

# MESOHELLADIKA ΜΕΣΟΕΛΛΑΔΙΚΑ

La Grèce continentale au Bronze Moyen

Η ηπειρωτική Ελλάδα στη Μέση εποχή του Χαλκού

The Greek Mainland in the Middle Bronze Age

Actes du colloque international organisé par l'École française d'Athènes,  
en collaboration avec l'American School of Classical Studies at Athens  
et le Netherlands Institute in Athens,  
Athènes, 8-12 mars 2006

Édités par Anna PHILIPPA-TOUCHAIS, Gilles TOUCHAIS, Sofia VOUTSAKI et James WRIGHT





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ΜΕΣΟΕΛΛΑΔΙΚΑ

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Une partie des congressistes devant le Cotsen Hall (photo Ph. Touchais)

## PRÉFACE

Allocution de bienvenue du Directeur de l'École française d'Athènes

*L'étude du matériel des fouilles de l'habitat mésohelladique de la colline de l'Aspis étant en cours d'achèvement, les responsables du programme, Gilles Touchais et Anna Philippa-Touchais, ont souhaité orienter la recherche de deux manières : en entreprenant l'étude globale des vestiges architecturaux de l'habitat mis au jour depuis les premières fouilles de Vollgraff et en mettant à profit cette étude pour une mise en valeur du site, mais aussi en inscrivant cette recherche dans une interrogation plus large sur l'Helladique Moyen. Cela impliquait de faire le point sur l'une des périodes les plus mal connues de la protohistoire égéenne en essayant de réunir, au niveau international, les chercheurs que le hasard des découvertes ou un choix délibéré avaient conduits à travailler sur cette période. On pouvait ainsi espérer dresser un bilan entièrement renouvelé par les données des nombreuses fouilles et prospections menées au cours des trente dernières années.*

*C'est à cet objectif que répond le colloque Mesohelladika. La Grèce continentale au Bronze Moyen, dont l'École française d'Athènes a eu l'initiative. Pour permettre son organisation, elle s'est assuré le concours de l'École américaine et de l'Institut néerlandais et je remercie très chaleureusement mes collègues Stephen Tracy et Gert Jan Wijngaarden d'avoir accepté le principe de cette association. En répondant positivement à notre invitation, les très nombreux chercheurs présents, venus d'Australie, d'Autriche, des États-Unis, de Finlande, de France, de Grande-Bretagne, de Grèce, d'Italie, des Pays-Bas et de Suède ont témoigné de leur intérêt pour la thématique centrale du colloque : procéder à une réévaluation de l'Helladique Moyen. - À tous, je souhaite la bienvenue et de fructueux travaux.*

*Je remercie tous ceux qui, dans chacune des trois Écoles concernées, ont permis l'organisation de cette manifestation. J'adresse des remerciements tout particuliers à Gilles Touchais, qui m'a soumis ce projet dès 2003, et à Anna Philippa-Touchais, dont la présence à Athènes a permis de régler les mille et une questions que ne manque pas de soulever une manifestation de cette ampleur.*

Dominique MULLIEZ

## Wellcome address of the Director of the American School of Classical Studies at Athens

*On behalf of the American School of Classical Studies at Athens welcome to this international conference Mesohelladika. It is wonderful to have such a large crowd on hand this evening. The program of the conference is diverse and rich; I think we will all learn much from our colleagues over the next four days. I know that we all are looking forward to it. The American School of Classical Studies is proud to cooperate with the Netherlands Institute and with the French School at Athens in hosting this conference. I want to congratulate and to thank the organizing committee and to single out Dr. Anna Philippa-Touchais, the person on the ground here in Athens, for all her hard work.*

*Thank you all again and welcome.*

Stephen TRACY

## Wellcome address of the Director of the Netherlands Institute in Athens

*Dear colleagues and friends, ladies and gentlemen,*

*Some time ago, Dr Sofia Voutsaki persuaded me to support this conference. On the occasion she emphasized that the Middle Bronze Age of the Greek mainland had been neglected of late and that it was in serious need of attention. Taking a look at the impressive conference program, I could only acknowledge Sofia's claims: obviously many scholars felt a similar need to discuss Middle Helladic Greece.*

*For several of the archaeological programs of the Netherlands Institute in Athens, the Middle Bronze Age is of importance. This is true for the excavations at Geraki in Lakonia, for the surveys in Thessaly, Boeotia and Zakynthos, as well as for the analytical program on the Argolid. I am confident that the Mesohelladika conference will contribute to a better understanding of the materials dealt with in these programs.*

*I am very pleased that this conference is a joint venture of three foreign archaeological institutes in Greece. International academic events are increasingly more difficult and costly to organize and cooperation in this respect is, in my view, beneficial to all. I would like to thank warmly my colleagues Dominique Mulliez and Stephen Tracy for the fruitful cooperation and for the hospitality. I also congratulate the organizers with the impressive program and I wish all participants an enjoyable and fruitful conference.*

Gert Jan VAN WIJNGAARDEN

## **INTRODUCTION**

L’Helladique Moyen, période qui correspond, en gros, à la première moitié du II<sup>e</sup> millénaire avant notre ère, s’intercale entre deux phases de prospérité économique et d’accomplissement culturel majeurs pour la Grèce continentale : le Bronze Ancien, d’une part, qui a vu naître et se développer, au cours du III<sup>e</sup> millénaire, des communautés proto-urbaines déjà fortement organisées, ouvertes sur le reste du monde égéen, et l’époque mycénienne de l’autre, qui, dans la seconde moitié du II<sup>e</sup> millénaire, portera à son apogée le système palatial et étendra son influence bien au-delà des rives de la mer Égée. C’est pourquoi l’Helladique Moyen est toujours apparu en retrait par rapport à ces deux grands moments, dans une vision purement négative que reflètent bien les termes de stagnation, de recul, d’isolement le plus souvent utilisés pour caractériser cette période. En outre, la comparaison avec l’essor que connaît, à la même époque, la Crète protopalatiale, tourne elle aussi au désavantage de la Grèce continentale et renforce cette impression négative, qui n’est sans doute pas étrangère au relatif désintérêt dont l’Helladique Moyen a pâti jusqu’à présent dans la recherche sur les civilisations égéennes.

Il apparaît cependant aujourd’hui, à la lumière des recherches récentes, que l’Helladique Moyen n’est pas cette longue période d’atonie si souvent décrite. Des indices de plus en plus nombreux suggèrent qu’elle a au contraire été marquée par de profonds changements d’ordre social, politique et culturel, qui conduisirent progressivement à la formation des entités politiques protomycénienes et, plus tard, des royaumes mycéniens. C’est pourquoi il nous a semblé que le moment était venu de rassembler la documentation la plus large possible sur cette période encore mal connue – ou plutôt méconnue. Le meilleur moyen était de faire se rencontrer tous les collègues qui avaient accumulé de nouvelles données au cours des dernières décennies, mais aussi ceux qui tentaient d’interpréter celles dont on disposait. C’est ainsi qu’est née l’idée de ce colloque – le premier à être consacré exclusivement à l’Helladique Moyen – et que furent définis ses principaux objectifs : d’une part, dresser un bilan de nos connaissances sur la période, en ne négligeant aucun domaine de la recherche ; d’autre part, explorer les mécanismes qui sont à l’origine des changements

constatés et tenter d'apprécier leur dynamique. On suggéra donc plusieurs axes de réflexion : la topographie et l'habitat (réseaux d'occupation humaine, organisation spatiale) ; les pratiques rituelles et funéraires ; les problèmes chronologiques (séquences céramiques, synchronismes, datations absolues) ; l'économie et l'exploitation des ressources naturelles (agriculture et élevage, techniques et productions artisanales, alimentation) ; les problèmes démographiques et sanitaires ; les contacts, les échanges et les influences culturelles ; l'évolution des structures socio-politiques.

L'intuition que le sujet était « mûr » et qu'une vision moins négative de l'Helladique Moyen avait commencé de prévaloir parmi les spécialistes du monde égéen a été confirmée bien au-delà de nos espérances. Car même dans nos prévisions les plus optimistes, nous étions loin d'imaginer que notre initiative rencontrerait un tel écho. En effet, près de 130 chercheurs ont répondu à notre invitation, plus de 80 d'entre eux proposant de présenter une communication et plus d'une quarantaine de réaliser un poster. Finalement, sur les 69 communications présentées à Athènes, 63 sont éditées dans le présent volume<sup>1</sup>, et 28 posters sur 29<sup>2</sup>.

Ce projet n'aurait pu être mené à bien sans le soutien financier et logistique, mais aussi scientifique et moral, des trois institutions qui en ont assuré directement l'organisation : l'École française d'Athènes, l'American School of Classical Studies at Athens et le Netherlands Institute in Athens, dont nous tenons à remercier les directeurs respectifs, Dominique Mulliez, Stephen V. Tracy et Gert Jan van Wijngarten, pour les moyens matériels et humains qu'ils ont généreusement mis à notre disposition. L'Institute of Aegean Prehistory de Philadelphie a également répondu, avec sa libéralité coutumière, à nos demandes de subvention, aussi bien pour l'organisation du colloque lui-même que pour

1. Massimo Cultraro, qui n'avait pu participer au colloque, a envoyé le texte de sa communication, mais les textes suivants n'ont pas été remis : Antikleia Agrafioti, « Les industries lithiques du Bronze Moyen et l'enjeu des éléments de faucille » ; Polyxeni Arachoviti, « Αερινό, ένας οικισμός της Μέσης Εποχής του Χαλκού στη νοτιοανατολική Θεσσαλία » ; Ioanna Galanaki, « Lefkandi Phases 2-6 : Some Observations on the Communication Networks and Communication Processes during the Middle Helladic Period » ; Chrysanthi Gallou, « “In the Dark Heart of Maleas”. The Transition from the Middle Helladic to the Early Mycenaean Period in the Southeastern Peloponnese » ; Olga Kyriazi, « Μαρτυρίες από την ανατολική Λοκρίδα σχετικά με τη μεταβατική περιόδο από τη Μέση στην Ύστερη Εποχή του Χαλκού: ενεργή συμμετοχή στις πολιτισμικές αλλαγές ή στο περιθώριο των εξελικτικών διεργασιών; » ; Elena Kountouri, « Προμυκηναϊκή Θήβα: τα δεδομένα από τις σύγχρονες έρευνες » ; Michael Lindblom, « The Middle Helladic Settlement at Mastos in the Berbati Valley » ; Adamantia Vassilogamvrou, « Η κεραμική της ΜΕ III-ΥΕ I φάσης από τη θέση Καταρραχιά Δυτικής Αχαΐας ».
2. Il manque celui d'Olga Philaniotou, « Naxos in the Middle Bronze Age. New Evidence for Habitation ». Pour la publication, nous avons choisi d'intégrer les posters aux unités thématiques auxquels ils se rapportent en les mêlant aux communications, plutôt que de les regrouper dans une section séparée comme cela se fait souvent.

la publication des actes : nous exprimons ici toute notre reconnaissance à son comité scientifique ainsi qu'à Karen Velluci, directrice des programmes de subvention, en qui nous avons toujours trouvé une interlocutrice efficace et attentionnée. Parmi les institutions françaises, le Centre national de la recherche scientifique et l'université Paris 1 – Panthéon-Sorbonne ont apporté une contribution appréciable au financement du colloque. De leur côté, le Service culturel de la Ville d'Athènes (*Δήμος Αθηναίων, Πολιτισμικός Οργανισμός*) et l'office du Tourisme hellénique (*Ελληνικός Οργανισμός Τουρισμού, Υπουργείου Τουριστικής Ανάπτυξης*) ont soutenu la manifestation en mettant gracieusement à notre disposition 150 exemplaires de deux luxueuses brochures sur Athènes, l'Attique et ses monuments. Plusieurs participants au colloque ont par ailleurs bénéficié de l'hospitalité offerte par les Instituts danois et suédois, ainsi que par les Écoles britannique et italienne, que nous remercions sincèrement de leur concours. C'est une dette particulière que nous avons envers Bob Bridges, secrétaire général de l'École américaine, qui, pendant les trois jours où le colloque s'est tenu au Cotsen Hall, n'a ménagé ni son temps ni sa peine pour assurer le bon déroulement des séances et résoudre tous les problèmes techniques, sans se départir jamais de son sourire.

Nous remercions également pour leur précieux concours à l'organisation et au bon fonctionnement du colloque Maria Tsimboukaki, qui a géré le secrétariat avec un dévouement et une efficacité dignes d'éloge, Stratos Balis et Tomek Hertig (site Internet), Eleni Gerontakou et Catherine Pantazis (travaux de secrétariat), Philippe Touchais (photos d'ambiance), ainsi que les volontaires étudiants post-diplôme de l'universités d'Athènes, dont le zèle et la bonne humeur communicative ont largement contribué à l'ambiance chaleureuse qui a régné tout au long de cette rencontre : Giorgos Charitos, Giorgos Choulis, Nikolas Dimakis, Dimitris Kloukinas, Akathi Maria Kovaiou, Anna Loukidou, Stefania Michalopoulou, Konstantina Nikolopoulou, Evangelia Polyzou et Eva Roussaki. C'est d'autre part à Orestis Kakavakis, doctorant à l'université d'Athènes, que l'on doit la traduction grecque des résumés qui figurent dans le présent volume.

Nous sommes particulièrement reconnaissants à Catherine Aubert, responsable du service des publications de l'EFA, pour le soin qu'elle a apporté à l'édition des actes de ce colloque, et à Vélassarios Anagnostopoulos, auteur de l'affiche.

Cet ouvrage témoignera durablement du remarquable travail accompli ces dernières années par une communauté de chercheurs qui, *last but not least*, mérite elle aussi toute notre gratitude – une communauté qui a hélas été endeuillée, depuis le colloque, par la disparition prématurée de deux de ses membres : Maria Oikonomakou et Angeliki Pilali, dont nous tenons à saluer ici la mémoire.

Les éditeurs



## ABRÉVIATIONS

### PÉRIODIQUES ET SÉRIES

Les abréviations utilisées sont celles de l'*American Journal of Archaeology* (voir AJA 111 [2007], p. 14-34, ou le site internet [www.ajaonline.org](http://www.ajaonline.org)) auxquelles on ajoutera :

<i>AEMTh</i>	<i>To Αρχαιολογικό Έργο στη Μακεδονία και Θράκη</i>
<i>BCH Chron.</i>	<i>Bulletin de Correspondance Hellénique</i> , «Chronique des fouilles et découvertes archéologiques en Grèce »

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## SUBDIVISIONS CHRONOLOGIQUES

### English

EB(A), MB(A), LB(A)	Early Bronze (Age), Middle Bronze (Age), Late Bronze (Age)
EC, MC, LC	Early Cycladic, Middle Cycladic, Late Cycladic
EH, MH, LH	Early Helladic, Middle Helladic, Late Helladic
EIA	Early Iron Age
EM, MM, LM	Early Minoan, Middle Minoan, Late Minoan

### Français

BA, BM, BR	Bronze Ancien, Bronze Moyen, Bronze Récent
CA, CM, CR	Cycladique Ancien, Cycladique Moyen, Cycladique Récent
HA, HM, HR	Helladique Ancien, Helladique Moyen, Helladique Récent
MA, MM, MR	Minoen Ancien, Minoen Moyen, Minoen Récent

### Ελληνικά

ΠΕ, ΜΕ, ΓΕ	Πρωτοελλαδικός, Μεσοελλαδικός, Γυστεροελλαδικός
ΠΕΧ, ΜΕΧ, ΓΕΧ	Πρώιμη Εποχή του Χαλκού, Μέση Εποχή του Χαλκού, Γυστερη Εποχή του Χαλκού
ΠΜ, ΜΚ, ΓΚ	Πρωτικυκλαδικός, Μεσοκυκλαδικός, Γυστεροκυκλαδικός
ΠΧ, ΜΧ, ΓΧ	Πρωτοχαλκός, Μεσοχαλκός, Γυστεροχαλκός Πρώιμη Χαλκοκρατία, Μέση Χαλκοκρατία, Γυστερη Χαλκοκρατία



# **Subsistence and more in Middle Bronze Age Aegina Kolonna: Patterns of Husbandry, Hunting and Agriculture\***

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Stephan ZOHMANN, Ursula THANHEISER and Walter GAUSS

## RÉSUMÉ

*Subsistance et autres à Kolonna d'Égine au Bronze Moyen : modèles d'élevage, de chasse et d'agriculture*

Des niveaux de remplissage du BM liés au complexe du Grand Bâtiment, sur la colline Sud du site de Kolonna à Égine, ont livré d'énormes quantités de restes fauniques qui appartiennent pour l'essentiel à des mammifères domestiques. L'élevage privilégiait apparemment le mouton et la chèvre. Les très rares restes de mammifères sauvages s'avèrent appartenir exclusivement à des espèces nobles, comme le cerf, très probablement aussi le sanglier, l'aurochs et même le lion. Si les os de pigeon représentent la grande majorité des restes d'oiseaux identifiables, il faut aussi mentionner deux éléments de squelette de cormoran. À en juger par plusieurs aspects de l'assemblage faunique, certaines similitudes avec des modèles de subsistance de la Crète minoenne peuvent être discernées. Bien que le matériel botanique se réduise à de très faibles quantités de graines carbonisées, il révèle un large éventail de céréales et de légumineuses. L'arboriculture est attestée par la présence de pépins de figue et de raisin, ainsi que par celle de noyaux d'olive.

## ΠΕΡΙΛΗΨΗ

*Διαβίωση και άλλα στην Κολόνα της Αίγινας κατά τη Μέση Εποχή του Χαλκού: πρότυπα κτηνοτροφίας, κυνηγιού και γεωργίας*

Οι επιχώσεις της MEX από το Μεγάλο Κτηριακό Συγκρότημα στον νότιο λόφο της θέσης «Κολόνα» στην Αίγινα απέφεραν μεγάλες ποσότητες οστών ζώων, κυρίως οικόσιτων θηλαστικών. Στην κτηνοτροφία προφανώς δόθηκε έμφαση στη βοσκή αιγυπτοβάτων. Τα ελάχιστα κατάλοιπα άγριων ζώων περιλαμβάνουν θηράματα γοήτρου, όπως το ελάφι και πιθανότατα τον αγριόχοιρο, τον βόνασο, ακόμη και το λιοντάρι. Αν και τα οστά περιστεριού αντιπροσωπεύουν το μεγαλύτερο μέρος στο σύνολο των ταυτίσιμων πτηνών, αξίζει να σημειωθεί η αναγνώριση δύο σκελετικών καταλοίπων από κορμοράνο. Όσον αφορά στα πρότυπα διαβίωσης από διάφορες απόφεις των αρχαιοζωολογικών δεδομένων μπορούν να επισημανθούν αναλογίες με τη ΜΜ Κρήτη. Μολονότι τα αρχαιοβιοτανικά δεδομένα περιορίζονται σε πολύ μικρές ποσότητες απανθρακωμένων σπόρων, έχει αναγνωριστεί μεγάλη ποικιλία δημητριακών και οσπρίων. Την καλλιέργεια κηπευτικών φυτών μαρτυρεί η παρουσία σύκων και πυρήνων σταφυλιού και ελιάς.

## 1. INTRODUCTION

Since 2003 the multi-disciplinary project “‘Subsistence and more’ – Bioarchaeo-logical studies in dietary, subsistence and environmental conditions of Middle Bronze Age Aegina” has been carried out by scholars from the Universities of Salzburg,<sup>1</sup> the University of Vienna<sup>2</sup> and the Universities of Medicine<sup>3</sup> and Veterinary Medicine,<sup>4</sup> Vienna. Funding of the project has been mainly accomplished by grants from INSTAP, additional support has been provided by the cooperating academic institutions. The project aims at the reconstruction of Aeginetan subsistence, economy and ecology during the Middle Bronze Age. This complex issue must be achieved by collection and analysis of human, faunal, and floral remains out of contextually and stratigraphically well-determined layers and soil samples from the new excavation area (South Hill) of the Kolonna-Aegina site that has been investigated by Walter Gauss and Rudolfine Smetana since 2002, in order to achieve the stratigraphic record for the Middle Bronze Age and the beginning Late Bronze Age.<sup>5</sup>

Probably due to its geographical position between mainland Greece, the Cyclades and Crete, Aegina is one of the major centres in the Aegean Bronze Age. During the Middle Helladic period the wealthy site of Kolonna is the main settlement known on the island. Rich finds clearly indicate the heyday of its occupation from the end of the Early Bronze Age to the period of the Shaft Graves.<sup>6</sup> While archaeological findings point towards an intensive cultural exchange with Minoan Crete and the Cyclades, locally produced Aeginetan pottery is found in most Middle Bronze Age sites of the Central Aegean, thus indicating Aegina as a significant part of well established trading and exchange networks.<sup>7</sup>

Although the excavations at the site of Aegina Kolonna unearthed important Bronze Age finds of the material culture, a thorough analysis of the archaeobotanic and archaeozoological remains has never been undertaken. This situation also proves true for the majority of Aegean Middle Bronze Age sites and, even if the state of knowledge has slightly improved during the last decades, this period in terms of bioarchaeology still “is an almost unknown quantity in Greek prehistory”.<sup>8</sup> Considering the rather large amount of evidence dealing with

\* The illustrations of this paper are copyright of G. Forstenpointner (Fig. 1) and G. E. Weissengruber (Figs. 2-5).

1. Institute of Classical Archaeology (R. Smetana, W. Gauss, – 2005).
2. Vienna Institute of Archaeological Science (U. Thanheiser), Austrian Archaeological Institute (W. Gauss –2005).
3. Institute of Histology (K. Großschmid, F. Kanz).
4. Dept. of Pathobiology, Working Group in Archaeozoology and Comp. Morphology (G. Forstenpointner, A. Galik, G. E. Weissengruber, S. Zohmann).
5. W. GAUSS, R. SMETANA, in this volume (*supra*, p. 165-174).
6. RUTTER, *Review II* (1993), p. 745-797, esp. 776.
7. For instance see distribution map, *ibid.*, p. 777, fig. 12.
8. C. BECKER, “Did the People in Agios Mamas Produce Purple-dye during the Middle Bronze Age? Considerations on the Prehistoric Production of Purple-dye in the Mediterranean”, in H. BUITENHUIS, W. PRUMMEL (eds.), *Animals and Man in the Past. Essays in honour of Dr. A. T. Clason* (2001), p. 122-131.

Late Bronze Age sites, only a little knowledge about subsistence and environmental patterns of the preceding period is available. At Middle Bronze Age settlements in mainland Greece flotation and wet sieving techniques have been applied only at a few sites such as Nichoria and Assiros, the latter producing mainly botanical evidence.<sup>9</sup> Other valuable data sets are available from Argissa Magoula and Pefkakia Magoula in Thessaly, from Lerna in the Peloponnese and from Kastanas in Northern Greece, all investigations featuring analyses of hand-collected samples.<sup>10</sup> The report from Lerna includes also rich evidence on human skeletal remains of a Middle Bronze Age population.<sup>11</sup> Short or preliminary reports have been published on samples from Midea, Asine and from Ayia Irini on the island of Kea.<sup>12</sup> A huge complex of animal remains from Ayios Mamas near Chalkidiki has been published after completion and submission of the present study.

Also from contemporaneous sites of Middle Minoan Crete only scarce bioarchaeological evidence is available. While short communications have been presented on samples from Ayia Triadha, Poros and Smari, the excavations at Kommos by means of advanced recovery methods produced a huge and rich sample of faunal and floral remains that enabled thorough and exhaustive analyses.<sup>13</sup>

Theoretical models on the evolution of Middle Bronze Age agricultural economy argue for an “intensification of production and specialization in certain products to meet demands of social use.”<sup>14</sup> However, as Hansen observed, “while we have the analytical

9. Nichoria: R. E. SLOAN, M. A. DUNCAN, “Zooarchaeology of Nichoria”, in *Nichoria I*, p. 60–77. – Assiros: G. E. JONES, *An Analysis of the Plant Remains of Assiros Toumba*, unpublished M. Phil. thesis, University of Cambridge (1979); P. HALSTEAD, G. JONES, “Bio-archaeological Remains from Assiros Toumba”, *BSA* 75 (1980), p. 265–267.
10. Pefkakia Magoula: B. JORDAN, *Tierknochenfunde aus der Magoula Pefkakia in Thessalien*, unpublished DVM Thesis, University of München (1975). – Lerna: N.-G. GEJVALL, *Lerna I: The Fauna* (1969).
11. *Lerna II*; on remains from human MBA populations see also J. L. ANGEL, “Human Skeletons from Grave Circles at Mycenae”, in MYLONAS, *TKB*, p. 379–397.
12. Midea: D. S. REESE, “The Faunal Remains”, in G. WALBERG (ed.), *Excavations on the Acropolis of Midea. Results of the Greek-Swedish Excavations I: The Excavations on the Lower Terraces 1985–1991* (1998), p. 277–291. – Asine: K. MOBERG, “The Animal Bones”, in R. HÄGG, G. C. NORDQUIST, “Excavations in the Levendis Sector at Asine, 1989. A Preliminary Report with an Appendix on the Animal Bones by K. Moberg”, *OpAth* 19 (1992), p. 66; *ead.*, “Animal Bones From Terrace III in the Lower Town of Asine”, in *Asine III*, p. 111–115; – Ayia Irini: J. COY, “The Faunal Remains from Period V”, in *Keos V*, Appendix 2, p. 109–111; – Ayios Mamas: C. BECKER, H. KROLL, *Das Prähistorische Olynth. Ausgrabungen in der Toumba Agios Mamas 1994–1996. Ernährung und Rohstoffnutzung im Wandel* (2008).
13. Fauna: D. S. REESE, M. J. ROSE, S. PAYNE, “The Minoan Fauna”, in J. W. SHAW, M. C. SHAW (eds.), *Kommos I: The Kommos Region and Houses of the Minoan Town. Part 1. The Kommos Region, Ecology and Minoan Industries* (1995), p. 163–290; Flora: J. M. SHAY, C. T. SHAY, “The Present Flora, Vegetation and Ethnobotany of Kommos”, *ibid.*, p. 91–162.
14. J. M. HANSEN, “Agriculture in the Prehistoric Aegean. Data versus Speculation”, *AJA* 92 (1988), p. 39–52, 41; see also C. GAMBLE, “Social Control and the Economy”, in A. SHERIDAN, G. BAILEY (eds.), *Economic Archaeology* (1981), p. 215–229.

means to recognize intensification of land use, surplus, and storage facilities, as yet no Early or Middle Bronze Age site has been excavated with a view to recovering this type of information, and, therefore, the careful, intensive sampling necessary has not been done.”<sup>15</sup> Considering the role of Aegina Kolonna as a key site of Aegean Middle Bronze Age and with reference to the availability of an elaborate stratigraphic record, we believe systematic analysis of bioarchaeological remains might serve as one of the clues to recognise shifts that accompany the economic transition from Early and Middle Bronze Age subsistence agriculture to the developed palace economy of Late Bronze Age.

## 2. MATERIAL AND METHODS

With the exception of fish bones,<sup>16</sup> all hand-collected faunal remains showed a very good state of preservation. Analysis of these materials was carried out on-site, using a mobile reference collection that has been applied successfully in several previous osteoarchaeological projects.<sup>17</sup> The investigations covered all applicable field-methods of archaeozoology in order to enable the acquisition of a comprehensive data-set on relevant parameters of animal husbandry and exploitation.

During excavation large quantities of stratigraphically well defined soil samples (ca. 2,200 kg.) were stored in separated lots weighing ca. 15 kg. Sampling of small-scale bioarchaeological residuals was processed by means of flotation and wet sieving,<sup>18</sup> using assorted mesh sizes from 500 microns to 2 mm. Due to the large quantities of soil-samples we employed two sieving/flotation units. While determination of floral remains already was carried out on-site, analysis of the huge micro-faunal sample will be the issue of a separate sub-project.

## 3. RESULTS

### Botanical remains

Charred plant remains are rather scarce throughout the site, which may be attributed to the prevalence of loamy soils in the excavated areas as well as the absence of ovens or hearths, middens or other rubbish dumps, or destruction layers caused by fire.

15. J. M. HANSEN (*supra*), p. 52.

16. A. GALIK *et al.*, in this volume (*infra*, p. 743-751).

17. E.g. G. FORSTENPOINTNER, G. GAGL, “Archäozoologische Untersuchungen an Tierresten aus Limyra”, *Öjh* 66 (1997), p. 419-426; G. FORSTENPOINTNER, G. E. WEISSENGRUBER, A. GALIK, “Banquets at Ephesos. Archaeozoological Evidence of Well Stratified Greek and Roman Kitchen Waste”, in H. BUITENHUIS, A. CHOYKE, M. MASHKOUR *et al.* (eds.), *Archaeozoology of the Near East V* (2002), p. 282-304.

18. On methodology see e.g. D. M. PEARSALL, *Paleoethnobotany. A Handbook of Procedures* (1989); T. P. O’CONNOR, “Collecting, Sieving and Animal Bone Quantification”, in H. BUITENHUIS, W. PRUMMEL (eds.) (*supra*, n. 8), p. 7-16.

Not surprisingly, field crops are dominant. *Triticum dicoccum* (emmer wheat), *Triticum aestivum* s.l. (bread wheat), and *Hordeum vulgare* (barley) occur in more or less equal proportions. Pulses are represented by *Lens culinaris* (lentil) and unidentifiable cultivated legumes. These field crops represent a fair section of the assemblage of cultivated plants known for the period. Hardly any segetals or ruderals are present in the samples.

For the first time garden plants were recovered in Aegina: *Vitis vinifera* (grape), *Ficus carica* (fig), and *Olea europaea* (olive). The majority of fig pips and some grape pips are preserved by mineralization. This type of preservation usually occurs in areas with high concentrations of sodium and phosphates, which prevail in latrines or sewage systems. In Aegina, however, mineralised remains occur throughout the site, which is rather unusual and which requires further investigation into the formation process of the studied plant assemblages.

#### Faunal remains

Analysis of hand-collected faunal remains that had been recovered from the excavation areas Q3 and Q6 during the excavation season of 2004 yielded totals of 3,178 terrestrial and 1,772 aquatic specimens. While almost all molluscan finds proved determinable at least up to genus level, due to a rather high grade of fragmentation of 1,148 mammalian, avian and ichthyc bone fragments determination was restricted to functional assignment. The MH II filling layer within the Large Building Complex produced a total of 1,062 determinable skeletal elements from terrestrial animals, almost exclusively representing livestock remains. Showing the typical patterns of plain domestic refuse, the faunal remains from MH II layers display a high degree of similarity to Mycenaean samples, indicating a mixed livestock economy that was based on non-recurrent resources like meat or hides as well as on recurrent production of goods like wool, milk, but also suggests use of animals for traction and maybe also ownership for social prestige. The analysis of tooth wear and epiphyseal closure stages proves a rather high percentage of animals (cattle and small ruminants) that were slaughtered not younger than 4-5 years. However, due to a clearly recognizable emphasis on sheep- and goat-herding, ratios of ovicapries, cattle and pig (cf. **Table 1**) display a less balanced economy of Aeginetan livestock during Middle Bronze Age than is proven by evidence from other contemporaneous sites of the Greek mainland.

	B	O-C	O	C	Sd	Cn	Ce	Ss	Le	NISP
Q3	112	555	58	78	172		3	6	1	985
Q6	92	226	8	10	117	3		2		458
NISP	204	781	66	88	289	3	3	8		1443

**Table 1.** – Mammalian remains from MH II Aegina Kolonna (B = cattle; O-C = sheep & goat; O = sheep; C = goat; Sd = domestic pig; Cn = dog; Ce = red deer; Ss = wild boar; Le = hare; NISP = number of identified specimens).

Comparison of available data on the compositions of main domestic species shows that the Aeginetan emphasis on sheep- and goat-breeding finds no parallel in the economies of

mainland Greek Middle Helladic settlements (Fig. 1). To a lesser extent than in Aegina ovicapries are predominant, in husbandry at Thessalian magulas,<sup>19</sup> while stock-breeding at Asine in the Argolid<sup>20</sup> as well as at Kastanas<sup>21</sup> in Northern Greece apparently focussed on cattle. However, a similar abundance of small ruminants can be found in faunal samples from the Aegean islands and from Minoan sites, like Kommos, not only evident during the Middle Minoan period but also discernible earlier and in subsequent chronological stages.<sup>22</sup> Results of the 2004 campaign yielded evidence of only a few, but quite indicative skeletal remains of game animals, proving hunting activities associated with the Large Building Complex inhabitants and represented by red deer, wild boar, possibly also aurochs, and even a lion. The lion bone, related to a ceramic MM IIB/MM IIIA context (19th/18th century B.C.),<sup>23</sup> represents the proximal quarter of a left humerus (arm bone) of a rather huge animal, according to the available measurements (Bp=73; Dp=85, Fig. 2). No cuttings or chop marks are discernible, however, due to the significant spiral formation of the broken edges, the fragmentation doubtlessly happened at a perimortal stage, most likely along with the cutting up of the corpse.

The surprising find of a lion bone in a waste deposit of Middle Helladic Aegina deserves to be discussed from several points of view. First we have to ask the provenance of the animal. The same question has to be raised about the remains of cervidae. Although the existence of wild boar on Middle Bronze Age Aegina is not unlikely, the ecological conditions of a small island are definitely not favourable for the survival of a herd of stags or a pack of lions. But could there have been lions in a reasonable proximity? Summing up the different and opposing opinions on the question whether actual lions existed in early Mycenaean Greece,<sup>24</sup> Nancy Thomas, in her recently published and extensive survey on “The early Mycenaean lion”, supplemented a list of lion bones found in Greece and the Balkans.<sup>25</sup> So far the earliest lion find known from the southern part of Greece is a humeral fragment from a male individual, found in a pit at the lower

19. A. VON DEN DRIESCH, “Haus- und Jagdtiere im vorgeschichtlichen Thessalien”, *PZ* 62 (1987), p. 1-21.

20. K. MOBERG (1996, *supra*, n. 12), p. 113.

21. C. BECKER, *Kastanas. Ausgrabungen in einem Siedlungshügel der Bronze- und Eisenzeit Makedoniens 1975-1979. Die Tierknochenfunde* (1986).

22. On comparative data see D. S. REESE *et al.* (*supra*, n. 13), p. 177f.

23. Absolute dates according to the modified high Minoan chronology offered by P. REHAK and J. YOUNGER, “Review of Aegean Prehistory VII. Neopalatial, Final Palatial and Postpalatial Crete”, in T. CULLEN (ed.), *Aegean Prehistory. A Review* (2001), p. 383-473, esp. p. 390 and table 1.

24. N. R. THOMAS, “The Early Mycenaean Lion up to Date”, in A. CHAPIN (ed.), *Xάροις. Essays in Honor of Sara A. Immerwahr* (2004), p. 161-206, esp. p. 190-191 with n. 162-167.

25. *Ibid.*, p. 189-190; the so far oldest lion bone in Greece is that from Dikili Tash, Macedonia, dating to the Late Neolithic period.

citadel of Tiryns containing pottery of the early Mycenaean/Shaft Grave period.<sup>26</sup> Since one of the main obstacles to the acceptance of an autochthonous Greek lion population has been the absence of any bones from earlier contexts or from northern locations,<sup>27</sup> Thomas offers an impressive list of early lion bones from the Balkans and southern Ukraine.<sup>28</sup> She ends her survey by stating: “The Balkan bones seem to have filled the void from earlier times and northern places. The lion surely roamed, however plentifully, in Bronze Age Greece.”<sup>29</sup>

Secondly one should ask about the hunters, or better, for the personalities who were responsible for the presence of lion(s) and stags in Middle Bronze Age Aegina. Doubtless we will never know whether these animals were the prey of aristocratic hunting parties, or gifts from a wealthy mainland ally, or simply bought by a well-to-do Aeginetan patrician. At any rate, one aspect is clear: interpretation of these finds has to be carried out in terms of prestige and the activities of an elite, because noble game belongs to noble men.<sup>30</sup>

A third, more zoologic-oriented question concerns the presumptive Greek lion population. Up to present it is not clear whether the lions of Greece and the southern Balkan represent an immigrated branch of the Asian lion (*Panthera leo persica* MEYER, 1826) or the last offspring of the Pleistocene cave lion (*Panthera leo spelaea* GOLDFUSS, 1810). Based on available skeletal material that has been enhanced substantially by the humerus fragment from Aegina and by a very recently published pelvis from Aegira,<sup>31</sup> morphological investigations in favour of clarifying this widely essential question are not only desirable but, most likely, also feasible.

Recent analysis yielded also avian remains that deserve further discussion. The MH II layers of area Q6 produced a total of six bones of pigeons, representing at least three individuals (Fig. 3). Additionally, also the presence of cormorants (MNI=2, Fig. 4) as well as of (greylag?) goose, rock partridge and a little owl species (MNI=1 each) has been proven by diagnostic fragments.

Relevant comparative data are only available from Middle and Late Minoan Kommos (Crete),<sup>32</sup> that refer to 25 dove bones from domestic refuse, making up 38% of identified

26. J. BOESSNECK, A. VON DEN DRIESCH, “Ein Beleg für das Vorkommen des Löwen auf der Peloponnes in ‘herakleischer’ Zeit”, AA 1981, p. 257-258; A. VON DEN DRIESCH, J. BOESSNECK, “Die Tierreste von der mykenischen Burg Tiryns bei Nauplion/Peloponnes”, *Tiryns XI* (1990), p. 87-164, esp. 111; N. R. THOMAS (*supra*, n. 24), p. 190.

27. N. R. THOMAS (*supra*, n. 24), p. 191 with n. 167.

28. *Ibid.*, p. 191-193.

29. *Ibid.*, p. 192.

30. On the meaning of lion hunt see e.g. N. MARINATOS, “Celebrations of Death and the Symbolism of the Lion Hunt”, in *Celebrations*, p. 143-147.

31. G. FORSTENPOINTNER, E. PUCHER, G. E. WEISSENGRUBER *et al.*, “Tierreste aus dem bronzezeitlichen Aigeira – Befunde und funktionelle Interpretation”, in E. ALRAM-STERN, S. DEGER-JALKOTZY (eds.), *Aigeira I: Die mykenische Akropolis* (2006), p. 171-226, esp. p. 180-181.

32. D. S. REESE *et al.* (*supra*, n. 13), p. 195-199.

bird bones. As the majority of dove bones from Aegina has been found intermingled in a huge assemblage of domestic refuse, containing also a remarkably high amount of fish remains, it is very likely that the finds from Aegina like those from Kommos are food residuals. However, as the history of dove domestication is unclear and considering the iconographic presence of pigeons in Minoan/Mycenaean art,<sup>33</sup> the decision whether the birds should be interpreted as a hunting prey or as evidence for a very early tradition of dove breeding cannot be easily made.

In spite of their greasy and fishy taste also cormorants have been eaten at least occasionally, clearly indicated by cutting-marks on a tibiotarsus (Fig. 4). No comparative evidence for the consumption of this avian species is available from prehistoric Aegean sites, however, the bird remains from Kommos yielded also 24 bones of shearwaters, another genus of fish-eating and fishy smelling aquatic birds. Maybe the evident appreciation of the Kommos people and the likely evident occurrence of consumption of such birds in Middle Bronze Age Aegina, together with a noteworthy frequency of dove bones at both sites, indicate particular dietary traditions that the inhabitants of the Large Building Complex shared with the people of Middle Minoan Crete.

A last discovery, apparently not related to subsistence exploitation of faunal resources, is worth mentioning, due to the highly interesting implications in terms of cultural history. The MH II filling layer yielded a lateral fragment of the dorsal carapace of a marginated tortoise (*Testudo marginata*). The fragment showed a clearly recognizable cutting edge, indicating a precise horizontal division of the carapace (Fig. 5). Even if various functional reasons for such a specific treatment are imaginable, a very common way of utilizing the carapace of tortoises is its usage as the sound-box of a musical instrument. Considering the fact that during the campaign of 2003 fragments of a tortoise lyre from a Mycenaean context have been identified,<sup>34</sup> the interpretation of this new find as a part of some sound box –maybe even of a lyre– seems not unlikely.

#### 4. CONCLUSIONS

Consumption refuse has been collected from a huge MH II filling layer, assigned to the significant Large Building Complex, and it has yielded wide-spread evidence concerning several aspects of very special living conditions in the context of an urban settlement of Middle Bronze Age Aegina. The available data enhance our knowledge of patterns of stock-breeding, agriculture, exploitation of marine resources, and high-ranking hunting activities.

33. e.g. M. P. NILSSON, *The Minoan-Mycenaean Religion and its Survival in Greek Religion* (1950), p. 336.

34. G. FORSTENPOINTNER, A. GALIK, G. E. WEISSENGRUBER, "Die Lyra. Archäozoologisches zum Fund eines Schildkrötenpanzers", in P. SCHERRER, E. TRINKL (eds.), *Die Tetragonos Agora in Ephesos. Grabungsergebnisse von archaischer bis in byzantinische Zeit – ein Überblick. Befunde und Funde klassischer Zeit* (2006), p. 256–260.

In our opinion, all this preliminary evidence has to be interpreted strictly according to context and it is not yet permissible to state that these data represent the general subsistence patterns of all of Middle Helladic Aegina, not to mention the whole settlement. In fact, they represent exclusively the consumption preferences of the inhabitants of the Large Building Complex. The comparison of our findings with contemporaneous data from a simple Aeginetan village would be a highly desirable goal for future studies in the bioarchaeology of prehistoric Aegina.

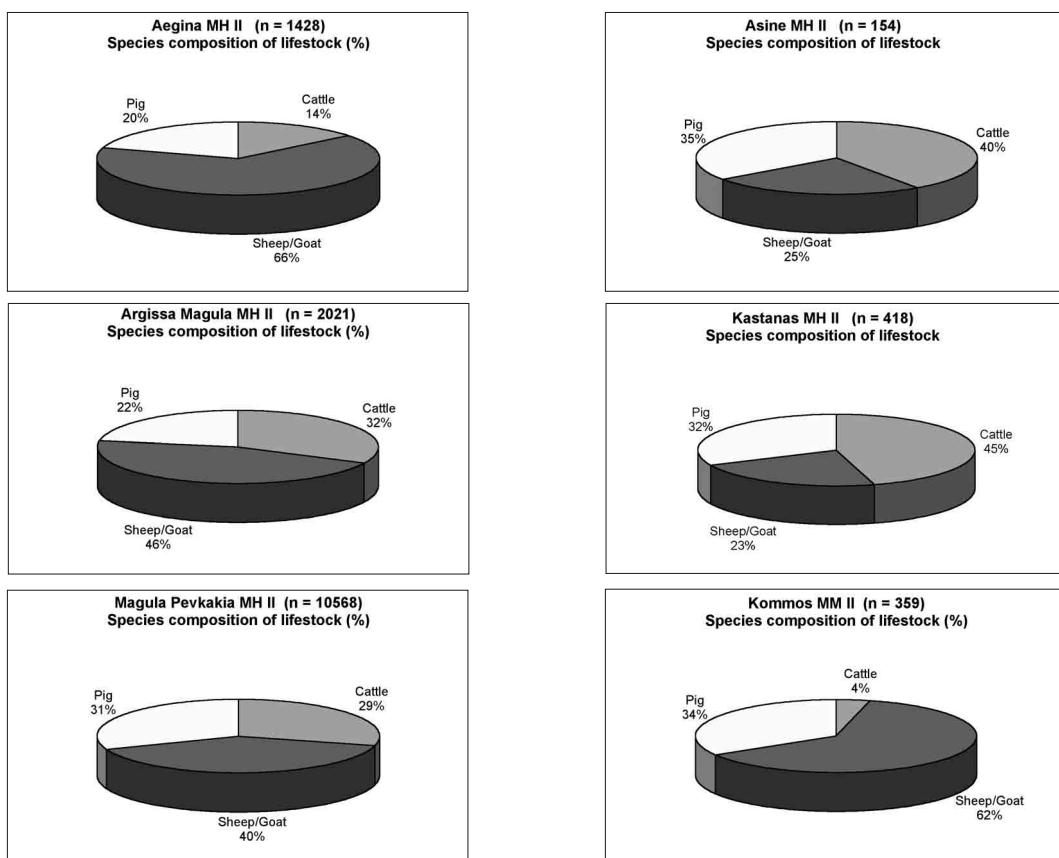
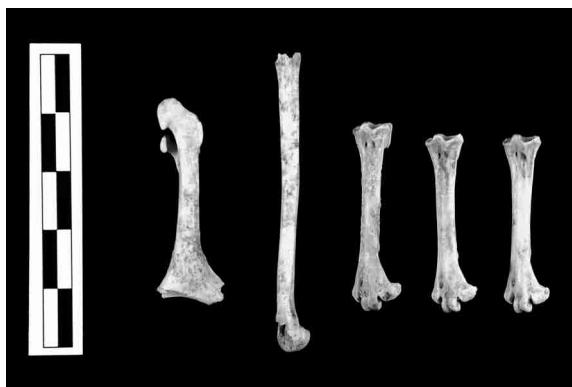


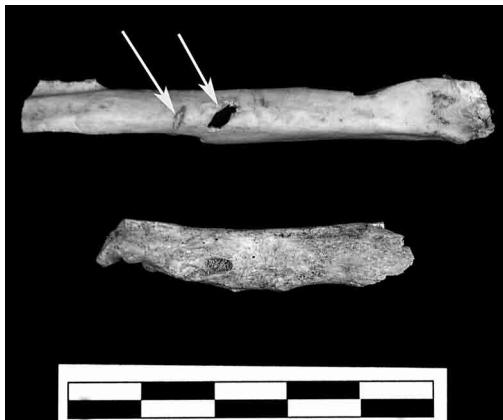
Fig. 1. – Species compositions of livestock in Greek MBA sites.



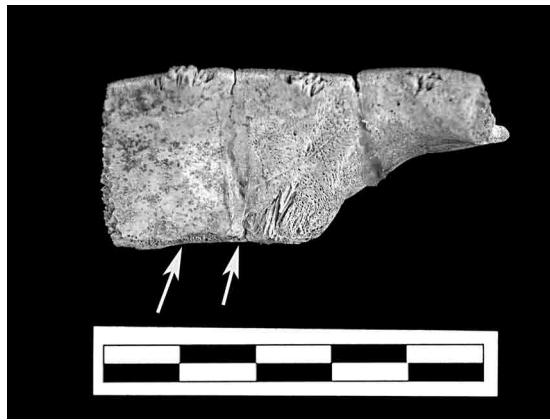
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Fig. 2. – Left humerus of a lion from MH II layers in Aegina Kolonna.

Fig. 3. – Pigeon bones from MH II layers in Aegina Kolonna.

Fig. 4. – Bones of two cormorants from MH II layers in Aegina Kolonna. Cutting marks are indicated by arrows.

Fig. 5. – Fragment of the dorsal carapace of a marginated tortoise. Cutted edge is indicated by arrows

## CONCLUSION

The major question at issue in this conference is: “Have we made progress in our knowledge of mainland Greece during the Middle Bronze Age?” The answer is indisputably yes, even if there remain many avenues for further research. Oliver Dickinson opened the conference by expressing his hope that we would learn much new about this phase of Greek prehistory, broaden our horizons, and ask new questions. The subsequent four days of papers ranged over many areas and themes and it is clear from listening to them that we have succeeded in informing each other in ways that make for a much more nuanced understanding of this period than we had before we arrived.

This progress has been made in three different respects. First is *geographical*. Regions which had been largely unknown and under-appreciated such as Elis, Achaia, Aetolia, Phthiotis-Lokris, Thessaly, and the Spercheios Valley, are now understood to be important and exciting areas for research. Important settlements which were not known in enough detail are much clearer thanks to reports given here. For examples we can point to Thebes, Dimini and Kirha, among many others. Second is *chronological*. We are now at a point where, especially thanks to the patient and careful work of all of our colleagues in the Archaeological Service, we can provide an archaeological definition of MH I and MH II, at least within restricted regions ; and this is not limited to the study of ceramics but also leads to an emerging understanding of the organization of settlement and to indications of the directions of interaction among different regions. Third is *thematic*. Of the approximately 70 communications, less than a dozen focused on ceramics (although this subject was often recognized as a component of other papers) and just slightly fewer focused on burials and funerary customs. Yet if the

conference had taken place 10 or 15 years before, without doubt many more papers would have addressed these themes, because at that time they monopolized our interests. This signifies, without any disrespect for these subjects, how scholarly interest has matured. Henceforth many other important subjects, such as lithics, architecture and settlement, economy, subsistence and modes of life, and social structure will drive our research. A number of presentations here have illustrated also the importance of attention to highly detailed and scientific applications that have the potential to revise fundamentally our traditional view of Middle Helladic societies. All these new and enlarged themes are owed to a transformation in the approaches Aegean archaeologists take to their fields of study, and we can take pride that our international community cooperates not only in research but also in training and that our host country of Greece continues to welcome new approaches and new ideas in the study of its past.

The attention to the *geographic spread* of Middle Helladic cultures and the variety of *interconnections* among different regions of Greece bears further comment. We are especially grateful to the participants for presenting much important new material, for bringing to light old material that was insufficiently known, and for focusing on the interpretation of evidence at many levels. As already noted, we have come to appreciate much better, thanks to the reports presented here, the vitality and viability of different regions. The papers have opened our eyes to settlement around the Saronic Gulf, throughout Attika, in Lokris and Thessaly, throughout the Corinthian Gulf and its opening to the West, in the southwestern Peloponnesos, in relationship to the Cycladic islands and those of the northeast Aegean, and of course in relation to Crete.

Of special notice are the reports that show the strong relations among Thessaly, Lokris, and Phokis and their relationship to the Corinthian Gulf. Discussion of settlements along the Corinthian Gulf show how they are interconnected, thus emphasizing its important role as a corridor connecting the Saronic Region at the east with Western Greece. From there, following on several reports, we are reminded that during the Middle Bronze Age knowledge of the Adriatic and Tyrrhenian coasts was increased and even that the geography of the Western Mediterranean was within the ken of these peoples. When we look eastwards into the Aegean, several reports make clear the fundamental importance for mainlanders of connections to the islands, whether looking at local relations with the important offshore islands of Aegina and Keos or the Cyclades, with their emerging gateway communities that controlled access to Crete.

Also of interest is the role of Crete during this period. Several of the papers point to Cretan interest in metals, not least a reason for Cretan interest in the northern and northeastern Aegean as more advanced forms of copper and bronze metallurgy begin to take hold. We need continuously reassess the role of Crete at this time, since as the work at Kythera demonstrates, it is not as straightforward as models of Cretan “colonization” of the Aegean had previously led scholars to believe.

The outstanding work of our colleagues in the Archaeological Service deserves further notice. Without their reports on new discoveries, their restudy of old material that commands our attention, and their assessment of the details of stratigraphy, ceramic development, and evidence of interconnections, this conference would not have succeeded. What has been provided to the conferees as a result of these reports is nothing less than a rewriting of the Middle Helladic as a cultural period. In connection with this work, the many papers which reevaluated different aspects of Middle Helladic culture and its social practices, provide us with a picture of a culture that is distinctly Middle Helladic, yet remains one without a strong center. In this regard the mosaic of regional and local forms that come into view is especially tantalizing as a picture of what we know was to come in the Late Bronze Age. Middle Helladic Greece is not merely an appendage of Early Helladic nor only a prelude to the Mycenaeans. It was a vigorous and dynamic interregional cultural phenomenon that established social and economic relations in a fashion that was different from the small centralized polities of the Early Bronze Age. At a time when new connections were forged and older ones reestablished, it was a new beginning, but hardly the one of stagnant cultural practices and an immobilized and impoverished population that most of us have been taught. There are many lessons for us to draw from the proceedings and we hope that they will bring to a wider public the interest and excitement shown by the participants at the conference.

The editors

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