Cover illustrations
On the front: The Helike coins of Poseidon, 4th c. BC. Bronze: Munzkabinett, Staatliche museen zu Berlin (© bpk, Berlin 1998). Silver: Image courtesy of Gorny and Mosch Gmbh, 2013.
On the back: Clay sealing from Kydonia, Crete, with representation of Poseidon commanding the sea, ca. 1450 BC (from Castleden 1990, 130, fig. 41).

ΕΤΑΙΡΕΙΑ ΦΙΛΩΝ της ΑΡΧΑΙΑΣ ΕΛΙΚΗΣ
THE HELIKE SOCIETY

HELIKE V

ΑΡΧΑΙΑ ΕΛΙΚΗ ΚΑΙ ΑΙΓΙΑΛΕΙΑ

ΠΟΣΕΙΔΩΝ
Ο ΘΕΟΣ ΤΩΝ ΣΕΙΣΜΩΝ ΚΑΙ ΤΩΝ ΥΔΑΤΩΝ
ΛΑΤΡΕΙΑ ΚΑΙ ΙΕΡΑ

ANCIENT HELIKE AND AIGIALEIA

POSEIDON
GOD OF EARTHQUAKES AND WATERS
CULT AND SANCTUARIES

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ΑΘΗΝΑ/ATHENS 2017

ISBN: 978-960-86377-4-0

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ΑΙΓΙΟΝ, 4-6 ΟΚΤΩΒΡΙΟΥ 2013

Εκδοτική επιμέλεια:
Ντόρα Κατσωνοπούλου

ΑΘΗΝΑ 2017

HELIKE V

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PROCEEDINGS OF THE FIFTH INTERNATIONAL CONFERENCE
AIGION, 4-6 OCTOBER 2013

Edited by
Dora Katsonopoulou

ATHENS 2017

ΠΙΝΑΚΑΣ ΠΕΡΙΕΧΟΜΕΝΩΝ
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ΕΛΙΚΗ ΚΑΙ ΚΟΡΙΝΘΙΑΚΟΣ ΚΟΛΠΟΣ
HELIKE AND THE GULF OF CORINTH

ΠΡΟΛΟΓΟΣ

Ο παρών τόμος (*Helike V*) είναι ο πέμπτος στη σειρά τόμος Πρακτικών Διεθνών Συνεδρίων αφιερωμένων στην Αρχαία Ελίκη και Αιγιάλεια, που οργανώνονται από την Εταιρεία Φίλων της Αρχαίας Ελίκης (ΕΦΑΕΛ) και πραγματοποιούνται στην περιοχή του Αιγίου και της Αιγιάλειας ανά τακτά διαστήματα. Ο τόμος, με τον ειδικότερο τίτλο *Ποσειδών, ο θεός των σεισμών και των υδάτων. Λατρεία και ιερά,* περιλαμβάνει τις επιστημονικές ανακοινώσεις που παρουσιάστηκαν στη διάρκεια του Ε' Διεθνούς Συνεδρίου, το οποίο πραγματοποιήθηκε στο Αίγιον από 4-6 Οκτωβρίου 2013. Ιδιαίτερος στόχος του Συνεδρίου υπήρξε η παρουσίαση των πλέον πρόσφατων στοιχείων (α) για τη λατρεία του Ποσειδώνος στην Ελίκη και άλλες περιοχές της Πελοποννήσου αλλά και στην Ιωνία της Μ. Ασίας, όπου ο θεός λατρευόταν ιδιαίτερα ως *Ελικώνιος* και (β) για τα σεισμικά φαινόμενα, ιδίως τον σεισμό του 373 π.Χ., που συνδέονται με την πανάρχαια ιδιότητα του Ποσειδώνος ως θεού των σεισμών και των υδάτων.

Το Συνέδριο ακολούθησε μετά το Δ' Διεθνές Συνέδριο της σειράς *Αρχαία Ελίκη και Αιγιάλεια* που πραγματοποιήθηκε στα Νικολαίικα Διακοπτού τον Σεπτέμβριο του 2007 και ήταν αφιερωμένο στα αποτελέσματα των ανασκαφών του Ερευνητικού Προγράμματος Αρχαίας Ελίκης στον σημαντικό πρωτοελλαδικό (ΠΕ) οικισμό που ανακαλύφθηκε στην περιοχή της Αρχαίας Ελίκης, στον σύγχρονο Ριζόμυλο της Αιγιάλειας, και των ερευνών και ανασκαφών σε άλλους σύγχρονους με την Ελίκη ΠΕ οικισμούς της νότιας και κεντρικής Ελλάδας. Τα Πρακτικά του Συνεδρίου (*Helike IV*) με τον ειδικότερο τίτλο *ΠΡΩΤΟΕΛΛΑΔΙΚΑ-Η Νότια και Κεντρική Ελλάδα*, δημοσιεύθηκαν από την ΕΦΑΕΛ το 2011, με την εκδοτική επιμέλεια της Ντόρας Κατσωνοπούλου.

Ο παρών τόμος (*Helike V*), περιλαμβάνει 16 επιστημονικές ανακοινώσεις που κατανέμονται σε δύο μέρη. Το Μέρος Ι, με τίτλο *Λατρεία και Ιερά Ποσειδώνος,* περιλαμβάνει 9 άρθρα σχετικά με τη λατρεία του Ποσειδώνος στην Ελίκη και άλλες θέσεις της Πελοποννήσου, και στην Ιωνία της Μ. Ασίας. Το Μέρος ΙΙ, με τίτλο *Ελίκη και Κορινθιακός Κόλπος,* περιλαμβάνει 7 άρθρα που αφορούν στην περιοχή της Αρχαίας Ελίκης και στη σεισμική ιστορία του ευρύτερου Κορινθιακού Κόλπου, εστιάζοντας στο αξιοσημείωτο καταστροφικό φαινόμενο του 373 π.Χ. και τις επιπτώσεις του.

Στην πρώτη εργασία του τόμου, Μέρος Ι, νεότερα στοιχεία παρουσιάζονται για τη λατρεία του Ποσειδώνος *Ελικωνίου* στην Ελίκη, μέσω εξέτασης των συμβόλων και της εικονογραφίας του θεού και της σύνδεσης της λατρείας του με τις αρχέγονες ιδιότητές του ως θεού των σεισμών και των υδάτων, και μια νέα ερμηνεία και χρονολόγηση της αποστολής των Ιώνων στην Ελίκη τον 4ο αιώνα π.Χ. προτείνεται, με βάση τη διαθέσιμη φιλολογική μαρτυρία και τα νέα αρχαιολογικά δεδομένα από τις ανασκαφές του Ερευνητικού Προγράμματος Αρχαίας Ελίκης στην περιοχή (*Dora Katsonopoulou*). Ακολούθως, τα μετρολογικά και εικονογραφικά στοιχεία όλων των γνωστών νομισμάτων της Ελίκης εξετάζονται για πρώτη φορά και συμπεραίνεται ότι αυτά αποτελούν μέρος μιας μοναδικής κοπής γύρω στο 300 π.Χ., και ότι είναι πολύ πιθανό η *πόλις* της Ελίκης να επέζησε του σεισμού του 373 π.Χ. και να έκοψε αυτά τα νομίσματα, όπως δείχνουν και τα αποτελέσματα των ανασκαφών του Ερευνητικού Προγράμματος Αρχαίας Ελίκης τα τελευταία χρόνια (*Robert Weir*).

Στο ζήτημα της θέσης του Πανιωνίου, κεντρικού ιερού της Ιωνικής Συμπολιτείας στη Μ. Ασία, όπου λατρευόταν ο *Ελικώνιος* Ποσειδών αναφέρονται τα επόμενα τρία άρθρα. Αρχικά

παρουσιάζεται, άγνωστη πριν, θέση του β' μισού του 7ου αιώνα π.Χ. που ανακαλύφθηκε στο Çatallar Tepe στη Μυκάλη, ενώ η παλαιότερη αρχαιολογική θέση που είχε ταυτιστεί με το αρχαιότερο Πανιώνιον, ερμηνεύεται εκ νέου σαν μια προσπάθεια επανίδρυσης της λατρείας του *Ελικωνίου* Ποσειδώνος στη διάρκεια του ύστερου 4ου αιώνα π.Χ. (*Hans Lohmann*). Ακολούθως, συζητείται ο νέος οχυρωμένος οικισμός του 7ου αιώνα π.Χ. που ανακαλύφθηκε στο Çatallar Tepe και προτείνεται η ταύτισή του με τον οικισμό της Μελίας (*Hans Lohmann* και *Özge Özgül*). Τέλος, περιγράφεται ο νέος αρχαϊκός ναός που βρέθηκε μέσα στον οχυρωμένο οικισμό στο όρος Çatallar και συζητείται η μοναδική μορφή του, ένας συνδυασμός ναού και λέσχης, λαμβανομένης υπόψη της λειτουργίας του (*Frank Hulek*).

Η μετάβαση στην επόμενη ενότητα που αφορά στη λατρεία του Ποσειδώνος σε άλλες περιοχές της Πελοποννήσου, αρχίζει με τη διερεύνηση της σημασίας των Ομηρικών επιθέτων και τίτλων του Ποσειδώνος *εννοσίγαιος, ενοσίχθων* και *γαιήοχος* και προτείνεται ότι η προβλεπόμενη καταστροφή του τείχους των Αχαιών στη Μ (και την Η) της *Ιλιάδος* που συχνά συγκρίνεται με τους μύθους για κατακλυσμό, είναι αντίθετα μύθος για ένα τσουνάμι (*Ioannis Petropoulos*). Η ιδιαίτερη σχέση του Ποσειδώνος με την Πελοπόννησο και η λατρεία του στους πρώιμους ιστορικούς χρόνους είναι το αντικείμενο του επόμενου άρθρου, σε σχέση και με γεωλογικά καταστροφικά φαινόμενα και μύθους που τον συσχετίζουν με άλλες θεότητες στις περιοχές λατρείας του (*Ελένη Μαράντου*). Η αρχή και η εξέλιξη της λατρείας του Ποσειδώνος στην Τροιζηνία, συμπεριλαμβανομένων της χερσονήσου των Μεθάνων, όπου έχει ανασκαφεί ΥΕ ΙΙΙ ιερό του θεού με σημαντικά ευρήματα, και της νήσου Καλαύρειας με το ιερό του Ποσειδώνος – έδρα της αμφικτυονίας, παρουσιάζονται διεξοδικά στη μελέτη που ακολουθεί (*Eleni Konsolaki Yannopoulou*). Το ιερό που βρέθηκε στη Μικρή Δραγονάρα Κυθήρων και στο οποίο λατρευόταν ο Ποσειδών ως *Γαιήοχος* συζητείται στη συνέχεια, περιγράφονται τα ποικίλα αφιερώματα και παρουσιάζονται τα γεωμορφολογικά χαρακτηριστικά της βραχονησίδας που υποστηρίζουν την υπόσταση και τη λατρεία του Ποσειδώνος ως θεού των σεισμών (*Άρης Τσαραβόπουλος* και *Γκέλη Φράγκου*).

Το Μέρος ΙΙ, αρχίζει με την παρουσίαση των αποτελεσμάτων γεωφυσικής έρευνας με ηλεκτρική τομογραφία στο μυκηναϊκό νεκροταφείο της περιοχής Αρχαίας Ελίκης, που στόχευε στον εντοπισμό και τη χαρτογράφηση θαμμένων αρχαιοτήτων καθώς και στην απεικόνιση του γεωλογικού υποβάθρου της περιοχής (*Grigoris Tsokas et al*.). Με την επόμενη ανακοίνωση, περιγράφονται οι πετρογραφικές και γεωχημικές αναλύσεις δειγμάτων της κεραμικής από τον πρωτοελλαδικό οικισμό της Ελίκης (ΠΕ ΙΙ-ΙΙΙ) και παρουσιάζονται τα αποτελέσματα που προέκυψαν για τις τεχνολογικές επιλογές των αρχαίων κεραμέων, όσον αφορά στην προέλευση των αργιλικών υλών, για την παραγωγή κεραμικής στην περιοχή της Αρχαίας Ελίκης (*Ioannis Iliopoulos* και *Vayia Xanthopoulou*). Μένοντας στην περιοχή, μια διαφορετική προσέγγιση για τα πιθανά αίτια καταστροφής της Ελίκης από τον σεισμό του 373 π.Χ., σε συνδυασμό με πλημμύρα του ποταμού Σελινούντα και ιλυοροή του χειμάρρου Κατουρλά, προτείνεται με το επόμενο άρθρο με βάση ιζηματολογικές, γεωλογικές και παλυνολογικές αναλύσεις, αναδεικνύοντας τη μεγάλη αξία της χερσαίας πλημμύρας ως μέσον καταστροφής (*Nikolaos Kontopoulos, Dora Katsonopoulou* και *Asimakis Koutsios*). Σε παρόμοια συμπεράσματα, οδηγεί η μελέτη της γεωλογίας της περιοχής που παρουσιάζεται στο επόμενο άρθρο του τόμου και εστιάζεται στον ρόλο του χειμάρρου Κατουρλά και τις συνέπειες της δράσης του στην πιθανή κάλυψη της πόλης κάτω από ιζήματα μετά την

καταστροφή της το 373 π.Χ. (*Κωνσταντίνος Τρίκολας*). Το καταστροφικό φαινόμενο που συνέβη στην Ελίκη και οι συνέπειές του στον χώρο των Δελφών, στην άλλη πλευρά του Κορινθιακού, ανιχνεύονται στη μελέτη που ακολουθεί μέσα από μια νέα «ανάγνωση» στην αρχιτεκτονική του δελφικού ιερού συνολικά, με την εξέταση των βλαβών και των συνθηκών αλλοίωσης στα μνημεία αλλά και των τεχνικών πρόληψης που ανέπτυξαν οι αρχιτέκτονες έχοντας εμπειρία του σεισμού, όπως επίσης και των αλλαγών στο υδρολογικό δίκτυο κατά την ανοικοδόμηση του απολλώνειου ναού στον 4ο αιώνα π.Χ. (*Elena Partida*).

Στην ανατολική πλευρά του Κορινθιακού, μας μεταφέρουν τα δύο επόμενα και καταληκτικά άρθρα του τόμου. Στο πρώτο, η παλαιοσεισμολογική ιστορία του ρήγματος των Κεγχρεών επαναπροσεγγίζεται μέσα από γεωαρχαιολογικά δεδομένα και με συνεξέταση των αρχαιολογικών στοιχείων από τις παλαιότερες αλλά και πλέον πρόσφατες ανασκαφές στην περιοχή της Ράχης Κουτσογκίλα (*Ioannis Koukouvelas* και *Elena Korka*). Ακολούθως, περιγράφεται η γεωλογική ιστορία των λιμανιών του Λεχαίου και των Κεγχρεών μετά την ύστερη Ρωμαϊκή περίοδο και παρουσιάζονται τα αποτελέσματα μελέτης των μεταβολών του επιπέδου της θάλασσας στις ακτές του βορειοανατολικού άκρου της Πελοποννήσου (*Νίκος Μουρτζάς* και *Ελένη Κολαΐτη*).

Για την υποστήριξη του Συνεδρίου, θερμά ευχαριστώ την Τράπεζα Alpha Bank, και για την φιλοξενία στην αίθουσα Στέγης Γραμμάτων & Τεχνών της Φιλαρμονικής Αιγίου, τον μαέστρο Λεωνίδα Χαραλαμπόπουλο. Τέλος, ειλικρινείς ευχαριστίες απευθύνονται στα μέλη του Διοικητικού Συμβουλίου της Εταιρείας Φίλων της Αρχαίας Ελίκης για την ουσιαστική συμβολή τους στην προετοιμασία και πραγματοποίηση του Συνεδρίου.

Ντόρα Κατσωνοπούλου
Πρόεδρος Εταιρείας Φίλων
της Αρχαίας Ελίκης
Διευθύντρια Ερευνητικού
Προγράμματος Αρχαίας Ελίκης

PREFACE

The present volume (*Helike V*) is the fifth in a series of international conferences dedicated to the archaeology of Ancient Helike and Aigialeia, organized by the Helike Society and conducted at Aigion and the Aigialeia region at periodic intervals. This volume, entitled *Poseidon, God of Earthquakes and Waters. Cult and sanctuaries*, contains scholarly papers presented during the Fifth International Conference on *Ancient Helike and Aigialeia*, which took place in Aigion from 4-6 October, 2013. Main purpose of the Conference was to present the most recent data (a) on Poseidon's cult in the Helike region and other areas of the Peloponnese, and Ionia in Asia Minor where the god was strongly worshipped as *Helikonios* and (b) on seismic phenomena, especially the 373 BC earthquake, in connection with Poseidon's primordial capacity as god of earthquakes and waters.

This Conference followed the previous one on *Ancient Helike and Aigialeia*, held in Nikolaiika of Diakopton in Aigialeia in September 2007 and devoted to the excavation results of the Helike Project from the Early Helladic settlement of Helike, discovered in the Helike plain in modern Rizomylos, and from other contemporary EH sites in the southern and central Greek mainland. The proceedings of the conference entitled *PROTOHELLADIKA. The Southern and Central Greek Mainland* (*Helike IV*), edited by Dora Katsonopoulou, were published by the Helike Society in 2011.

The current volume on the fifth Congress (*Helike V*), also published by the Helike Society and edited by Dora Katsonopoulou, includes a total of sixteen scholarly papers, divided into two parts. Part I, entitled *Cult and Sanctuaries of Poseidon*, includes nine studies on Poseidon's cult in Helike and other areas of the Peloponnese, also in Ionia of Asia Minor. Part II, entitled *Helike and the Gulf of Corinth*, contains seven papers dealing with the area of Ancient Helike and the seismic history of the Gulf of Corinth, focusing on the remarkable 373 BC earthquake and its impact.

Part I begins with the presentation of new elements about the cult of Poseidon *Helikonios* in Helike via examination of the god's attributes and iconography, and the association of his cult with the deity's primitive properties as water and earthquake god; further, a new interpretation and dating of the Ionian mission to Helike in the 4th century BC is proposed, based on available literary evidence and the new archaeological data from excavation work of the Helike Project in the area (*Dora Katsonopoulou*). Next, the metrological and iconographic contexts of all the known Helike coins are for the first time examined and it is concluded that they were part of a small, one-time issue sometime around 300 BC, and that the *polis* of Helike survived the earthquake of 373 BC to be the issuing authority for these coins as excavation results by the Helike Project in recent years have shown (*Robert Weir*).

The next three articles of the volume concern the Panionion, central sanctuary of the Ionian League in Asia Minor, where Poseidon was worshipped as *Helikonios*. First, is presented evidence for the discovery of a previously completely unknown hilltop site of the 2nd half of the 7th century BC at Mt. Çatallar Tepe in the Mykale region, while the site formerly identified with the earlier Panionion is reinterpreted as a rapidly abandoned attempt to renew the cult of Poseidon *Helikonios* during the late 4th century BC (*Hans Lohmann*). The newly discovered fortified site at Mt. Çatallar Tepe is consequently discussed and its identification with the Carian

settlement of Melia is proposed (*Hans Lohmann* and *Özge Özgül*). In the third paper dealing with Ionia, the Archaic temple discovered within the fortified settlement at Mt. Çatallar is presented and its unique form, a combination of temple and banquet hall, is discussed with regard to its function (*Frank Hulek*).

In the first paper of the next section of Part I concerning Poseidon's cult in other regions of the Peloponnese, the meaning of the Homeric epithets and titles of Poseidon *enossigaios*, *enosichthon*, and *gaieochos* is explored and it is proposed that Poseidon's devastation of the Achaean wall in the *Iliad* 12, often read as a 'deluge myth', it is actually a myth about a tsunami (*Ioannis Petropoulos*). Poseidon's special connection with the Peloponnese, and his cult in the early historic times is the subject of the next article, discussed especially in light of his association with natural catastrophes and other deities co-worshipped in the same areas (*Ελένη Μαράντου*). The beginning and the development of Poseidon's cult in Troezenia are presented in detail in the following study, including the peninsula of Methana, where a LH III sanctuary of the god and significant associated finds have been excavated, and the island of Kalaureia where the sanctuary of Poseidon and seat of the amphictyony was situated (*Eleni Konsolaki Yannopoulou*). Next, the sanctuary of Poseidon *Gaieochos* in Mikri Dragonara of the island of Kythera, and the various dedications found, are described including a discussion of the geology of the islet supporting the hypostasis of Poseidon as the god of earthquakes (*Άρης Τσαραβόπουλος* and *Γκέλη Φράγκου*).

Part II begins with the presentation of the results of geophysical prospection using electrical resistivity tomography at the Mycenaean cemetery in the area of Ancient Helike aiming at detecting and mapping concealed antiquities and undulations of the geological formation considered as basement (*Grigoris Tsokas et al*.). Then, petrographic and geochemical analyses of pottery samples from the Early Helladic Helike settlement (EH II-III) and their comparison with local clayey raw materials are described and the evidence provided for potters' choices concerning the source of the clays for the ceramic production in the area of Helike, is presented (*Ioannis Iliopoulos* and *Vayia Xanthopoulou*). Focusing in the seismic history of the area of Helike, in the next article a different approach is proposed regarding the possible causes of Helike's natural destruction in 373 BC; in conjunction with flooding of the Selinous River and mudflows of the Katourla stream, the high possibility of terrestrial flooding as a medium of catastrophe is stressed (*Nikolaos Kontopoulos, Dora Katsonopoulou* and *Asimakis Koutsios*). Similar conclusions are reached via the geological study of the area presented in the following paper, focusing on the activity of the Katourla stream probably responsible for complete or partial burial of the city under its sediments after the 373 BC seismic event (*Κωνσταντίνος Τρίκολας*). The 373 BC catastrophe and its impact at the site of Delphi are investigated next via a new "reading" of the architecture of the sanctuary as a whole considering distortions or damages to the monuments, prevention measures developed by the architects having the experience of an earthquake, and including changes in the hydraulic network during the temple reconstruction in the 4th century BC (*Elena Partida*).

The last two papers of the volume are dealing with the eastern part of the Gulf of Corinth. Initially, the palaeoseismological history of the Kenchreai Fault in Korinthia is re-considered in light of geoarchaeological data and archaeological finds from earlier and more recent excavations on the Koutsongila Ridge (*Ioannis Koukouvelas* and *Elena Korka*). Next, in the final article

of the volume, the geological history of the ports of Lechaion and Kenchreai after the late Roman period is described and the results of studies on relative sea level changes in the NE coast of the Peloponnese are discussed (*Νίκος Μουρτζάς* and *Ελένη Κολαΐτη*).

I would like to thank warmly the Alpha Bank for financial support of the Conference and Mr. Leonidas Charalampopoulos for hosting the Conference in the Cultural Center of the Aigion Philharmonic Orchestra. I also thank the Board members of the Helike Society for their valuable contributions toward the preparation and realization of the Conference.

Dora Katsonopoulou
The Helike Society, President
The Helike Project, Director

ΜΕΡΟΣ Ι - PART I

ΛΑΤΡΕΙΑ ΚΑΙ ΙΕΡΑ ΠΟΣΕΙΔΩΝΟΣ
POSEIDON'S CULT AND SANCTUARIES

The Architecture of the Middle Archaic Temple at Mount Çatallar Tepe

Frank Hulek

University of Cologne, Germany

During the survey of Mycale (modern Samsun Dağları in Western Asia Minor), H. Lohmann and his team discovered the ruins of an Ionic temple.[1] Since it had been vandalized and continued to be threatened by illegal diggings, the General Directorate of Museums and Antiquities of the Republic of Turkey granted a permit for a rescue excavation of the temple. This was carried out in three annual campaigns from 2005 to 2007 under the auspices of the Museum of Aydın and its director E. Yener. During this excavation the entire remains of the temple were uncovered.

The length of the temple is 28.8m (approx. 100 feet). Thus, it seems appropriate to call the building a *hekatompedos*. Its width is 8.6m (ca. 30 feet) and its orientation is due east. The layout of the building combines a pronaos with eight interior columns in two rows with an almost quadrangular naos, which has two columns (centred above the older naiskos) and a large room in the western part of the building with three columns in the longitudinal axis. There are neither a crepidoma nor a peristasis, not even a prostyle front or a continuous step in front of the pronaos. This means that important characteristics which distinguish a temple as such are missing (Fig. 1).

The western room (the so-called Westroom) was not accessed through pronaos and naos, but directly from the exterior through a door at the western end of the southern wall. Shortly after its construction the temple was destroyed by fire. The destruction layer in the Westroom contains the collapsed roof on the floor covered by the clay of the walls. The clay was partly reddened by the fire. The pottery shards on top of the floor date to the first half and to the middle of the sixth century BC, the fine wares like the attic imports and especially a black-figured bowl (kylix) by the Tleson-painter, date the destruction to the decade directly before 550 BC.[2] This is confirmed by the features of the roof tiles and the stylistic positioning of the lionhead-antifixes as A. Busching and Ö. Özgül have shown.[3] Construction and destruction of the temple are, therefore, reliably dated within narrow limits based on the archaeological record, irrespective of the position of the building in the history of architecture. Thus, the building can be seen as an important point of reference for the evolution of sacral architecture

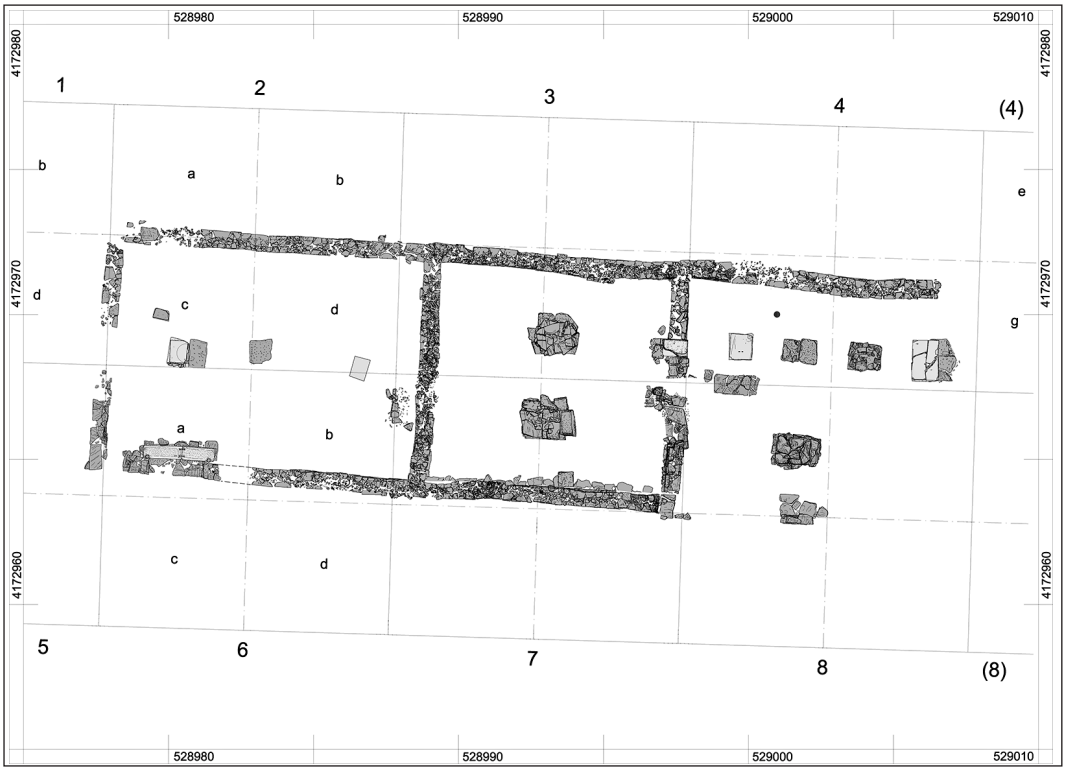

Figure 1. *Stone plan of the middle Archaic temple on Mt. Çatallar Tepe. CAD-processing by G. Kalaitzoglou.*

in Ionia and there is reasonable hope that it will shed new light on other buildings in the region like the Archaic temples of Samos, Miletos, and Ephesos, which are less well preserved and whose chronology is more complex.[4] It will be shown in this paper that the middle Archaic temple at mount Çatallar Tepe fulfils this hope, although its remains suffered by different interventions later on.

The destructive fire burned numerous architectural members nearly to lime and now they disintegrate if touched. At a particular time after the fire, an earthquake dislocated the walls and left them in sinuous lines. In Early Byzantine times marble, stone, and metal material were robbed. This practice continued until the 20th century, even a lime kiln was erected near the ruins. In the last decades before the excavations, the temple became victim of illicit diggings. Great parts have been destroyed by means of heavy building equipment, perhaps a loader. This caused severe damage to the southern part of the pronaos and to the Westroom.[5] All these destructive incidents have left their marks on the architecture of the temple. The foundation walls, the rising structure and the floors are out of alignment by more than 10cm, due to the earthquake.[6] An unknown number of architectural members were removed. Despite this, the excavation has yielded more than 600 architectural fragments which were drawn and photographed by H. Büsing during the excavation. His documentation allowed a well-founded textual and graphic reconstruction of all technical and architectural details of the temple. The mix of materials in the building represents a last stage in

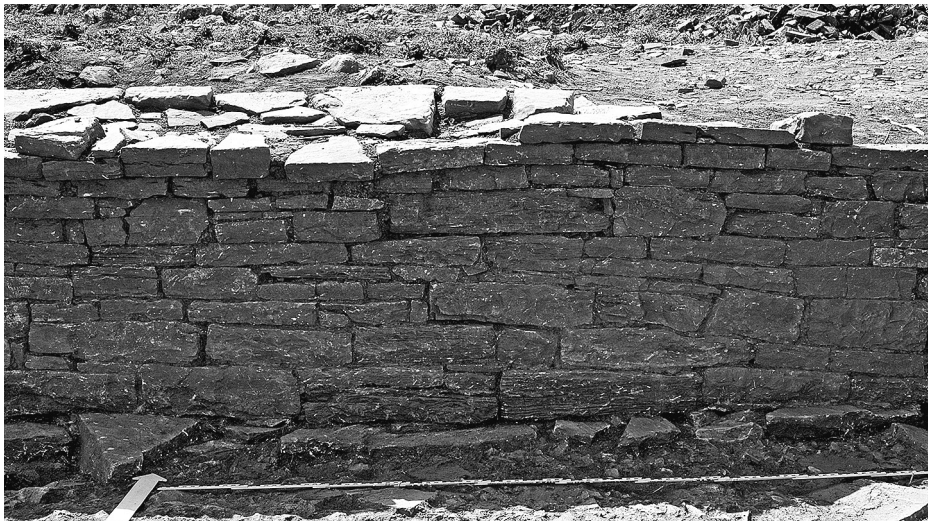

Figure 2. *Inner face of the south wall in the Naos. Photograph by H. Lohmann.*

the development from the common techniques of domestic architecture to monumental marble architecture.

THE WALLS

The socle of the walls consists of stones, but the walls themselves were made of clay. The groundwork of the building was rather simple. A 1.5 m high socle of slightly scabbed quarry stones of local limestone stood on a layer of projecting stone slabs (Fig. 2). Where the living rock is cropping out, it was superficially dressed and served as the foundation. The large-scale buildings of that time also had similar shallow foundations. Those of the older Dipteros on Samos are in some places only 40 cm deep. According to H. Kienast these shallow foundations caused enormous settlings of the temple. Subsequently, the Heraion had to be torn down and reconstructed.[7]

The visible face of the socle had undergone a characteristic treatment. The surface of the stones had been worked on with parallel strokes of a tool, perhaps a scabbing pick or a *skeparnon*. The resulting surface appears nidged. The stones which had been treated this way can be found only above ground level. A similar surface treatment can be seen in the sanctuaries at Ephesos, Samos, and on some walls in the living quarters of the Kalabaktepe excavation at Miletos.[8] This feature was a necessary support for the loam rendering which covered both the socle and the walls of clay. Such scabbing is still practiced today in traditional constructions.[9]

Excavations have yielded a huge amount of clay, whereas the excavated stone material suffices for the socle only. Since the conspicuous wall stones have not been spotted at any other site during the extensive survey of the Mycale mountain range it is unlikely that they have been removed from the ruins for secondary use.[10] Therefore, the original walls must have been made of either mud bricks (i. e. adobe) or rammed earth (i. e. pisé). The pieces of burnt

loam found during excavation have not been preserved in the shape of bricks, but are probably remnants of the loam rendering of the walls. As a presumed building technique of ancient Greece, archaeologists normally favour mud brick walls over pisé, partly because there are some well preserved examples of this technique in the Greek world[11] and partly because Pliny the Elder (*Nat. Hist.* 35.169) conveys that while the Greeks used mud bricks, the Carthaginians preferred pisé for their constructions. Probably these preferences were not always as exclusive as they seemed to the Roman author, since the Lydians, direct neighbours of the Ionians, used contemporarily both techniques at Sardis:[12] because at the Lydian capital both techniques were deployed, neither of these can be completely dismissed for the temple at Mount Çatallar Tepe.

CLAY ARCHITECTURE AT ARCHAIC TEMPLES

It is a well known fact that clay is a cheap and easily obtainable building material; it has satisfactory static properties and balances the moisture and the temperature inside of a building. Thus, it was the first choice in domestic architecture of at least the Geometric and Archaic periods.[13] For sacred buildings, however, clay architecture may be considered inappropriate; especially the temples of the sixth century BC seem at first sight to have been built entirely and solely of stone. This might hold true for the Ionian dipteroi, but for medium-sized buildings this assumption can be doubted.[14] At the older temple of Athena at Miletos and at the so-called North Building ('Nordbau') at Samos, stones of the walls are missing in the archaeological record. H. Kienast and W. Held assume that these were removed later and therefore exclude clay as building material,[15] even though mud bricks have been found next to the temple of Athena.[16] It should be taken into consideration, however, that also the clay of bricks and pisé can be removed and reused easily and conveniently, too.[17] Therefore, the absence of large quantities of clay at the North Building does not contradict the assumption of clay as material for the walls, nor do the vast dimensions of the substructures (1 m high and 1.2m wide) make a point in favour of stone, since limestone and clay have similar densities.[18] The Samian substructures were most probably necessitated by the marshy subsoil of the river basin close to the sea.

A similar case is the middle Archaic temple at the Eastern Greek settlement at Naucratis (Egypt). There, the excavator E. Gjerstad assumed that the walls were built of mud bricks, the material traditionally dominant in the delta of the Nile and abundantly present in the archaeological strata[19]. F. von Bissing later objected, stressing the presence of stone chips in a presumed destruction layer, which according to him point to stone walls.[20] But the stone chips in question can also be explained by the assumption of a stone socle for a clay wall. More recent studies on the architecture of the Naucratean temple do not even discuss the question and take stone to be the sole building material, even though only one single probable fragment of an ashlar has been found.[21]

THE COLUMNS AND THEIR FOUNDATIONS

The columns of the temple at Mount Çatallar Tepe and their foundations display equally simple but appropriate constructions. There are neither strip foundations nor a continuous stylobate, but each column had its own foundation; eight of them are preserved: five in the pronaos, two in the naos and one (out of formerly three) in the Westroom. They consist of

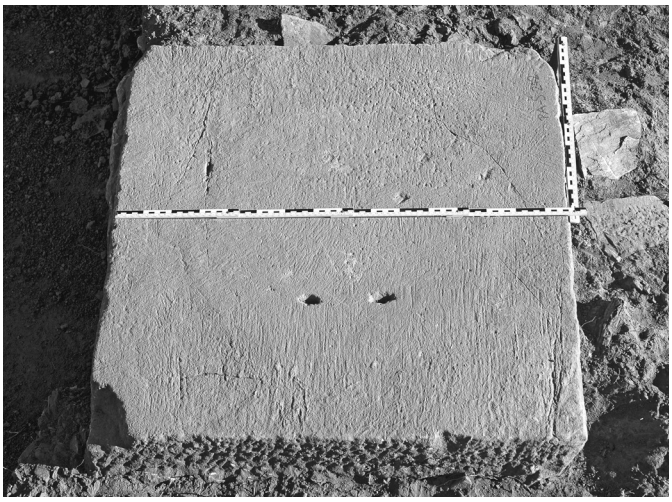

Figure 3. *Upper surface of a stylobate slab (Invt. No. PA-S242). Photograph by H. Lohmann.*

barely hewn slabs, mainly of local, partly schistous limestone, but also of breccia and tuff. [22] The average thickness of the slabs is 30cm. In cases where their bearing surfaces are uneven or not parallel, they are leveled using smaller stones and clay. Where the natural rock abuts the foundations it is barely smoothed and used as a base for the slabs.[23] Otherwise, the foundations of both the walls and the columns were set on the ground and the walls were backfilled with earth. The topmost layer of the foundations of the columns was made of marble slabs, the so-called stylobate slabs (Fig. 3). Their upper surface is thoroughly planed by means of a pointed chisel or a pick and later smoothed. All other surfaces seem to be unworked and remained invisible under the floor. In some cases a circular area can be discerned on the smoothed surface. Its diameter is 56cm and its centre is marked by a shallow compass hole. On this well smoothed and slightly (by about 1mm) raised area the columns were erected.[24] The column drums were neither doweled to the stylobate slabs nor to each other.

Because the building ground declines to the south, the foundations under the southern row of columns were thicker and larger than those under the northern row. The two foundations in the naos are even sturdier with respect to the wider span of the roof beams and to the consequently stronger forces occurring there. On the bigger foundations two unjointed marble stylobate slabs constitute the bearing for the columns. The heights of the upper surfaces of the stylobate slabs differ between the three rooms, thereby attesting to different floor levels in the rooms. The floor inside the naos was at least 20 cm higher than in the pronaos.

The columns and their capitals do not conform with the accepted perceptions of Ionic architecture. Since the columns lack bases, the column shafts stood directly on the stylobate slabs. The shafts are partly unworked except for smoothed stripes (two or four, respectively) which run vertically along the drums and at the top and bottom of each drum (Fig. 4). Evidently no fluting was ever planned, but only smoothing of the whole column.[25] Unfluted columns

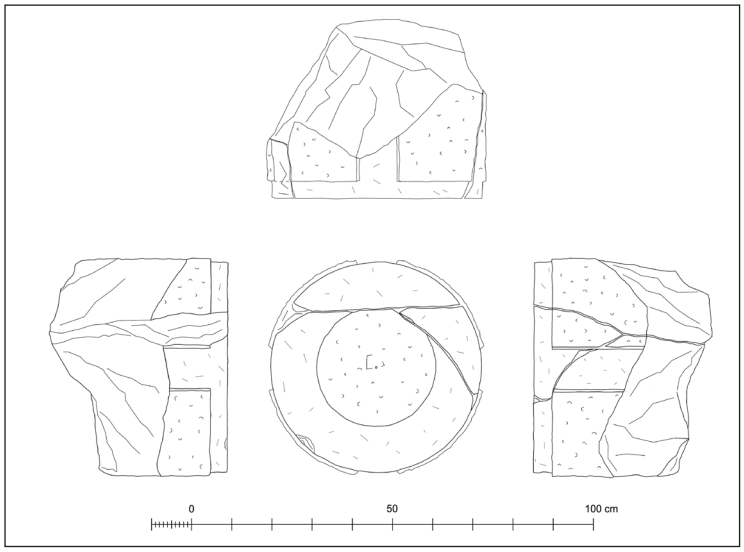

Figure 4. *Column drum fragments (Invt. No. PA-S150, S216, S423a). After a drawing by K. Nowak-Größchen).*

were neither uncommon nor humble for middle Archaic Ionian architecture.[26] Indeed, the first temple with the canonical Ionic fluting (i. e. with shallow ridges) was the fourth Samian Heraion, near the end of the sixth century.[27] But its front columns were not fluted as it was the case with its predecessor, the first Samian dipteros.[28] Further examples are offered by the temple at Sangri (on Naxos) and by the eastern porch of the Oikos of the Naxians on Delos which was added later.[29] Summing up each feature of the building at Mount Çatallar Tepe which at first glance appeared unique, is paralleled elsewhere. Accordingly, the Ionic order was not yet as mandatory in the middle Archaic period as often imagined.

The diameter of the column drums varies from 45cm to 56cm. The slenderest drums were certainly set at the neck of the columns, the broadest at their lowest part. The tapering of the single drums could be determined in one single case only. Therefore, the height of the complete columns is open to debate. It is often assumed that in Archaic architecture, the ratio between the inferior diameter and the height of a column is 1:10 or even 1:13, resulting in very slender columns.[30] For instance, at the Archaic temple of Artemis at Ephesos, F. Krischen deduced the height of the columns as being 36 Ionian cubits, roughly equivalent to 42 Athenian cubits which is the presumed height of their late Classical successors. Assuming that the architect of the temple of Athena at Priene copied the dimensions of the latter by reducing them to two thirds, he fixed the height of the columns at Priene at 42 Athenian feet.[31] Although none of these measures has ever been verified, they were repeatedly handed down to the most recent specialist literature.[32] The presumed heights of other Ionian columns are based on similar conjectures. To cut a long story short,[33] the only reliable and verifiable ratios for Archaic Ionian columns are to be found at the Stoa of the Naxians on Delos and at the older Samian dipteros. On Delos a monolithic column shows a height of nine lower diameters.[34]

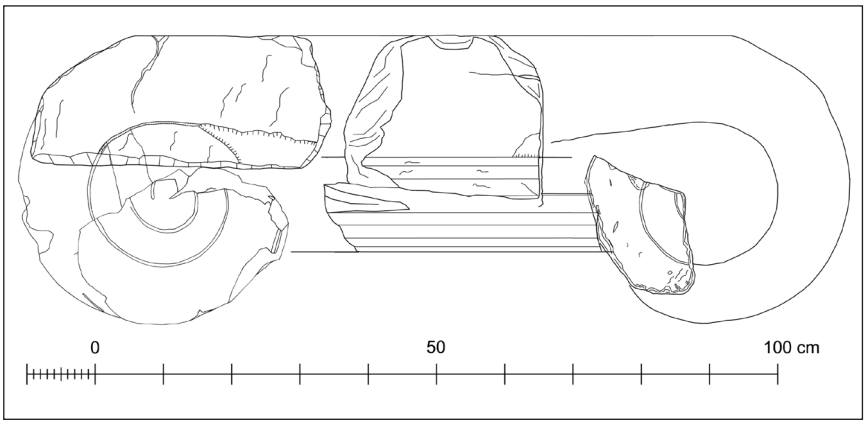

Figure 5. *Reconstructed front of a volute capital (Fragments Invt. No. PA-S015a, S130, S136, S182, S507). Drawings by the author.*

The recently published measurements by C. Hendrich of the older Samian dipteros involve all available bases, capitals, and drums of this building. Here the columns at the front were sturdier than those at the rest of the peristasis, and the supports in the cella were even more slender. The ratio in question thus varied between 1:7.7 and 1:11.7.[35] Based on this and the rather strong tapering (3.6cm per linear meter) of the only measurable drum fragment from Çatallar Tepe, one may assume rather sturdy columns of 4.0–4.5m height.[36]

THE VOLUTE CAPITALS AND THE TORUS CAPITALS

Two completely different types of capitals were used for the temple, namely volute capitals and torus capitals without abaci. Despite the fragmentary state of preservation of these members, their original appearance has been reconstructed. The volute capitals show a rather peculiar composition and at first sight differ from other Archaic Ionian capitals (Fig. 5). But they should be seen as an original and at their time consistent solution for that architectural member. At their time they would not have been considered to be lacking certain elements which only later on became canonical. Büsing's view that they were expressing a certain elegance by replacing the plastic decorations of Ionian capitals with the simplicity of the elementary shapes, seems therefore questionable.[37] He interprets the contrast that we perceive as being intended by the ancient stonemasons. But this contrast results from the fact that our perception of Ionic architecture is shaped by the later examples of Ionic architectural adornments and the architectural tradition of the sixth century BC. In fact the architectural elements of the temple fit perfectly into the development of early Ionic architecture, especially within the regions of Miletos, Samos and Ephesos.

The course of the volute is carved as a fine, 2mm wide and 1–2mm deep V-shaped score.[38] The spiral does not markedly interfere with the surface of the capital but reminds of calligraphy or a hallmark in a metal foil and ends without forming an eye. The design of the capitals seems rather elongated, because they were about 1.2m long but only 0.32m high and 0.43cm wide at the upper bearing. Instead of the later common egg-and-dart, their echinus is in the shape

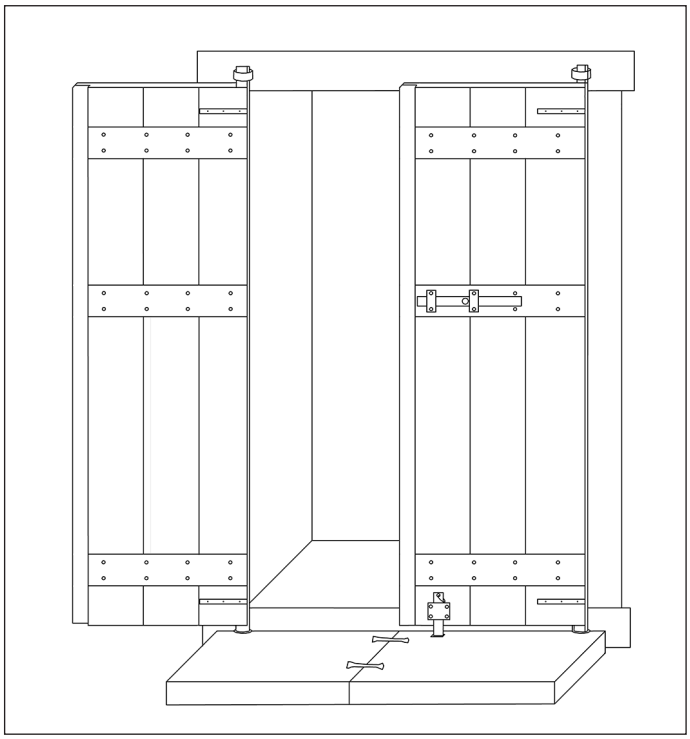

Figure 6. *Reconstruction of the door of the West Room as seen from the inside. Drawing by the author.*

of a torus. The canalis forms a distinctive 150°-angle with the contour of the volute disk. The same obtuse angle is to be found at Archaic and early Classical capitals on Samos. There,[39] according to G. Gruben, it provided an enlarged bearing of capitals without abacus and offset the bearing visibly.[40] The spandrel between volute and canalis is not decorated with a palmette or any other ornament. The canalis is just undercut, thus allowing the contour of the volute disk to continue beyond the torus. On the cushion side of the capital, a 1.0–1.5cm wide strip edges both fronts. The cushion is otherwise smoothed and forms a curved line.

The tori of the torus capitals are horizontally fluted and only 16cm high.[41] They cannot be explained as parts of bases, because the diameters of their bearings (ca. 48cm) are considerably smaller than the broadest drums. Moreover, the upper bearings of the tori are rather coarse, allowing to apply wooden beams, but not a marble column drum. This type of capital is common on Samos and in the Ionic architecture of the Cyclades.[42] Archaeologists have added abaci on top of the Samian capitals in their reconstructions, despite the fact that such abaci have not been verified. Hendrich considers the tool marks on three of the torus capitals of the third Heraion as proof of wooden corbels on top of them.[43] But these tool marks can equally testify to beams. Both capital types are to be found at the fourth Heraion.[44] There, the torus capitals were probably set on the inner columns, thus taking into account the changing angle of view under which they were seen. This type of capital has been presumed

also for the other two Archaic Ionian dipteroi.[45] Therefore, most probably the two types of capitals employed for only thirteen capitals met the different requirements of the front part of the building (pronaos, naos) and the Westroom, respectively.

THE DOOR FRAMES

Through the two marble door frames, one entered the naos and the Westroom, the latter being much better preserved. In front of the inner wall lay two cramped slabs. The holes for the bolt and the pivots are located on them. These slabs form the *inner* threshold, which was located behind the actual doorframe. Fragments of the doorframe have been found, thus its shape and most of its measurements can be completely reconstructed (Fig. 6). Büsing has considered two stone slabs of the original findings to abut the door frame, but indeed these were the outer supports of the proper threshold. Therefore, he presumed that the doorframe had been narrower than it actually was and lacking substructures.[46] This faulty reconstruction led to door leaves wider than the frame, which would have been both unsightly and unpractical.

In fact, the door-opening was nearly 2m wide and therefore more than 3m high. All parts were simple smooth marble beams with rectangular cross-sections and without any ornament. One could close and lock it with two wooden leaves; fragments of the iron hardware have been identified. The lower pivot of the door leaf had been set into a hole in the inner threshold. The upper pivot was supported by an iron pivot hinge which was fastened to the lintel by means of a lead socket. This iron hinge was found lying next to the door. Up to now all known parallels come from the Near East.[47] Probably, the door to the naos had a similar appearance. Its size was even more monumental: it was 3m wide, 80 cm deep and probably 4.5m high. At least the lintel and threshold were monoliths.

THE ANTAE

According to the first observations Büsing had made during the excavation, the antae were smooth marble slabs without capitals.[48] But closer examination has shown that they were connected to the wall bond by their L-shaped cross section.[49] They bore an unfinished decoration on the lower end of their front surface, probably a rosette as at Klopedi on Lesvos.[50] Two ovoli of the lower row of the typical three-row Ionic capital are preserved;[51] on the side, they show a flattish volute shape.

THE EAVES AND THE ROOF OF THE MIDDLE ARCHAIC TEMPLE

The eaves were made of marble slabs which represent a prototype of the later geisa (Fig. 7). These geison slabs were cramped to each other and thus acted as a ring beam. Similar 'proto-geisa' have been found at Miletos, Ephesos, Didyma, and Olbia, probably also on Samos, and on Naxos.[52] There was neither frieze nor dentils in the layer beneath the eaves, but only smoothed marble plates and clay. Perhaps this part of the wall had also been plastered. Indeed, the earliest ascertained examples for the use of dentils in the Ionic architecture date to the end of the sixth century.[53] This raises doubts that the dentils derived directly from the roof battens of a wooden architecture as Vitruvius (*de Arch*. 4.2.5) suggests.

Of course nothing of the wooden roof structure remains, except for the stone parts of the eaves and thousands of fragments of the terracotta roof tiles. They belong exclusively to a

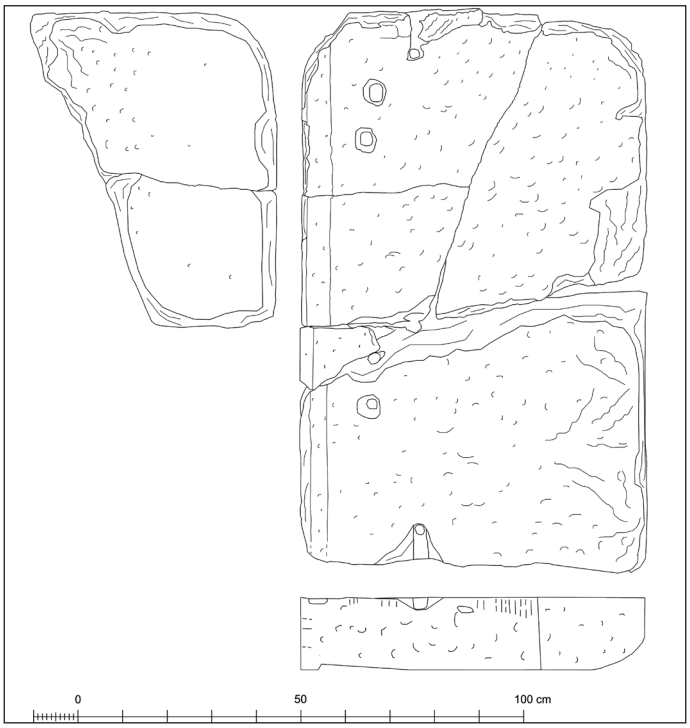

Figure 7. *Geison slab (Invt. No. PA-S011). Drawing by the author after photographs by H. Büsing.*

Corinthian roof of type C2 according to the typology of Ö. Wikander.[54] Busching has deduced from the roof tiles a pitched roof with an inclination of about 17°.[55] This leads consequently to the assumption of a purlin roof, which is further confirmed by the bearings on the stone parts of the eaves. They attest that the eave purlins and the trusses were both laid on special stones. As usual, the columns sustained the other purlins and the trusses while the rafters bore on the purlins. As is generally acknowledged, the cross-sections of timbers of Greek roofs were rather oversized.[56] Contrary to this, the timbers which resulted from the reconstruction of our temple seemed rather undersized (e. g. about 10cm × 10cm for the rafters; 30cm × 10cm, horizontal, for the trusses). It therefore became necessary to determine their load capacity in terms of statics. Since it proved statically admissible, the reconstruction of the roof trusses does not contradict actual knowledge of the engineering sciences. Probably the carpenters of that time drew on their experience from other buildings to choose the appropriate timbers.

THE GROUND PLAN AND ITS PLACE IN ARCHAIC SACRAL ARCHITECTURE

Comparing the architecture of the temple with contemporary buildings, the large dipteroi on Samos, at Ephesos and Didyma first come to mind. These impressive temples outmatch the temple at Mount Çatallar Tepe not only by sheer size, but because they were also built of more precious and labor consuming materials, like ashlar for the walls and marble. Moreover,

they were lavishly endowed with architectural sculpture. The Didymaion, the Heraion at Samos, and the Artemision at Ephesos impressed with sculptured column drums and other embellishments at least at the entablature.[57] These temples mark an important difference from the middle Archaic temple at Mount Çatallar Tepe.

There were also more modest temples. A little temple in a sanctuary at the Sacred Way from Miletos to Didyma measured only 9.9m by 5.3m and was made of clay and wood, the eaves of local limestone.[58] The same holds true for a number of small buildings in the Heraion of Samos which have been explained as treasuries or banquet halls for particular groups of the Samian society.[59] A third group of buildings takes an intermediate position between the large dipteroi and the small shrines and treasuries. In this group, we find the temple of Athena at Miletos, which is one generation older than the temple at Mount Çatallar Tepe and is also slightly smaller, measuring about 25m by 7.3m. But according to Held, it displays an innovative use of different stone materials, among other marble.[60] This was indeed the temple of the poliadic deity of Miletos, Athena, who was later outdone by the Apollo of Didyma. A little wider is the so-called North Building on Samos measuring 13m by 30m, thereby exceeding our temple only in width, not in length. Its original plan disposed of no peristasis either and the walls were probably constructed of clay.[61] Unfortunately the proper use of this building is unknown. It served perhaps as a second temple of Hera or another, less important deity. Also at Klaros and Teos, two buildings of comparable size and equipment served as important temples during that period.[62]

The plan of the building at Çatallar Tepe combines two well known building types in a unique way, having the temple and the banquet hall under one and the same roof.[63] Typical features of Archaic banquet halls since the seventh century BC were a rectangular room, a row of columns in the long axis, and an excentric door in the longer side.[64] The use of the Westroom as a banquet hall is also attested by fragments of drinking and serving vessels.[65] Here, a community enjoyed feasting and conversation in a cultic context.

In the Greek world, collective meals were usually taken in a reclined position. This can be imagined for the Westroom, too. This would also explain the excentric position of the door, which allowed for the couches (*klinai*) to be arranged along the walls.[66] Furthermore, at banquet halls in Near Eastern contexts, the doors are placed next to the end of the wall to provide shelter from curious observers.[67] This might perhaps explain the position of our door next to the western end of the wall.

The front part of the building has the form of a simple temple with columns *in antis*. It consists of a rather small and nearly square naos and a deep pronaos with eight columns. Comparable pronaoi are a well-known element of the Ionic dipteroi and of some smaller Ionic temples. At Mount Çatallar Tepe this element was not necessary for the stability of the building, as the above mentioned static analysis has shown. Rather, it met representative demands by emphasizing the prominence of the temple and organized the approach to the naos with the cult image in a striking way.

One may even presume that the architect imitated the plan of the large dipteroi, to some extent, at the middle of the sixth century BC. The peristases of the temples at Ephesos and Samos at that time had not yet been constructed. According to A. Furtwängler, at Didyma the existence of the peristases is completely doubtful.[68]

Temples as well as banquet halls are constitutive elements of many Greek sanctuaries. Until the seventh century some benches, fireplaces, and findings indicate the celebration of cultic meals inside temples.[69] In the sixth century, the temple and the banquet hall have become separate types of buildings.[70] Surprisingly, this is not the case at Mount Çatallar, where both functions are united under one roof, although not in the same room.

Two other examples of the combination of temple and banquet hall in the sixth century are offered by the temple (of Apollo?) at Aliki on Thasos and the sanctuary of Apollo on Despotiko near Antiparos. In the temple at Aliki a hearth in one of the rooms testifies to the preparation of cultic meals in the building.[71] One of the recently excavated buildings with two rooms on Despotiko has been explained by the excavators as the temple of Apollo. Another part of this building complex, which was attached later, has three rooms for *klinai*.[72] But it has to be admitted that both examples do not provide exact parallels to our temple. They only illustrate that having cultic meals in a room closely linked to the temple was desirable also elsewhere. But in both examples, this desire was met in different ways.

The Ionic architecture of the sixth century BC was very innovative to explore new forms not only in architectural details but even in ground plans.[73] From its outward appearance, the Archaic Didymaion seemed to be an unusually large temple. But the interior was instead a ceremonial court which united different important cultic objects like the shrine with the cult image, the sacred laurel tree, and the holy spring. The court served cultic functions, for example for the oracle.[74] According to Bammer, something similar may have occurred at Ephesos.[75]

Thus we see that an Ionian architect at that time was not limited by an architectural set of rules, but could rather freely choose the ground plan most appropriate for the requirements of the cult. Different functions and cult places were integrated into one structure. In the temple at Mount Çatallar Tepe an important mark was the place of the older naiskos of the seventh century, which had served as a temple and a place of feasting. As we know from at least three hearths found in and around the old naiskos and the analysis of both ceramic findings and faunal remains, meals were also an important part of the cult of the seventh century.[76] In the sanctuary of the sixth century, however, a certain group of people claimed a special, representative place for their cultic meals and their community, directly linked to the house of the god. According to Lohmann's reasoning, these were the representatives of the Ionian poleis when gathering at the Panionion.[77]

ACKNOWLEDGMENTS

I want to express my gratitude to Dora Katsonopoulou for inviting me to the 5th Helike Conference and offering the opportunity to present a summary of my Ph.D. thesis (Hulek forthcoming). Furthermore, I thank all participants and especially E. Konsolaki, E. Partida, J. Petropoulos, and R. Weir for helpful discussion subsequent to my talk. A. Ohnesorg, W. Koenigs, and N. Hellner have offered further, informative advice from the architects' point of view. Furthermore, I thank T. Stewart and S. Hoss for improving the English text and J. Chatheril for helping with the static analysis of the roof structure. My dissertation has been funded by a doctoral scholarship of the Ruhr University Research School (DFG GSC 98/1) and a scholarship for a one-year-stay in Greece from the German Academic Exchange Service (DAAD).

NOTES

1. cf. Lohmann 2004; 2005; 2007; 2011; this volume; Lohmann and Özgül, this volume.
2. Kalaitzoglou 2007, 151–6 fig. 37; 2011, 46 fig. 4.10; cf. Heesen 2011, 183–6, 293 pl. 78e No. 270.
3. Busching 2013, 55–61; Özgül 2013, 160–3.
4. cf. Ohnesorg 2007, 127–32; Kerschner and Prochaska 2011, esp. 108; Hendrich 2007, 87–9; Hellner 2009, 201–4; Kienast 2012, 17; Dirschedl 2013, 177–8 No. E 2, E 3, pp. 222–3; Slawisch 2013, esp. 53–7.
5. Lohmann 2007, 129–30; 2011, 39, 43.
6. Lohmann 2007, 137–8.
7. Gruben 1988, 168; Kienast 1991, 124–5 fig. 1. 2. p. 126 fig. 3; 1998, 120–7 fig. 3. 4.
8. Ephesos: Kerschner and Prochaska 2011, 77–8 fig. 2. 3; cf. Bammer 1991, 70; Samos, South Stoa (Südhalle): Gruben 1957, 54 n. 9 incl. 81; Kienast 2011, 75–80; Heraeum I/II: Buschor 1930, incl. 7,1; Miletos, Kalabaktepe: cf. Lohmann 2007, 131 n. 277.
9. Kalpaxis 1986, 25; Seeher 2007, 103–4; Röhlen and Ziegert 2014, 51; Fromme and Herz 2012, 26–7.
10. Lohmann 2007, 132; 2011, 40.
11. e. g. Eleusis (Attica): Noack 1927, 25–8, 30–3, 39, 70, 88 pl. 26a. b; Hellmann 2002, 108 fig. 129; Gela (Sicily): Griffo and Matt 1964, 184–91 fig. 126, 128, 179–80 fig. 131, 132; Panvini 1996, 117–20.
12. Ramage 1978, 4–6 fig. 16.
13. Lauter 1986, 50–1, 73; Hellmann 2002, 108–9 fig. 129.
14. P. Schneider ascertains clay architecture at the small-scale sanctuary on the Sacred Way between Miletos and Didyma, Schneider 1996a, 15, 43, 52.
15. Mallwitz 1968, 125; Kienast 1989, 44; Held 2000, 52–3.
16. Mallwitz 1968, 105 fig. 6.
17. Hänsel 1980, 343–5; Röhlen and Ziegert 2014, 6–7; Fromme and Herz 2012, 37.
18. Against Kienast 1989, 44. Density of mud bricks: up to 2.2 t, stone: 2.0–2.9 t, cf. Röhlen and Ziegert 2014, 176, 179.
19. Gjerstad 1934, 74–5, 83.
20. Bissing 1951, 68.
21. Höckmann 2001, p. VII; Koenigs 2007a, 312, 348 No. 47 fig. 10.
22. Lohmann 2007, 135.
23. Lohmann 2007, 138; Büsing 2007, 158.
24. Büsing 2007, 159–60 fig. 39.
25. Büsing 2007, 160 fig. 41.
26. Schuller 1985, esp. 395; Donos 2008, 75.
27. Buschor 1933, 35–6.
28. Reuther 1957, 42 Z13. Z14. Z23; pp. 48–9, 63. 65; Gruben 2001, 364–5 fig. 274; Donos 2008, 75–6 n. 378; Hellner 2009, 9 n. 54; pp. 77–8, 202–3; Kienast 2012, 13; Dirschedl 2013, 233–4 No. S 23 pl. 23, 3. 5–7.
29. Gruben 1997, 346; Rocco 2003, 67 fig. 49.
30. Gruben 1996, 76; Weber 2002, 253–67.
31. Krischen 1923, 6–7; 1956, 62–8.
32. Ohnesorg 2007, 110–1.
33. For a more careful treatment of this question, see Hulek forthcoming; cf. Wesenberg 2008, 316.
34. Hellmann and Fraisse 1979, 102–3 pl. 14,73. Another monolithic column is not securely dated to Archaic times; it shows a sturdy ratio of 1:5.2, Bujskich 2010, 23.
35. Hendrich 2007, 62-4 fig. 19.

36. Against Büsing 2007, 158; Lohmann 2007, 106, 135; 2011, 40; Busching 2013, 7.
37. cf. Büsing 2006, 56; 2007, 157.
38. cf. Büsing 2006, 55; 2007, 162.
39. Möbius 1927, 170-1 pl. 27; Ziegenaus 1957, 106-9 incl. 108; Gruben 1960, 9; Alzinger 1972-5, 172; Rocco 2003, 90-1 fig. 76; Ohnesorg and Büyükkolancı 2007, 225.
40. Gruben 1960, 9.
41. Büsing 2007, 163 fig. 47.
42. Kienast 1992, 177; Hendrich 2007, 28.
43. Hendrich 2007, 35-7 fig. 12. 13 pl. 14 incl. 43.
44. Volute capitals and egg-and-dart-capitals, cf. Reuther 1957, 50-1; Rumscheid 1994, 307; Gruben 2001, 362; Hendrich 2007, 36.
45. Schneider 1996b, 80-1 n. 10 fig. 5; Ohnesorg 2007, 112.
46. Büsing 2007, 163-4 fig. 48. 49; Lohmann 2007, 136; 2011, 44; 2012, 102.
47. Ninive: Damerji 1973, 201-2. 240 fig. 78; cf. Unger 1913, 10-1 fig. 1; Damerji 1973, 239-40 fig. 79.
48. Lohmann 2007, 134; Büsing 2007, 161-2 fig. 42.
49. L-shaped cross section not only of the capital but also of the wall-part of the anta can be found at Sangri on Naxos, cf. Lambrinoudakis 1979, 258; Gruben 2001, 370 fig. 278.
50. Evangelidis 1928, 132.
51. e. g. Hahland 1964, 146-56; Brockmann 1968, esp. 66. 159-62; Koenigs 1986, 113; Ohnesorg 2005a, 138-54; Skarlatidou 2006, 130-1.
52. Gerkan 1925, 18-9 fig. 9. 10; Courbin 1980, 77 80 fig. 23 pl. 57. 59; Gruben 1993, 232-3 fig. 152 a. b; 2001, 358, 376 fig. 283; Ohnesorg 1993, esp. 22-3, 56. pl. 1. 5; 2005b, 136-8 fig. 1; 2007, 115-6 pl. 12. 18; Schneider 1996a, 18 20 fig. 8 10 pl. 34,13; 1996b, 82 fig. 7. 8; Bujskich 2010, 47-8, 99 pl. 53,4; cf. Busching 2013, 23-5.
53. cf. Gruben 1963, 149-50 n. 122; Laviosa 1972/3, 410-8; Felten 1984, esp. 28-31; Bingöl 1990, 101-8; Lambrinoudakis 1996, 5-60; Ohnesorg 2007, 115; Koenigs 2007b, 674; 2011, 26; Baran 2013, 217-8.
54. Wikander 1988, 210-1; Lohmann 2011, 42; Busching 2013, 49-50; Özgül 2013, 131.
55. Busching 2013, 16–23.
56. Hodge 1960, 46 Tab. 2; Müller-Wiener 1988, esp. 98–100; Bankel 2011, 127, 133–4; cf. Ohnesorg 1993, 116-7; e. g. Parthenon: 90cm × 70cm, Korres and Bouras 1983, 87-8; cf. Schneider 1992, 161.
57. Muss 1994, 18-20; Ohnesorg 2007, esp. 109-10; Kienast 2012, 5-17; Dirschedl 2012, 43-55.
58. Schneider 1996a, 42-3, 46-7 fig. 30, 31 pl. 40.
59. Kienast 1985, 368; Burkert 1995, 206–7; Mohr 2013, 24-6.
60. Held 2000, 63-6.
61. Kienast 1989a, esp. 21-37; cf. supra, 80.
62. La Genière and Jolivet 2003, 187–8; Koenigs 2007b, 670-1; Friese 2010, 176-7, 390-2 (cf. Moretti 2012, 351); Moretti 2011, 299-301 fig. 26. 27; Müller and Prost 2013, esp. 114-23; cf. Kadıoğlu 2012, 513.
63. A presumed parallel, the temple of Apollo at Halieis, was refuted by Bergquist 1990, esp. 27-9 fig. 3 (but contradicted by Mazarakis Ainian 1997, 164).
64. Lohmann 2012, 108-12.
65. Kalaitzoglou 2007, 150-5; Lohmann 2011, 46; 2012, 104-107; cf. Sommer 2009, 523; Bentz and Bumke 2013, 285-6.
66. Goldstein 1978, 303; Börker 1983, 12–3; Leypold 2008, 152–6; Lohmann 2011, 43; 2012, 101–2.
67. Naumann 1971, 171; Boysan-Dietrich 1987, 106–7.
68. cf. Furtwängler 2008, 5–6; Dirschedl 2012, 55–6, 62–3; Slawisch 2013, 54–7.
69. Martini 1986, 23–36; Mazarakis Ainian 1997, 340–9; Barletta 2001, 23–4.

70. For the vast bibliography on this topic, see e. g. Sinn 2005, 87–8; Lambrinoudakis 2005, esp. 84–5; Schuitema 2008, 137–9.
71. Servais 1980, 10–72; Börker 1983, 14–5, 24 fig. 7; Schuller 1985, 358–61; Leypold 2008, 161–3 fig. 107.
72. Kourayos 2008, 388–9; Kourayos *et al.* 2012, 99–104, 116–24, 129–32.
73. Koenigs 2007b, 675.
74. Gruben 1963, 172; Tuchelt 1991, 86–7 fig. 1; Tölle-Kastenbein 1994, 45–8; Slawisch 2013, 57–8 fig. 10.
75. Bammer 1993, 138–66; 2008, 451–4 fig. 2. 4; cf. Bumke 2011, 255–60; Kerschner and Prochaska 2011, esp. 108–17; Mohr 2013, 24.
76. Obermaier 2013, esp. 213–4; Lohmann and Özgül (this volume).
77. See Lohmann (this volume).

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ABSTRACT

THE ARCHITECTURE OF THE MIDDLE ARCHAIC TEMPLE AT MOUNT ÇATALLAR TEPE

Within the fortified settlement on the southwestern slope of Mt. Çatallar (Samsun Dağları in Western Asia Minor), the remains of an Archaic temple have been discovered and subsequently excavated between 2005 and 2007. The length of the temple is 28.8m, which is close to 100 feet (*hekatompedos*). Its unique layout combines a pronaos with eight interior columns with an almost quadrangular naos (centred above an older naiskos) and a large lesche. Despite the damages caused by fire, an earthquake, and illegal digging, it still remains one of the best preserved examples of Archaic architecture.

The excavation has yielded more than 600 architectural fragments which allowed a well-founded graphic reconstruction of all technical and architectural details of the temple, e. g. its two marble doors, the walls of pisé or sundried bricks, the roof and groundwork. The results concern both the building techniques of the Archaic period and our perception of the Ionic architecture as a whole. The columns are lacking bases and fluting, some of the capitals were simple tori, there were neither frieze nor dentils: these distinctive features challenge our concept of an Ionic 'order' perceived as an inherent system of shapes. Moreover, the unique form of the building, a combination of temple and banquet hall, is discussed with regard to its function.

Frank Hulek

ΠΕΡΙΛΗΨΗ

Η ΑΡΧΙΤΕΚΤΟΝΙΚΗ ΤΟΥ ΑΡΧΑΪΚΟΥ ΝΑΟΥ ΣΤΟ ΟΡΟΣ ÇATALLAR TEPE

Μέσα στον οχυρωμένο οικισμό της νοτιοδυτικής πλαγιάς της κορυφής Çatallar Tepe (Μυκάλη/Samsun Dağları στα δυτικά της Μικρασίας), έχουν ανακαλυφθεί και εν συνεχεία ανασκαφεί στο διάστημα μεταξύ 2005 και 2007 τα ερείπια ενός αρχαϊκού ναού. Ο ναός έχει μήκος 28,8 μέτρα, δηλαδή περίπου 100 πόδια. Η μοναδική του κάτοψη συνδυάζει έναν πρόναο με οκτώ εσωτερικούς κίονες με έναν ναό σχεδόν τετραγώνου σχήματος (στο κέντρο του οποίου βρισκόταν ένας παλαιότερος ναΐσκος) και μια μεγάλη λέσχη. Παρά τις ζημιές που προκλήθηκαν από φωτιά, σεισμό και παράνομες ανασκαφές, αποτελεί ακόμα ένα από τα καλύτερα παραδείγματα της αρχαϊκής αρχιτεκτονικής.

Η ανασκαφή απέδωσε περισσότερα από 600 αρχιτεκτονικά μέλη τα οποία επέτρεψαν μια βάσιμη γραφική αναπαράσταση όλων των τεχνικών και αρχιτεκτονικών λεπτομερειών του ναού, π. χ. οι δύο μαρμάρινες θύρες, οι τοίχοι από συμπιεσμένο μέσα σε ξυλοτύπους πηλό (pisé) ή από ξεραμένους στον ήλιο πλίνθους, η στέγη και τα θεμέλια. Τα αποτελέσματα αφορούν τόσο την τεχνική οικοδόμησης της αρχαϊκής περιόδου όσο και τη γενική μας αντίληψη για την Ιωνική αρχιτεκτονική. Οι κίονες στερούνται βάσεων και ραβδώσεων, μερικά από τα κιονόκρανα ήταν απλά στρογγυλά επιστρώματα με οριζόντια αυλάκια (δακτύλιοι/tori), ούτε ζωφόρος υπήρχε ούτε και γεισίποδες. Αυτά τα διακριτικά χαρακτηριστικά θέτουν σε αμφισβήτηση την αντίληψή μας για την Ιωνική τάξη, θεωρούμενη ως ένα εγγενές σύστημα σχημάτων. Επιπλέον, η μοναδική μορφή του κτιρίου, ένας συνδυασμός ναού και λέσχης, συζητείται λαμβανομένης υπόψη της λειτουργίας του.