armed conflict and/or engagement in warfare⁴⁶. In retrospect, the prevalence and seriousness of trauma impact was reflective of a population in blatant existential distress based on circumstances which must have deterministically eclipsed their organizational abilities and buffer mechanisms to alleviate morbidity and mortality caused by trauma and pathological stress. Additionally, the unique prevalence, when compared to sites “B” and “A”, of non-metric epigenetic traits with emphasis on

43. Mortality prevalence within the Infancy I age subgroup was at 38.33% at site “B”, and 46.15% at site “A”.

44. Such as primary periosteal reactions, traces of mild anemias and vitamin C, and D deficiencies.

45. Or due to changes caused by physical environmental parameters.

46. Including an aberrant case of a decapitated veteran.

dental manifestations of the Carabelli trait revealed a discernible decrease in gene pool variation of this population sample indicative of gene flow restrictions regarding population genetics, strongly suggestive of relatively endogamous conditions⁴⁷ and circumstances of population isolationism. The latter suggestion reflects on a rostrum of new realities at site “C” indicative on the reliance for progeny to localism based not on arbitrary social behaviors of sectionalism from the regional fabric of Byzantine populations but caused instead by significant obstacles of consequence to accessing those demographic pools brought about by the catalytic infiltration of Turkic marauding invaders into the country side steadily and dangerously restricting the grids of communications between Polystylon and the regional communities such as the urban centres of Peritheorion and Xantheia.

Furthermore, dental palaeopathologic data clearly indicated that the foods consumed were less well prepared compared to the earlier sites, while chemical bone isotopic analyses showed an additional decrease in consumption of C3 pathway photosynthesizing plants (51% by volume of intake compared at 60% at site “B”, and 88% at site “A”) such as wheat and barley, and a further lowered proportionality of animal protein intake (8% by volume of intake compared at 10% at site “B”, and 12% at site “A”), see Figure 12. Incidentally, the animal protein intake at site “C” provided an archaeometric signature distinctly deficient in marine foodstuffs; the latter providing for an unprecedented dietary trait in the diachronic range of Abdera/Polystylon. Whereas plants with a C3 chemical signature and animal protein intake marked the lowest values at site “C”, compared to both earlier sites, the intake of foodstuffs based on plants with a C4 chemical signature reached the highest proportionality (41% by volume of intake, compared to 30% at site “B”, and having been absent at site “A”). This was singularly unique through the diachronic range of Abdera/Polystylon since the Klazomenaeon endeavors at the shores of Thrace to found Abdera in the 7th c. BC. Hence, the dietary intake of site “C” individuals was rendered the poorest volumetrically in animal protein intake (chiefly derived from terrestrial sources) since the foundation of Abdera, while it was uniquely dependent on terrestrial, hardy, C4 plant sources than ever before in the history of Abdera/Polystylon.

47. Involving an increased reshuffling of genetic information within the confined boundaries of a decreased reservoir of genes.

Discussion

In offering some concluding remarks it appears that the population of site “A” presents skeletal record data that simulate a continuum to the human condition from the Hellenistic-Roman phases of the ancient polis of Abdera. This refers to the dynamics of the demographic and palaeopathological profiles, of epigenetic variation and biological growth, of morphologic and skeleto-muscular adaptations relative to food production as well as of dietary intake issues supported by archaeometric analyses. Such data reflect, in combination with the rest of the archaeological record on broader issues of social and physical environmental contexts of the population involved during this period. It appears, for example, that the population size of Polystylon had not yet been drastically reduced as it continued to offer in issues of progeny the availability of a larger gene pool, indicative of no major or long lasting interruptions in the movements of people to and from other destinations based on skeletal-dental evidence that showed absence of gene flow restrictions in reference to the dynamics of population genetics. It was also possible to deduce that there was an adequate availability of resources, economic output undertakings with anticipated aspects of trade and of relative safety in regards to accessibility of activity areas distributed spatially within the broader region as well as the domains of the extent of the ancient city. Although there were no abrupt changes from earlier time periods, namely since the Classical period, to the conditions of biological growth, to dietary intake⁴⁸ and the palaeopathological profile of the population sample involved, it was nevertheless apparent from the archaeo-anthropological record on aspects of the funerary activity area along with the burial customs and practices that the initial period relative to site “A”, ranging from the 6th to the 10th/11th c., provided for a transitional juncture which served as nexus from polytheistic antiquity to Christianity with its new realities, experiences, and cultural traditions.

48. For example the archaeometric analyses on dietary evaluations revealed an identical proportionality of resource intake between the Classical, Hellenistic and Early Byzantine (Site “A”: 6th to 10th/11th c.) periods at Abdera/Polystylon (see footnote 57 *infra*).

During the subsequent Byzantine period at site “B”, dated to the 12th/13th c. the Polystylon population sustained itself under living conditions of aggregate permanently relocated to be shielded as rendered necessary behind fortification walls. These rather tumultuous times⁴⁹ were associated with the oppressive and taxing impact of the 4th crusade and the onerous consequences of the Latin occupation⁵⁰ including the ensuing strife and polemic campaigns of the Despotate of Epirus and the Nicaean Empire to reclaim from the Latins and eventually Bulgars, by conquest, captured territory in Macedonia and Thrace⁵¹, the raids carried out by Cumans⁵², as well as seaward piracy. Certainly, the pervasiveness of male fatalities at site “B”, surpassing the mortality prevalence (while initiating three years earlier namely at 18 years of age) compared to relative cohorts of both the preceding and following Byzantine periods investigated at Polystylon, may warn of the exacting challenges afforded on the occupants of the town. It is further deduced that the population involved during the first half of the 13th c. (as provided by the relative date of the cemetery use) was in fact increasingly vulnerable to compromised living conditions with compound exposure to contaminants, pathogens, contagious disease and overall increased conditions of stress. This may be epitomized, in addition to the male predicament, by the uniquely atypical peak of early female mortality

49. The walls may have provided some measure of defence and protection from external pressures and dangers.

50. See, e.g. D. M. NICOL, *The Last Centuries of Byzantium, 1261-1453*, Cambridge Univ. Press 2002; D. E. QUELLER - T. MADDEN, *The Fourth Crusade: The Conquest of Constantinople*, Philadelphia 2000; J. GODFREY, *1204-The Unholy Crusade*, Oxford 1980; SETTON, *Papacy*, v. 1, 8ff.

51. A. MILLARAKIS, *Ιστορία του Βασιλείου της Νικαίας και του Δεσποτάτου της Ηπείρου (1204-1261)*, Athens 1898; D. M. NICOL, *The Despotate of Epiros, I (1204-1267)*, Oxford 1957; S. J. LANGDON, *John III Ducas Vatatzes' Byzantine Imperium in Anatolian Exile, 1222-1254: The Legacy of his Diplomatic, Military and Internal Program for the Restitutio orbis* [Dissertation-Univ. California Los Angeles, University Microfilms International], Ann Arbor, Michigan 1979; D. J. GEANAKOPOLOS, Greco-Latin Relations on the Eve of the Byzantine Restoration: The Battle of Pelagonia-1259, *DOP* 7 (1953), 99-141; A. AGELARAKIS, Cretans in Byzantine foreign policy and military affairs following the Fourth Crusade, *Κρητικά Χρονικά* 32 (2012), 41-78.

52. Cf. F. EVANGELATOU-NOTARA, Πολεμικές επιχειρήσεις στη Θράκη τὸ θέρος τοῦ 1247, *BF* 14/1 (1989), 189-197.

at a mean of 26.5 years when juxtaposed to female mortality scores of any earlier period at Abdera/Polystylon⁵³. Thus, forensic anthropological data provide no slender evidence of an abnormal condition of early demographic attrition particular to the female biological sex. The potency of morbidity by infectious disease in an aggregate environment would have affected females⁵⁴ more intensely than males should gender relative role distribution have allocated to home bound females⁵⁵ the overall care of the young and the elders and particularly of wounded and/or pathogenically distressed individuals. Such a context of female predicament, as revealed by the dynamics of site “B”, be that as it may a random sample of a provincial Byzantine town in the region, may illuminate if not at least partially serve to explain important underlying causes of the population decrease phenomenon as recorded in *ἀπογραφὰι*⁵⁶ taking place a few generations later. The circumstances of the uniquely premature mortality of adult females would have afforded significant impairment to the organizational abilities and capacities, as well as the overall stability of the socio-cultural system involved with imminent impacts to coeval and future prospects of livelihood, the transference of intergenerational wisdom and even population survivorship⁵⁷. The latter, along with the high prevalence of male mortality documented during this period, apparently had serious progeny consequences traceable in the impoverishment particularly of the peasants and country-dwellers and plight of *λειψανδρία* that affected a multitude of Byzantine abilities and capacities recorded during the *ἀπογραφὰι* of the early years of the 14th c. This thesis

53. Compared for example to the preceding site “A” female mean of mortality at 46 years, female longevity at site “B” sustained a most significant drop by 42.392%.

54. Although regarding the purview of female attrition the compounding effects of succumbing to direct (i.e. fatality by missile impact during a siege) or indirect (issues relative to the realm of cultural mandate(s) at times of grievous distress including personal choices made such as suicide) consequences of acute conflict and its outcomes such as abduction/enslavement attempts by exogenous forces with emphasis on the conduct of the Latin occupants should not be excluded.

55. Sheltered to exposure of physical activities that had been routine for females at site “A”, as revealed through anthropological analysis presented above.

56. Cf. LAIOU-THOMADAKIS, *Peasant Society*, 222; 227-228.

57. Older female individuals would have transferred medical remedies and know how at least in circumstances of assisting younger females in times of childbirth and the rearing of the very young.

may also offer a fine-tuning in the explanatory arguments claiming that *πενία ἀνδρῶν* was rather the result of male casualties at the battlefield and/or the fragmentation of the peasant extended household to individuation effects of the nuclear families⁵⁸. Apropos, this also elucidates further aspects of competing explanatory arguments on the discernible underrepresentation of females in early 14th c. censuses, lending support (based on the dynamics of the provincial town of Polystylon, as a case study) to the proposed explanation that the causes may not have been the result of partiality on the side of the sensor nor the result of female infanticide⁵⁹.

It also clearly appears, through archaeometric results, that contributing further to the unprecedented morbidity causing pressures and the undermining of biological growth and physiological development of the population members at site “B” were significant restrictions afforded on the proportionality of nutritious dietary intake as identified by the considerable decrease in consumption of animal protein (by 16.67% compared to site “A”) and prime choice cereals (by 31.82% compared to site “A”) of the C3 photosynthesizing chemical signature, proportionally replaced by the introduction of foodstuffs of C4 photosynthesising plants (see Table 4) that were not considered in generations past of the Classical, Hellenistic, Roman and Early Byzantine Abdera as proper for human consumption⁶⁰. These dietary intake archaeometric results, it is suggested, are traceable measures of emergency conditions concomitant with significant limitations in the functional accessibility and/or limited use of extra-mural physical space for purposes of food production and resource acquisition⁶¹, signalling

58. Cf. LAIOU-THOMADAKIS, *Peasant Society*, 223-266 *passim*.

59. This study is in agreement with the argument made by LAIOU-THOMADAKIS, *Peasant Society*, 267ff; however, this study may not lend any support to the argument (*ibid.*) proposing that female infanticide was a reason for the underrepresentation of females in early 14th c. censuses--in the case of infanticidal acts the archaeo-anthropologic analysis at site “B” would have documented a number of perinatal individuals interred.

60. AGELARAKIS, *Deciphering the Archaeological Record Through Physical Anthropology* [as in n. 12], 856-857; ID., *Aspects of Demography and Palaeopathology*, 17; ID., *The Clazomenian Colonization Endeavor at Abdera in Retrospect*, 173.

61. Significant restriction of physical activities and processes which had been considered routine at site “A”, but also in the acquisition of important food resources, with diminishing animal protein intake, yet coping under the new conditions by resourcefully relying of hardy, resilient, C4 plant food source(s).

threats to safety from external pressures and signifying overall economic distress and resulting to even intra-mural logistical considerations impacting specialized activity areas including these for funerary purposes. Incidentally, coeval truncation impact of burial features by subsequent interments with a considerable prevalence, particularly in vertical stratigraphy, was unprecedented as such at any other Abdera/Polystylon excavated burial grounds and cemeteries. Insofar as the stratigraphic relations between primary superimposing and truncated secondary burials, it appeared that there must have been in effect a matter of limited spatial availability for funerary activities. This may be illuminating of broader parameters on spatial restrictions for human specialized activity areas in involuntary aggregate living conditions such as in refuge seeking areas behind fortification walls. It is at this juncture in time that the probability can be inferred for Polystylon that it would have received behind its wall of fortification a number of villagers and *παροικοι* (with basic valuables and some domestic animals) reflective not only of matters in need for safety but also of the consequences of abandonment of at least the outermost zones of productive land, rendering the acquisition of local and traded resources insufficient and/or easier depleted when available and resulting to economic downturn and impoverishment, as well as in the weakening of the prospects for optimal biological growth of the population involved with hardships and disadvantages in even attaining an expected progeny potential.

The Late Byzantine period as observed at site “C” (dated to the 13th/14th c.) was indicative of ominous demographic circumstances given the tumultuous circumstances of the period⁶², as assessed through the very high infant mortality reflected in the available population sample at a prevalence of 62%, compounded by the diminishing number of adults with unique emphasis on females and the dire prospects of fertility and progeny when compared to any period since the foundation of Abdera at the 7th c. BC. Certain male morpho-metric indicia, such as those of standing height and skeleto-muscular robustness, showed a rebound of biological growth

62. Parenthetically to note Andronikos' II order to evacuate people in the endoplains and to repair-fortify the towns, cf. G. Pachymeres, *Historical Relations*, ed. A. FAILLER, *Georges Pachymères Relations Historiques*, v. 1-5 [CFHB 24/1-5], Paris 1984-2001 [hereafter Pachymeres, *Historical Relations*], VII.37: v. III.121.

issues, particularly on skeletomuscular robustness and standing height, to conditions that had been characteristic of the site “A” but unattainable at site “B”. An explanatory postulate regarding this matter of rebound biological growth conditions at site “C” would offer as a basis of reason a diminishing severity of strict aggregate living and thus of a reduced extent of contagious pathogenicity and morbidity potential within the fort, at least during the earliest decades of life of the adult individuals in the population sample involved compared to their cohort of site “B”. Further, it is proposed that both memories and experiences lived and acted during site “B” had been transferred through intergenerational wisdom to the members of site “C”, therefore allowing the implementation of gradually developed buffer mechanisms and strategies, if not to safeguard, to at least provide for abilities to cope with dietary resource procurement⁶³ in periods of siege by pillaging and plundering bandit groups of Turks⁶⁴ with emphasis on the intake component of C4 plants⁶⁵ compared to the stressful conditions of

63. It is suggested that the population of Polystylon in addition to other means of securing food resources actively cultivated small fields and gardens inside the refuge of the fortification walls. This argument resonates the statements made on the cases of other Byzantine walled cities such as Constantinople and Thessalonike, cf. A. E. LAIOU – C. MORRISSON, *The Byzantine Economy*, Cambridge University Press, New York, 2007, 197; It should be noted that the land girded by the Polystylon fortifications comprises fertile sediments and has been cultivated as parceled farmland privately owned as attested by personal communication of A. AGELARAKIS in the 1980s (see also footnote 19, *supra*) with the landowners with no recorded interruption in recent memory since the 18th c., with the exception of the WWII period.

64. Turks that had remained in Thrace since the Catalan marauding but particularly by reason of the second civil war (1341-54), making a living “...as mere bandit groups...” raiding the Byzantines under the exercise of holy war against the Christians, cf. C. G. LIAKOPOULOS *The Ottoman Conquest of Thrace: Aspects of Historical Geography*, Bilkent University, Ankara 2002, 56.

65. Based on the archaeometric results on dietary intake it appears that C4 plants proved to be a resourceful alternative, as a considerable volumetric replacement of C3 plants, initially harvested for human consumption during emergency periods (i.e. during the period of site “B”) but consequently established as a considerable food stable component (at site “C”). Further, juxtaposing archaeometric dietary results to skeletal biological growth indicia, particularly of the male individuals of site “C”, it appears that C4 plants in addition to their reliable capacities to yield to the population of Polystylon a preferred crop alternative to C3 plants in times of extramural stress, must have also not lacked in providing for adequate nutritious value.

malnutrition and/or undernutrition effects afforded at site “B”, manifested conditions that had been unprecedented during earlier centuries at Polystylon. Yet the discernible qualitative worsening of nutritional intake with a focus on the component of animal protein has been archaeometrically substantiated to have been more acutely decreased than at site “B” (see Table 4), and in fact, since the Early Classical period at Abdera/Polystylon provided no slender evidence for a much constrained living within the fortification walls with an emphasis on matters of defence against the looming encroachment and raids of enemy forces, restricting as it were even in the gathering of the nutritive in protein resources available from the most bountiful littoral zone of Polystylon at the very foreshore terrace of the fort. This was coupled, as revealed through the palaeopathological profile, by the dwindling organizational ability to buffer the sharply intensified exogenous strain of polemic aggression with consequences of rampageous physiologic and pathologic stress afforded on the Late Byzantine population. The severity of traumatic manifestations, caused by combat encounters, sustained by the vast majority of male individuals at a prevalence comparable to effects of an epidemic impact, describe as they may the overwhelming predicament faced by the members of Polystylon at site “C”. Further, given that there was no discrimination in the distribution of trauma impact among intra-male age subgroups involved, or according to social standing--should the semantics of the type of burial features reflect on such references, it appears that both younger and older and without any distinction between social classes⁶⁶ had been involved in the defence of the fort. Hence, Polystylon data at site “C” may be taken rather to lend support to the kind of evidence one would come to retrieve from the human skeletal record reflecting on *intra vitam* implementations of what Thomas Magister had counselled that both poorer and richer citizens should be able to carry out tasks in support of military affairs and to serve as auxiliaries to state military forces⁶⁷.

66. Contra FRANCÈS, E. argument in “La feodalité byzantine et la conquete turque”, *Studia et Acta Orientalia*, 4 (1962), 69-90.

67. Cf. Thomas Magistros, *Λόγος περὶ πολιτείας*, ed. J. P. MIGNÉ, *PG*, 145, cols. 495-548. M. BARTUSIS, Urban Guard Service in Late Byzantium: The Terminology of the Institution, *Macedonian Studies* 5 (1988), n.s. 2, 52-77.

Historical events that took place during the 13th and 14th centuries involved a plethora of political and military circumstances⁶⁸ which progressively jeopardized the implementation effectiveness and control of the central Byzantine government over its provinces. As a consequence, specifically after year 1305⁶⁹, individual towns in Thrace relied mainly, in a trend of autonomy⁷⁰, on their inhabitants for matters of defence against invading hordes particularly of the Alans, the Catalans and their Ottoman allies. It is suggested that the excessive load of male traumatic injuries at site “C” offer evidence of the Polystylon inhabitant-soldiers who stood to protect material and abstract values as identified and/or symbolized by their provincial Byzantine town in Thrace⁷¹.

It appears that the fate of Polystylon provides a simulation for the fate of many Byzantine towns and in some ways of Constantinople and its central administration. Polystylon, although it had already faced decentralization and fragmentation⁷² from its administrative and military organizational alliance network (i.e. the functional *terminus* of the Macedonian and Thracian *themes*⁷³) by the cataclysmic effects of the fourth crusade and Latin occupation, had not been immune to the challenging endeavors and rivalries of the Nicaean Empire and Despotate of Epirus⁷⁴ for the epanorthosis of Constantinople with involvement of the Bulgars

68. See NICOL, *Last Centuries*, passim.

69. Following Michael IX's defeat at Apros in 10/6th/1305, see Pachymeres, *Historical Relations*, XII. 31-32: v. IV, 597-605; Gregoras, *Roman History*, VII. 4: v. I, 227-232.

70. Cf. E. ZACHARIADOU, Ἐφήμερες ἀπόπειρες γιὰ αὐτοδιοίκηση στίς ἐλληνικῆς πόλεις κατὰ τὸν 14ο καὶ 15ο αἰῶνα, *Αριάδνη* 5 (1989), 345-351; D. KYRITSES, The “Common Chrysobulls” of Cities and the Notion of Property in Late Byzantium, *Σύμμεικτα* 13 (1999), 229-245.

71. Cf. BARTUSIS, Urban Guard Service in Late Byzantium, 52-77; see also fragment on soldiers dedicated to guard streets and pathways due to war circumstances in Cantacuzenus, *Histories*, I. 43: v. I, 210

72. A. CARILE, Partitio Terrarum Imperii Romaniae, *St Ven* 7 (1965), 125-305.

73. They had merged in one *theme* during the latter half of the 10th c., within the period of site “A”, cf. D. ZAKYTHINOS, Μελέται περὶ τῆς διοικητικῆς διαίρεσεως καὶ τῆς ἐπαρχιακῆς διοικήσεως ἐν τῷ Βυζαντινῷ Κράτει, *ΕΕΒΣ* 18 (1948), 42-62.

74. D. M. NICOL, *The Despotate of Epiros, 1267-1479: A Contribution to the History of Greece in the Middle Ages*, Cambridge 1984.

and the clandestine engagement of the Papacy⁷⁵. It must have also been affected by the earthquakes of June 1296 and August 1303⁷⁶, the pirates that ravaged the Aegean and its seashores, the ruthless pillaging afforded by the interruption of communications with Constantinople caused by the devastating mar of the Catalans⁷⁷ and their marauding mercenary-allies⁷⁸, the Tartar invasion⁷⁹, the Venetian-Genoan conflict which offered no safety for coast living Byzantines, the pressures of Uroš' incursion⁸⁰, the

75. D. J. GEANAKOPOLOS, *Emperor Michael Palaeologus and the West 1258-1282: A Study in Byzantine-Latin Relations*, Cambridge-Massachusetts 1959.

76. For June 1296 by Gregoras, *Roman History* VI.8, v. I:202, and Pachymeres, *Historical Relations* IX.15: v. III. 259. For August 1303 by Pachymeres, *Historical Relations*, XI.11: v. IV, 429.

77. Gregoras, *Roman History*, VII.9: v. I, 262. All towns had been pillaged except for Constantinople, Adrianopolis, Christopolis, and Thessaloniki cf. Ramon Muntaner, *Chronicle*, translated by Lady Goodenough, Publications Catalan Series, 2000, Cambridge, Ontario, chapter ccxxviii, 453-454.

78. Pachymeres X. 23: v. IV, 365 calls the Turks as *σύμμαχοι*-allies [*συμμάχους ἔχειν καὶ πρὸς τὴν καταδρομὴν συλλήπτορας ἰκανούς*], Gregoras as *μισθοφορικὴν συμμαχίαν*-mercenary allies: see N. ΟΙΚΟΝΟΜΙΔΗΣ, The Turks in Europe (1305-13) and the Serbs in Asia Minor (1313), in: E. ΖΑΧΑΡΙΑΔΟΥ (ed.), *The Ottoman Emirate (1300-1389)*, Crete University Press, Herakleion, 1991, 159-168. While Melik with the Tourkopouloi deserters (1000 horse/500 on foot) submitted to the Serbian Kral [cf. Gregoras, *Roman History* VII. 6: v. I, 248-249] the Turks under Halil (1300 horse/800 on foot) after returning back from the passage of Christoupolis fortified themselves in Kallipolis and for 2 years (starting in late summer of 1311) [cf. Gregoras, *Roman History* VII.9: v. I, 262] ravaged Thrace so that the Byzantines shut themselves in the forts and could neither plow or sow their lands (*Ὦς μὴτε ἄροτριᾶν, μὴτε σπεύρειν τῶν πόλεων ἐξιόντας δύνασθαι Ῥωμαίους ἐφ' ὄλοις ἔτεσι παρὰ βραχὺν δύσιν*). The Serbian Kral Milutin sent 2000 cavalry to help the Byzantines to subdue them as it happened at the end. Also note that with the initial 500 Turk mercenaries invited from western Asia Minor many more came to the Catalans as volunteers, just for the booty and giving 1/5 to the Catalans. Some were Turkopouloi that had deserted Andronikos II, and even some Greeks who had followed the Catalans to Asia Minor in earlier years as they were starving in Konstantinople when the Catalans first came in.

79. The Tartars were occupying Bulgarian territory but acting separately from the Bulgarian King. They invaded Thrace in 1320 up to Adrianople and then again in 1321. The local Byzantines were abandoning all movable materials and hid behind the forts.

80. Many places in Macedonia were destroyed, others devastated, their inhabitants were taken as captives—Andronikos himself weeps the loses, cf. Pachymeres, *Historical Relations*, X. 9: v. II: 323-324.

unsuccessful defensive struggles of Michael IX, the opportunistic raids of the Alans and Bulgars that ravaged Thrace (until the summer of 1307), the sea bound piracy raids of 1341 including those of the maritime Turkoman emirates⁸¹, the destruction and destabilization provided by the Andronikoi civil wars⁸², the regional encroachment, ruinous damages and loss of wealth to Serb allies and Ottoman mercenaries by means of the second civil war⁸³, the detriment to food production caused by weather conditions in 1344⁸⁴, the devastation caused by the Serbian and Turkish invasions of 1345⁸⁵, coupled by the conditions created by the implications of Momchil up to the battle of Peritheorion in 1345⁸⁶, and even the most dramatic and ever devastating effects of the plague in 1347⁸⁷.

Polystylon, as a provincial Byzantine town and fort, facing such quandary of apocalyptic magnitude had been exposed unilaterally to fend off mounting external pressures. It had been seriously diminished in its capacities for economic productivity and abilities to secure personnel, funds, as well as resources for all logistical concerns. Further, Polystylon exhausted by a drastic population decline, if not only due to the civil strife that ended

81. Aydin, Mentеше, Sarukhan in the 1320' and not the Ottoman Turks that had taken western Asia Minor, cf. A. E. LAIOU, *Constantinople and the Latins; The Foreign Policy of Andronicus II (1282-1328)*, Harvard University Press, Cambridge, Massachusetts 1972; NICOL, *Last Centuries*, 188.

82. Between Andronikoi II and III during 1321-1322, and 1327-1328 with destructive effects afforded on the land, population and state resources, cf. Cantacuzenus, *Histories*, I. 25: v. I, 137-138, and further between John VI Kantakouzenos and the regency of John V Palaiologos, cf. Gregoras, *Roman History* XV. 1: v. II. 747-748.

83. During 1341-47, with considerable social strife between the aristocracy and the μέσοι and with significant economic consequences, cf. LAIOU - MORRISON, *The Byzantine Economy*, 195-200.

84. Gregoras, *Roman History* XIV. 6: v. II, 711-712.

85. Gregoras, *Roman History* XV. 1: v. II, 747-748.

86. Momchil ("ruler of Rhodope") was granted all territory as *Sebastocrator*, east of Nestos to Komotini hence including Polystylon, by John VI Kantakouzenos, but he changed to the regency's side as *Despote* and burned Umur Bay's soldiers' ships in Porto Lagos and ravaged the land ... in the summer of 1345 at Peritheorion Momchil was defeated, by Kantakouzenos' army supported by his friend and ally Umur Bey, see Gregoras, *Roman History* XIV. 9: v. II, 728-729; Cantacuzenus, *Histories*, III. 86: v. II, 531-534.

87. Gregoras, *Roman History* XVI. 1: v. II, 797-798.

in 1347, but also of the plague that stroke the same year, had already befittingly been portrayed by John VI Kantakouzenos five years earlier as *παράλιον πολίχμιον* (a village by the shoreline)⁸⁸. It would have seem to have easily faded away unable to defend and preserve the apparition of its former legacy against the increasing intensity of razzias and the cumulative *vi et armis* impact by the invasion waves of ghazi warriors, dervishes, yoruks and other Turkic hordes. The latter had been purposefully channeled by the Ottoman leaders of western Asia Minor⁸⁹ in the region to plunder and devastate the Byzantine lands and population in western Thrace, to conquer and colonize as vanguards to subsequent Ottoman military strategies. An element derived from the archaeoanthropological record at site “C”, namely the particular of the archaeometric analysis for dietary evaluations that indicated an unprecedented for Abdera/Polystylon lack of any intake from marine resources, may by the merit of its measurable data illuminate aspects of the human condition during those tumultuous times at Polystylon. The potential of gathering seafood sources (i.e. for most nutritious shell fish) particularly from the littoral and pericoastal region⁹⁰ which borders the southern footing of the fortress, hence in imminent proximity to the safety of the fortification walls, would require under most circumstances daylight activities. Apparently the inhabitants of the fort could not afford to venture out for such activities, considered most probably as of insignificant returns, given the projected level of dangers for morbidity or capture by ambushing enemy groups and/or of periods of *ante portas* temporary blockade if not of prolonged siege. This discloses, as it may, elucidating facets on the condition that Polystylon outfitted to offer a stronghold for the defending Byzantines would have also provided, in addition to any extramurally received supplies stocked, a certain yield of edible, preferably of hardy nature, plants from the land within its fortifications to support as rendered necessary both humans and domesticates⁹¹.

88. Cantacuzenus, *Histories*, III.37: v. II, 226.

89. Cf. LIAKOPOULOS, *The Ottoman Conquest of Thrace*, 87.

90. Any venture for pelagic fishing would have been even more dangerous to attain, although it is suggested that any seaworthy vessels available to Polystylon would have been already captured or incapacitated by the invaders.

91. Regarding herbivoran domesticates, animal fodder would have been necessary particularly the winter months.

And yet it appears that Polystylon, despite its predicament, did not yield easily to the Ottoman conquest but sturdily resisted with resolve for a considerable period bearing in mind that the Ottoman military campaigns in the immediate region, under the leadership of Ghazi Evrenos Bey, had already conquered around the later half of the 1360s, in the following sequence⁹² the urban centers of Peritheorion, and Xantheia, as well as Maroneia⁹³. The accurate date of Polystylon's fall to the Ottomans is not known, approximated to have taken place within the middle of the 1380s⁹⁴, hence possibly comprising the last remaining fortress to resist the Turkish yoke in the regional locality. Further, whereas all regional Byzantine towns and strongholds conquered by the Turks were assigned Ottoman designations often in paraphrase of their Hellenic names, Polystylon, as an exception in the region, appears to be lacking a designated Turkic toponym in the available Ottoman records⁹⁵. This probably relates to the fact that the location of the ancient acropolis of Abdera and Byzantine fort was not to be settled by the occupiers who preferred the fertile, arable, lands inland of Polystylon, indicative as it may be of their perceived concepts and indifference to the potential harvest of the rich seaward catchment area of Nestos delta.

In closing regarding matters of interest to site "C" and the last years of Polystylon, a few more thoughts may be offered. It certainly appears that the fortification works and preparations at Polystylon by Kantakouzenos' vision, initiative and financial support held out remarkably well to the onslaught brought about by the vanguard warriors and formal military conquering engagements of the Ottomans. Obviously, there must have been matters beyond the sheer strength of the walls but as importantly the tactics and the defence strategies carried out to address the variety of the adversaries' strengths, plans and capacities. Of importance would have been

92. LIAKOPOULOS, *The Ottoman Conquest of Thrace*, 87. 82-84.

93. Gregoras *Roman History* VII.6: v. I, 244.

94. See footnote 36 (*supra*); cf. C. HAYWOOD, *The Via Egnatia in the Ottoman period: The Melzihanēs of the Sol Kol in the late 17th / early 18th century*, in: E. ZACHARIADOU (ed.), *The Via Egnatia under Ottoman Rule (1380-1699)*, Halcyon Days in Crete II, University of Crete Press, Rethymnon 1996, 129-141.

95. Cf. LIAKOPOULOS, *The Ottoman Conquest of Thrace*, 88-89 (Whereby Peritheorion was renamed as "Buru", Xanteia with a variety of names as "Ksani", "Isketye", "Eskice", and Maroneia as "Marulya").

the organizational abilities of the fort inhabitants and the nature of their group(s) composition: their capabilities to both maintain lines of command and communication and of intramural capacities to offer logistical support for the execution of a variety of orders in securing and defending the fort. It is suggested that along the cultivation of at least a few intramural parcels of land a number of able craftsmen must have mandated positions in the fort required for masonry, carpentry, and metalwork for the production (as facilitated by stocked and *ab extra* available supplies) and repair of necessary gear in the fort; those activities would have been carried out by the generalist or specialist members of the defenders⁹⁶. Yet skilled warriors would have been required to implement military actions for the successful defence of the fort; were those individuals professional military personnel or could they have been identified as the local citizen-soldier militia, multitasking for a variety of required logistical purposes, seasoned in the hardships of combat and requirements of warfare since the previous years of prolonged civil strife and the perils of asphyxiating Turkic encroachment? Furthermore, was there one individual, seasoned in the military arts of the period, that commandeered the defence of the fort supported by an interwoven group that led the uniquely long lasting defence of the Polystylon fort? It is deduced that their prolonged steadfast position against the infidel invaders may signify that they were making a last stand, with nowhere in the region to seek for an available refuge and apparently with no exit strategy by surrender⁹⁷.

Resonating echoes from traces permanently recorded on the archaeo-anthropological record of the individuals recovered from cite "C" appear to indicate that a number of adult males preserved on their skeletal surfaces manifestations, in addition to these of *perimortem* trauma, of healed and in the healing process trauma impacts that had been caused by armed conflict, hence indicative of the presence and participation at the fort of seasoned

96. The particular pedologic substrate of the fort was in essence *fortified* by: a) the cultural, depositional, stratigraphy of superimposed Classical, Hellenistic, and Roman acropolises' monumental in size and thickness stone-work foundations, and b): by the abruptly elevated position of the acropolis hill where the fortification walls were founded offering a strategic advantage against subterranean tunnelling in undermining the walls, while siege craft would require the construction of significantly elongated earth rampart(s) in order to lessen the pitch of their platforms.

97. *Una salus victis nullam sperare salutem* (Virgil, *Aeneis* ii, 354).

warriors and/or veterans. In addition, the high prevalence of skeletal and dental manifestations of epigenetic non metric variability documented, with emphasis on the dental trait of Carabelli, expressed indiscriminately among a considerable cluster of both young and older individuals reflects on demographic dynamics regarding a considerable component⁹⁸ of the fort inhabitants. The latter were not a collective of random individuals that had ended up at the fort as refugees, specialists and/or generalists, veterans or novices in warfare but rather the membership of a population group with closely knit kinship relations, well interwoven by blood relations. They represented a gene pool that had been guided for at least two to three generations by endogamous conditions of population isolationism⁹⁹, reflective as this may be of their fragmented and increasingly isolated socio-cultural network, aggravated by the swiping advent of the Ottoman hordes.

The population group at site "C", comprising among its membership a considerable cluster of the *Polystylites*, made a last defiant stand with unwavering bravery despite their deadlock predicament; an undertaking of herculean courage and determination not unlike it may be added in retrospect the prowess and valor acted by Herakles, the mythical hero-founder of their ancient city of Abdera*.

98. The variable degree of preservation of axial (including dentitions) and appendicular skeletal structures presented a limiting parameter in the quantification of epigenetic traits involving the entire skeletal sample recovered at site "C".

99. Lack of "Gene Flow"

* The field drawings and illustrations were made by Argyro Agelarakis, MA.

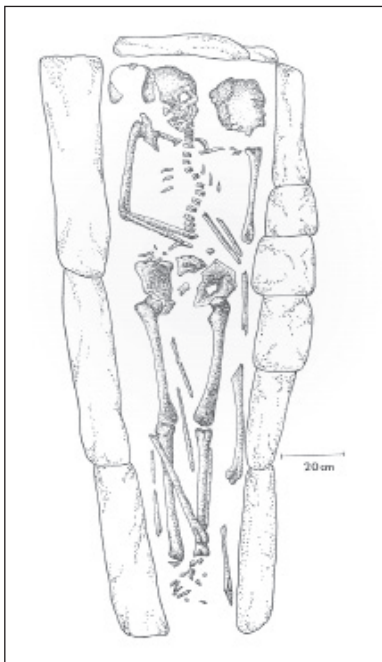
Acknowledgements

The authors wish to extend many thanks to the excavator of the three sites at Polystylon, Dr. Ch. Bakirtzis, Byzantinologist, then serving as Ephor of Antiquities at the 12th Ephoreia of Byzantine Antiquities of the Hellenic Archaeological Service, in recognition of his trust and collegial mentoring during our earlier years of professional activity in the field and beyond. We also thankfully recognize Dr. Nikolaos Zekos, Byzantinologist, of the same Ephoreia of Antiquities and field director at the sites of Polystylon, a much respected and appreciated colleague for the countless archaeological discussions in the field, the expert knowledge and the sharing of information ever since the mid-1980s. Last but not least warm-hearted thanks go Byzantinologist Dr. Constantine Hatzidimitriou, for his unpretentious encouragement, good thoughts and inspiration to revisit and contemplate retrospectively the world of the Eastern Romans, the Byzantines, of Abdera/Polystylon. We also wish to thank the anonymous reviewers for their comments and suggestions.

In conclusion, this article is respectfully dedicated to the memory of the *Polystylites* as we thankfully consider that even posthumously they made it possible for us to decipher and better understand aspects of their life experiences.



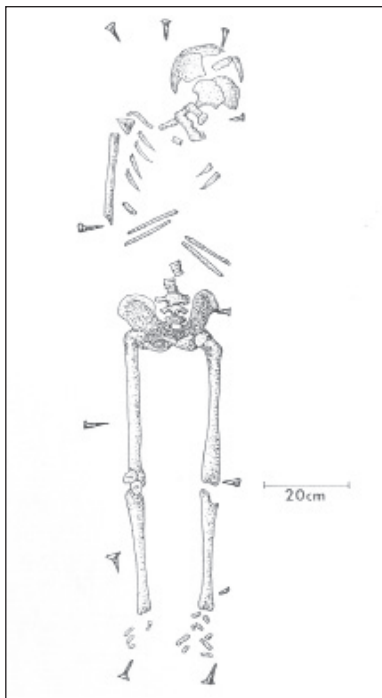
Ill. 1: Site "A", Grave No 7, Burial of an infant, age assessed between 6 months to 1.5 years of age.



Ill. 2: Site "A", Grave No 11, Multiple Interments involving a male individual at 35-40 years, a male individual at 28-32 years, and an individual of a approximately 8 years of age, of indeterminate biological sex.



Ill. 3: Site “B”, Grave No. 49, Burial of an individual age assessed at approximately 10 years, having sustained considerable taphonomic in nature skeleto-anatomic truncation, caused by coeval funerary anthropogenic activities.



Ill. 4: Site “B”, Grave No. 51, Burial of a male individual age assessed at approximately 25 years, showing the outline of a wooden coffin by the shape of the iron nails found in situ.



Ill. 5: Site "C", Grave No. 9 (at the right side), Burial of an individual age assessed at approximately 7 years and of indeterminate biological sex; Grave 10 (at the left side), Burial of an individual age assessed at approximately 4 to 5 years and of indeterminate biological sex.



Ill. 6: Site "C", Grave No. 13, Burial of an individual age assessed at approximately 5 to 6 years and of indeterminate biological sex, and the cranial remains of a male, veteran, individual.

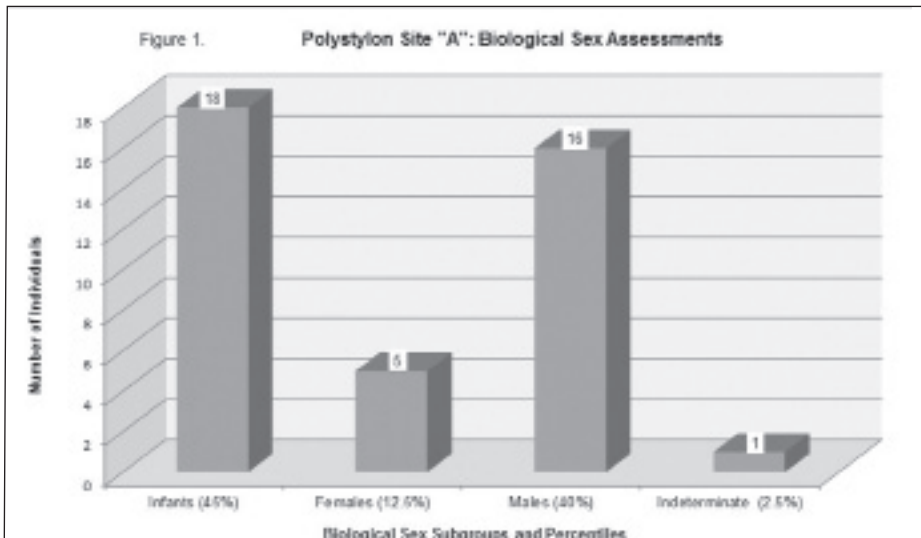
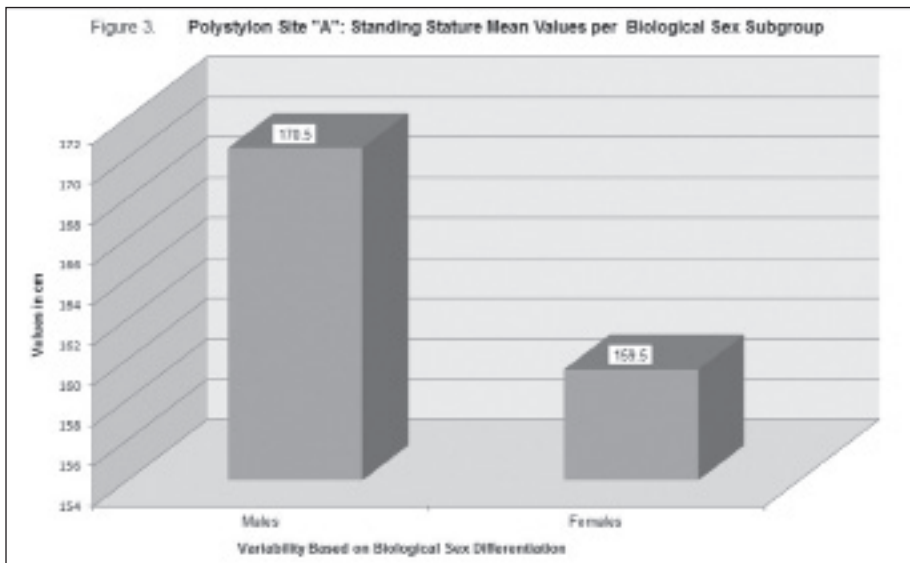
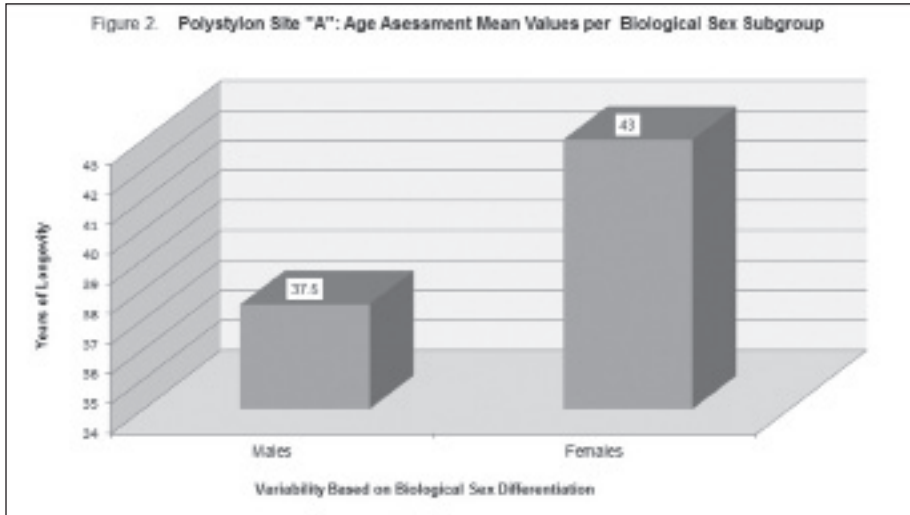
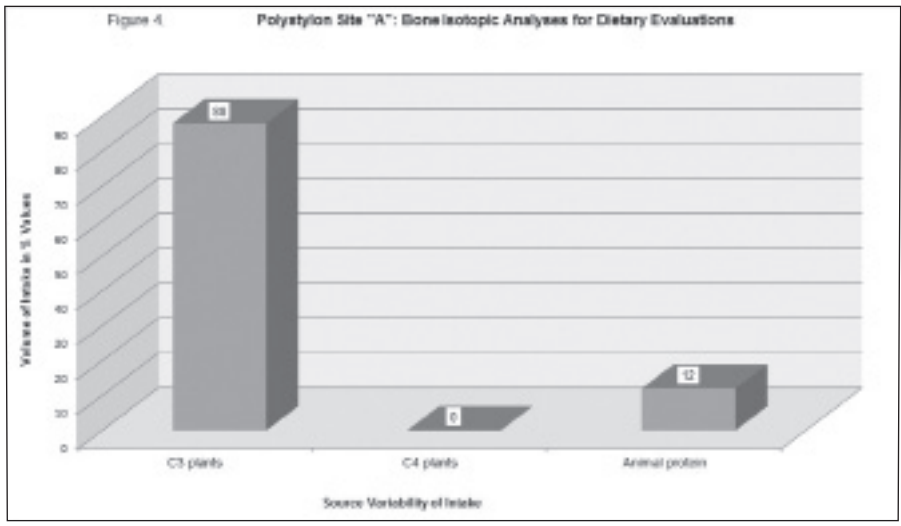


Table 1. Biological Sex Subgroups, Numbers of Individuals and % Values at Site "A"

Subgroups		Numbers	% Values
Infants	=	18	45
Females	=	5	12.5
Males	=	16	40
Indeterminate (due to limited preservation)	=	1	2.5
Number of Individuals at Site "A"	=	40	100





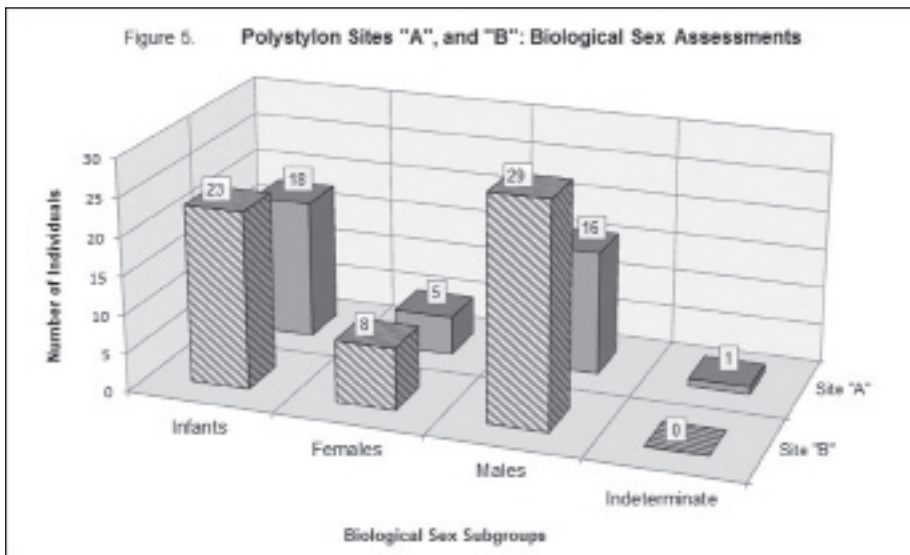
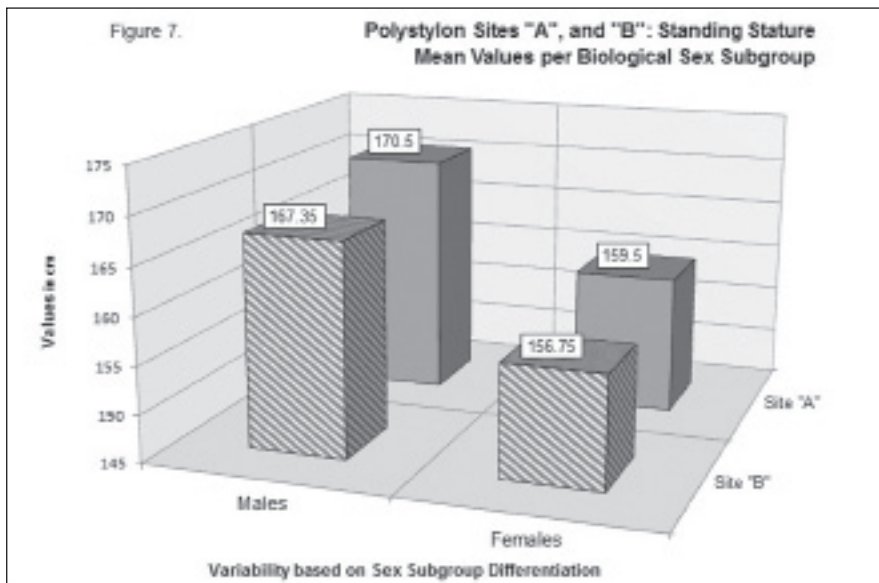
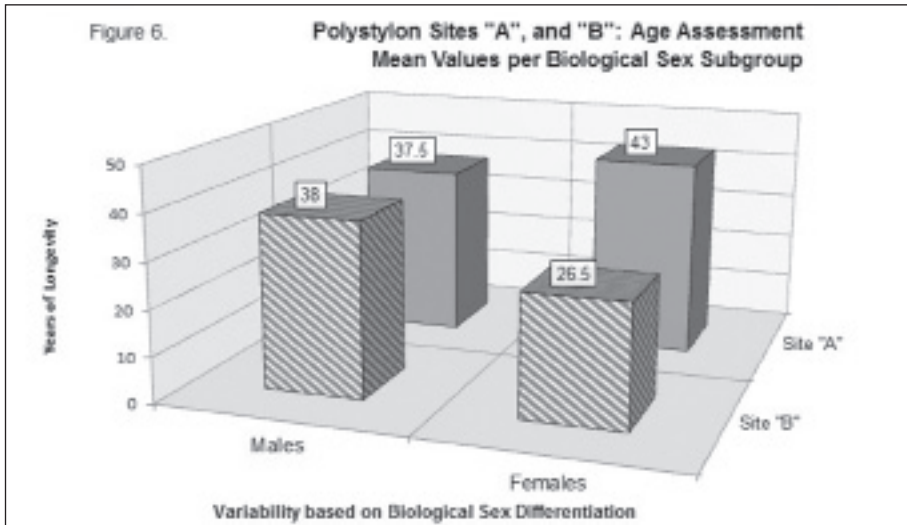
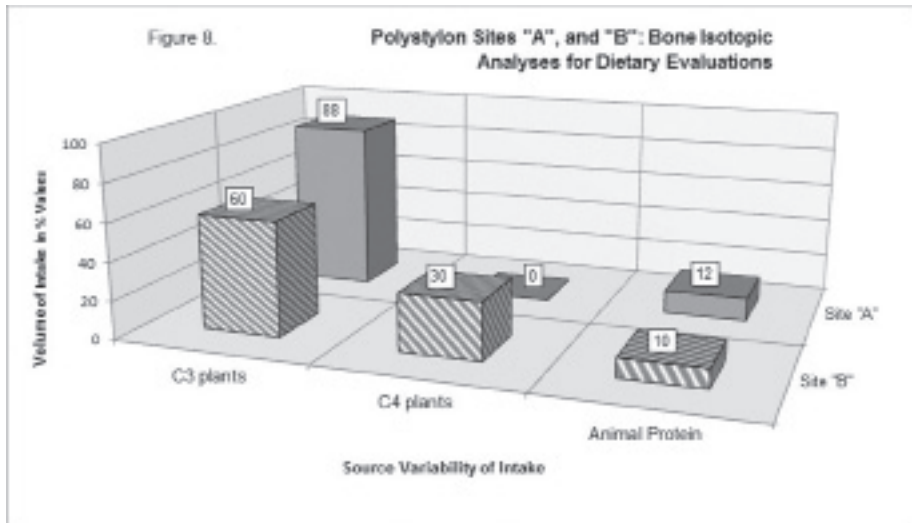


Table 2. Biological Sex Subgroups, Numbers of Individuals and %Values at Sites "A", and "B"

Subgroups		Site "A"		Site "B"	
		Numbers	% Values	Numbers	% Values
Infants	=	18	45	23	38.33
Females	=	5	12.5	8	13.33
Males	=	16	40	29	48.33
Indeterminate	=	1	2.5	0	0
Individuals per site	=	40	100	60	100





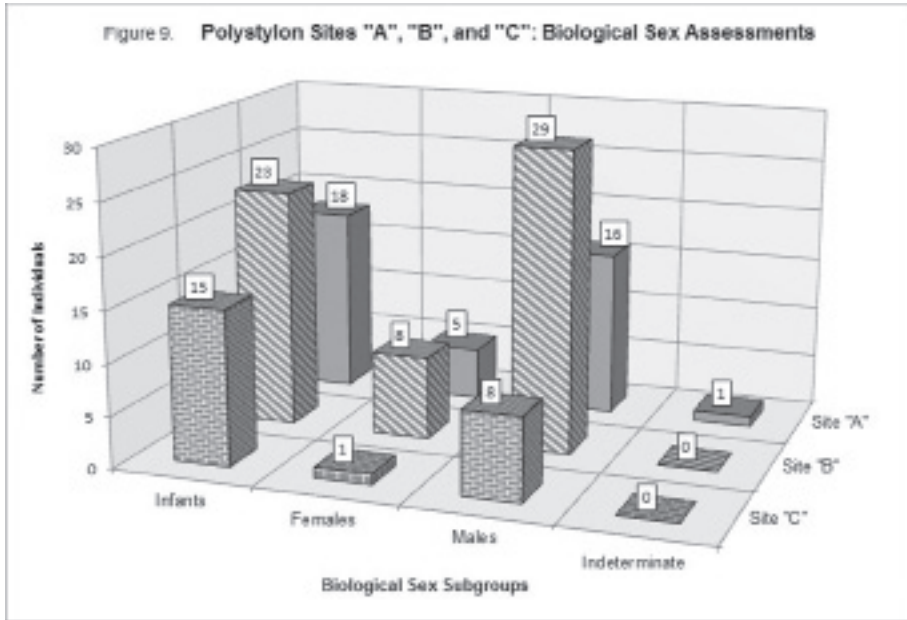
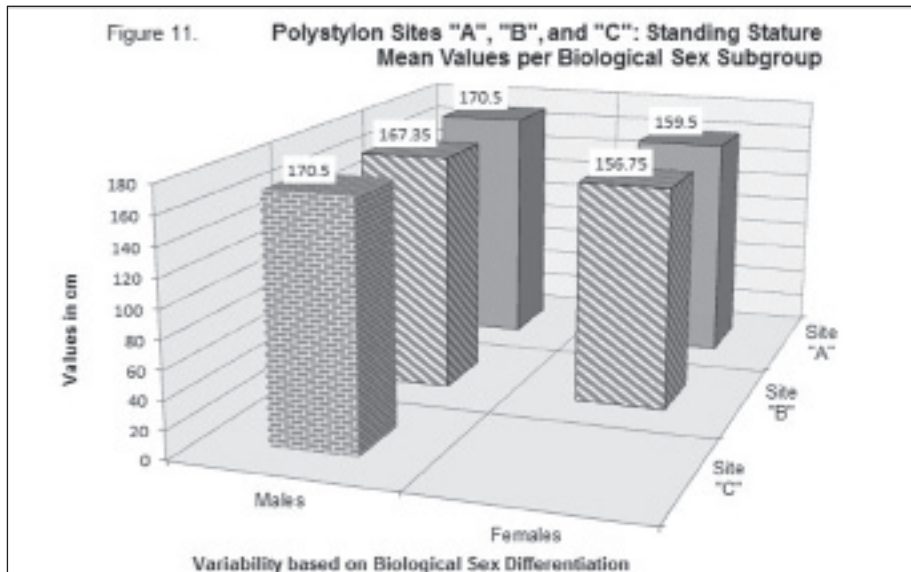
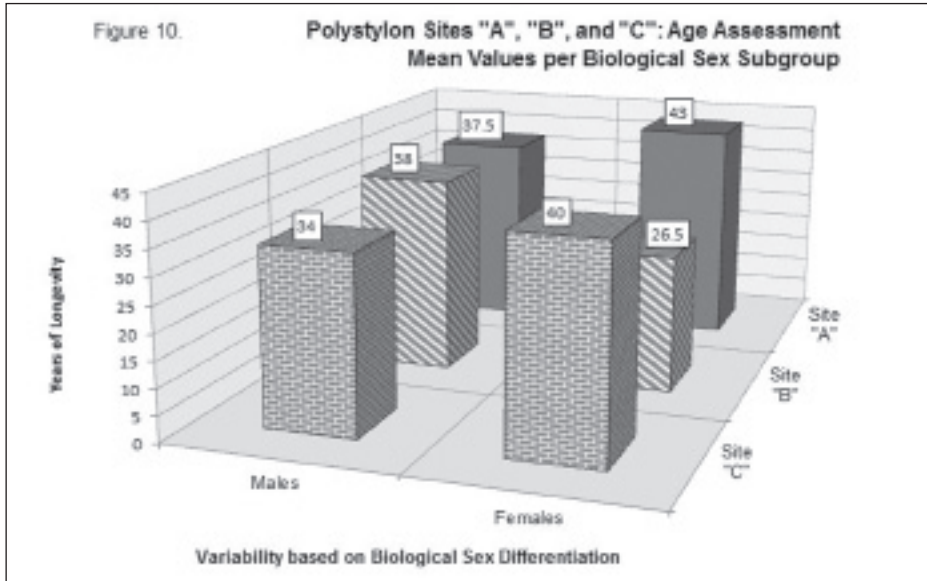


Table 3. Biological Sex Subgroups, Numbers of Individuals and %Values at Sites "A", "B", and "C"

Subgroups		Site "A"		Site "B"		Site "C"	
		Numbers	% Values	Numbers	% Values	Numbers	% Values
Infants	=	18	45	23	38.33	15	62.5
Females	=	5	12.5	8	13.33	1	4.16
Males	=	16	40	29	48.33	8	33.33
Indeterminate	=	1	2.5	0	0	0	0
Individuals per site	=	40	100	60	100	24	100



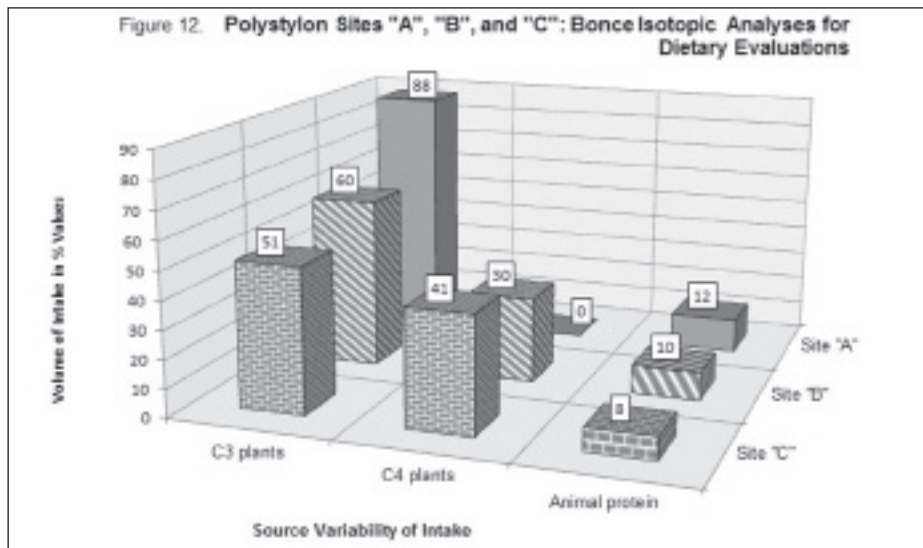


Table 4. Bone Isotopic Analyses: Dietary Intake Volume Proportionality and Relations between Sites "A", "B", and "C", with Emphasis on C3 Plants and Animal Protein

Dietary Sources	Site "A"		Site "B"			Site "C"				
	Volume Units	% Values	Volume Units	% Values	Relation to Site "A"; Change from Site "A"	Volume Units	% Values	Relation to site "A"; Change from Site "A"	Volume Units	% Values
C3 Plants	88	88%	60	60%	68.18%	-31.82%	51	51%	57.95%	-42.05%
C4 Plants	0	0	30	30%	(C4 plant introduction (30% of site's total volume))		41	41%	(C4 plant increased use (41% of site's total volume))	
Animal Protein	12	12%	10	10%	83.33%	-16.67%	8	8%	66.66%	-33.34%
Site Totals (Volume & %)	100	100%	100	100%			100	100%		

ΑΒΔΗΡΑ/ΠΟΛΥΣΤΥΛΟΝ: ΜΙΑ ΒΥΖΑΝΤΙΝΗ ΠΟΛΗ ΤΗΣ ΔΥΤΙΚΗΣ ΘΡΑΚΗΣ ΣΤΟ
ΠΛΑΙΣΙΟ ΤΩΝ ΙΣΤΟΡΙΚΩΝ ΕΞΕΛΙΞΕΩΝ ΑΠΟ ΤΟΝ 6Ο ΕΩΣ ΤΟΝ 14Ο ΑΙΩΝΑ ΜΕ ΒΑΣΗ
ΤΑ ΑΡΧΑΙΟΛΟΓΙΚΑ ΚΑΙ ΤΑ ΑΝΘΡΩΠΟΛΟΓΙΚΑ ΔΕΔΟΜΕΝΑ

Στο άρθρο παρουσιάζονται τα αποτελέσματα της έρευνας από τις ανασκαφές που διεξάγονται σε τρεις βυζαντινές τοποθεσίες των Αβδήρων/Πολυστύλου. Συνδυάζοντας τα στοιχεία από τα αρχαιολογικά, τα ιστορικά και τα ανθρωπολογικά δεδομένα, η μελέτη των ανθρώπινων σκελετικών ευρημάτων από τις τρεις περιοχές αποσκοπεί, μέσω της διεπιστημονικής ανάλυσης των δεδομένων, να απεικονίσει την κατάσταση των κατοίκων εκείνης της εποχής, ελπίζοντας να διαφωτίσει τις ολοένα και πιο δραματικές αλλαγές στις συνθήκες της ζωής που βίωναν οι άνθρωποι στην επαρχιακή εκείνη πόλη από την πρόωμη έως την ύστερη Βυζαντινή περίοδο.