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Jessica Paga

Das Zahneisen und das Hekatompedon-Problem. Werkzeug- und Technikfragen im archaischen Athen

ZUSAMMENFASSUNG Seit fast einem Jahrhundert steht das Zahneisen im Zentrum von Debatten über die Datierung und Position von Monumenten auf der archaischen Akropolis. Die Diskussion über die Übernahme und den frühen Gebrauch dieses Meißeltyps wurde teils intensiv geführt und die chronologischen und topographischen Konsequenzen dieser Fragen bilden unverändert eine Grundlage vieler weiterer Fragen, Probleme und Annahmen hinsichtlich des Heiligtums der Athena im 6. und frühen 5. Jahrhundert v. Chr. Insbesondere die ursprüngliche Position des Hekatompedon oder Blaubart-Tempels wurde mit dem Gebrach des Zahneisens in Verbindung gebracht. Der vorliegende Aufsatz untersucht die Geschichte des Zahneisens ebenso wie seinen umstrittenen Platz in der Forschungsdiskussion und betrachtet seine Rolle für das Problem der sogenannten H-Architektur, für deren Position auf der Akropolis neue Hinweise vorgestellt werden. Sowohl in der Art seines Einsatzes als auch im Anwendungsbereich des Zahneisens wird eine Entwicklung nachgezeichnet, wobei eine graduelle Zunahme in der Vertrautheit mit dem Gerät und der Flexibilität seines Einsatzes in Athen und Attika im Laufe des 6. und frühen 5. vorchristlichen Jahrhunderts konstatiert wird.
Schlagwörter Akropolis; Agora; archaische Zeit; Heiligtümer und heilige Bezirke; Bearbeitungsweisen.

ABSTRACT For nearly a century, the claw-tooth chisel has been at the heart of debates concerning the dating and siting of monuments on the Archaic Acropolis. Discussion of the adaptation and early uses of the chisel has not been without controversy, and the chronological and topographical ramifications of these issues continue to underscore many of the problems, questions, and assumptions about the 6th and early 5th century B.C. sanctuary of Athena. In particular, the original location of the Hekatompedon, or Bluebeard Temple, has been connected to the use of the claw. This paper reviews the history of the claw as well as its contentious place in scholarly debate, and considers its role in the problem of the so-called H-architecture, with new evidence presented for the location of this structure on the Acropolis. A development in both application and use of the claw is traced, which posits a gradual increase in the familiarity with and flexibility of the chisel in Athens and Attica over the course of the 6th and early 5th century B.C.
Keywords Acropolis; Agora; Archaic period; sanctuaries and sacred precincts; methods of treatment.

Η οδοντωτή ξοΐς και το πρόβλημα του Εκατόμπεδου ναού. Ζητήματα εργαλείων και τεχνικής στην αρχαϊκή Αθήνα

ΠΕΡΙΛΗΨΗ Για σχεδόν έναν αιώνα, η οδοντωτή ξοΐς βρισκόταν στο επίκεντρο των συζητήσεων αναφορικά με τη χρονολόγηση και τη θέση των μνημείων πάνω στην αρχαϊκή Ακρόπολη. Η συζήτηση της υιοθέτησης της οδοντωτής ξοΐδος καθώς και των πρώιμων χρήσεών της δεν στερούνταν διχογνωμιών και οι χρονολογικές και τοπογραφικές συνέπειες αυτών των ζητημάτων συνεχίζουν να αποτελούν τη βάση πολλών προβλήματων, ερωτημάτων και υποθέσεων για το ιερό της Αθηνάς κατά τον 6ο και πρώιμο 5ο αιώνα π. Χ. Η αρχική θέση του Εκατόμπεδου ναού, ή ›ναού του Κυανοπώγωνα‹, έχει συσχετιστεί ιδαίτερα με τη χρήση της οδοντωτής ξοΐδος. Το παρόν άρθρο εξετάζει την ιστορία της οδοντωτής ξοΐδος καθώς και την αμφισβητούμενη θέση της στην επιστημονική συζήτηση και εκτιμά το ρόλο της στο πρόβλημα του κτηρίου Η (λεγόμενη αρχιτεκτονική Η) με νέα στοιχεία που παρουσιάζονται για τη θέση αυτού του οικοδομήματος πάνω στην Ακρόπολη. Ανιχνεύεται μια εξέλιξη τόσο στην εφαρμογή όσο και στη χρήση της οδοντωτής ξοΐδος, η οποία προϋποθέτει βαθμιαία αύξηση της ευελιξίας του εργαλείου και μεγαλύτερη εξοικείωση με αυτήν τη σμίλη στην Αθήνα και στην Αττική κατά τον 6ο και πρώιμο 5ο αιώνα π. Χ.
Λέξεις-κλειδιά Ακρόπολη. Αγορά. Αρχαϊκή περίοδος. Ιερά και ιεροί περίβολοι. Μέθοδος και διαχείριση.

INTRODUCTION

The claw-tooth chisel is a tool of unique significance in studies of Greek sculpture and architecture. Its origins, evolution, and uses have long been debated, with important chronological repercussions. Some of the most controversial statues and structures from the Archaic and Early Classical period have been dated, in part, based on the presence or absence of claw markings. The chronological and topographical progression of structures on the Athenian Acropolis, for example, has fluctuated drastically over the past century, depending on when one chooses to date the introduction of the claw-tooth chisel for architectural members and where the markings of the tool have been detected. In addition, some kouroi and korai have been adduced as evidence for an earlier adoption and use of the claw on large-scale stone sculpture, which has resulted in a divide between the application of the tool to sculpture versus architecture. The majority of contemporary accounts of the Archaic Acropolis are based on this assumption, namely that the claw-tooth chisel was adopted in the early Archaic period for sculpture, but not applied to architectural elements until later in the 6th century. The implications of this division have had far-reaching effects on both the dating and siting of monuments on the Acropolis.

This paper argues instead that the claw-tooth chisel was adopted in Greece in the early second quarter of the 6th century, and simultaneously used for both sculpture and architecture. This argument has significant ramifications for the chronological and topographical problems on the Archaic Acropolis. The dating of the claw is inextricable from the topography of the Acropolis and the arguments that have been posited for the location of the so-called Hekatompedon, or Bluebeard Temple. In order to establish this revised chronology for the introduction and evolution in use of the claw, I undertake a thorough reinvestigation of the topographical problems on the Archaic Acropolis. This examination of the siting of structures on the Acropolis allows for a better understanding of when and how the claw-tooth chisel was used, which in turn generates a more thorough picture of how, when, and where the structures were built. Ultimately, a reevaluation of the origins and evolution of the claw is necessarily tied to a reconsideration of the siting of the Bluebeard Temple, and the first point cannot be altered without critical changes to the second and vice versa. In what follows, I first argue for an adoption of the claw-tooth chisel for both sculpture and architecture in the early 6th century in Greece. I then turn to a consideration of the Hekatompedon problem and examine how the claw both complicates and illuminates the controversial issues involved in its siting on the Acropolis. In particular, I evaluate the Dörpfeld foundations to the south of the Erechtheion and consider how the use of the claw in the case of this construction relates to both the chronological and topographical issues at stake. Finally, I consider the changes in the use of the claw in Athens over the course of the 6th and in the early 5th century, and posit an evolution of both application and function in the decades prior to the Persian destruction of Athens in 480/479 B.C.

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ORIGINS OF THE CLAW-TOOTH CHISEL

The claw-tooth chisel, also known as the toothed chisel, was an important tool in the ancient stonemason's repertoire, both for architectural blocks and sculpture. This chisel facilitated the rapid removal of stone from the surface of a block, functioning between the rough pick of the quarry and the flat chisels and smoothing rasps of the finished surface[1]. In some cases, the claw was used as the finishing tool, generally for the background of relief sculpture, where the smoothing rasp was not necessary[2]. It is a tool of efficiency and variability: the width of the head could be widened or narrowed, depending on the size of the block being worked, and the length, thickness, and number of tines or teeth could also be altered[3]. The angle at which the chisel was struck could also affect how the tool was used and the resulting marks: the claw could be struck nearly perpendicular to the stone, resulting in a row of small dots or dents in the surface of the stone, or it could be struck at a more oblique angle, resulting in longer grooves of parallel lines – the distinctive ›scalloping‹ commonly associated with the claw[4]. The claw eventually became one of the most common tools employed by Greek stonemasons, and its traces can be detected on a variety of structures and sculptures throughout the Classical and Hellenistic periods. It remained a popular tool for stoneworkers throughout the Roman period and is still used today with frequency[5].

The earliest appearance of the claw-tooth chisel in the Greek mainland occurs in the second quarter of the 6th century on the Pomegranate Kore in the Acropolis Museum[6]. More recently it has also been argued that the claw was used on several sculptural pieces of the so-called ›H-architecture‹, such as the snake-bodied Bluebeard Monster, similarly dated to approximately 570–560[7]. I have also found traces of the claw within the scales of Triton or

[1] There are several treatments of the use of the claw in quarrying and shaping blocks; see esp. Nylander 1965, 50 f.; Nylander 1970, 35; Nylander 1991, 1039, where he discusses the advantages of the claw over other types of chisels. Also to be consulted are Casson 1937; Adam 1966, 18–22; Blümel 1969, 16–28; Boschung – Pfanner 1990; Rockwell 1990; Palagia 2006, 252. Given the thoroughness of these previous investigations into the technical application of the claw in the quarrying and shaping process, such matters will only be discussed briefly here. For quarrying practices in general, see Waelkens et al. 1990.

[2] Rockwell notes the use of the claw in this way on several of the relief panels on the Arch of Trajan at Benevento and on the Column of Trajan in the Forum (Rockwell 1990, 217–220). He also points to several uses of the claw to create a deliberately textured background, such as the rocks in the background of the relief of Heracles freeing Prometheus from the Sebasteion at Aphrodisias (Rockwell 1990, 213 f.).

[3] Martin notes that claw-toothed chisels vary between 0.015 m and 0.08 m in width and have 6 to 12 or 16 teeth (Martin 1965, 182); Nylander notes that the claw generally has between 7 and 12 teeth (Nylander 1965, 50). The thickness of the individual teeth varies depending on the tool in question, as well as on how frequently the tool is used, as the teeth or tines would become blunted over time (see Adam 1966, 18). In the building contracts from Levadia, a further distinction can be made between the sharp, close-toothed chisel and the coarse-toothed chisel (ξοΐδος χαρακτῆς πυκνῆς and χοΐδος χαρακτῆς τραχείας respectively: IG VII 3073, ll. 104. 107), which would imply a distinction between claws with pointed teeth and those with deliberately blunted teeth (see Bundgaard 1946). In addition, the sharp, pointed teeth of the former would become blunt with use, requiring sharpening, which would gradually shorten and thicken the tines. This could imply that the sharp, pointed chisel was used less frequently than its thicker, coarser, or blunter companion – it would be more expensive to produce and keep sharp over time – or that the two tools were used at different stages in the shaping process, with the sharp-toothed chisel employed after the blunt-toothed chisel had removed the bulk of the stone. See Rockwell for some remarks on the effects of stone removal on the teeth of the chisel (Rockwell 1990, 210).

[4] Adam 1966, 18; Nylander 1970, 35; Rockwell 1990, 210 f.

[5] Rockwell details the similarities and differences between the ancient and modern claw (Rockwell 1990).

[6] Acropolis Mus. inv. no. 593. The use of the claw is visible on the back of the Kore, along her long tresses of hair, particularly on the left-hand side. The use of the claw here has been noted by several scholars, including Nylander 1991, 1042; Palagia – Bianchi 1994, 187; Palagia 2006, 252.

[7] Kissas 2008, 103 figs. 26. 27. Kissas describes the claw marks as being directly to the left of the monster's right wing, slightly above and to the left of the break. Personal examination of the piece confirms this ob-

Fig. 1 Bluebeard Pediment, Triton (Nereus), detail of a scale

Fig. 2 Introduction Pediment (Acropolis Mus. inv. no. 9), detail of a draped figure

servation. Note, however, that in her review of his publication, Ohnesorg points out that many of the examples adduced by Kissas as evidence of the claw are more likely the result of a flat chisel, although she does not specifically mention this particular example (Ohnesorg 2010, 1153. 1162). Kissas' publication and Ohnesorg's review are treated in more detail below. For an additional review of Kissas' work that is not as critical with regard to his detection of the claw markings but disagrees with his topographic reconstruction of the Acropolis and dating of certain monuments, see Santi 2009.

Nereus, wrestled by Heracles, in the opposite corner on this same pediment *(fig. 1)*. In addition, the draped male figure currently restored on the far right of the ›Introduction Pediment‹ and likewise dated to the second quarter of the 6th century, displays traces of the claw along the red mantle which is draped over his blue chiton *(fig. 2)*[8]. At present, there is no demonstrable evidence that the tool was employed by Greek stonemasons on the mainland earlier than ca. 575. As with any chisel, it is possible that the processes of smoothing and finishing the stone with rasps and polishers erased any telltale tool marks, but the present evidence can be pushed back no further than the second quarter of the 6th century. It is worth noting that these early appearances of the tool primarily come from Attic examples. Indeed, it has been thought that the tool may have originated there in the 6th century and subsequently spread throughout the Mediterranean, traveling to the Cycladic islands before ultimately entering Ionia and the Near East[9].

O. Palagia and R. Bianchi, however, have shown that the claw was used by Egyptian sculptors and architects at an earlier date, i.e. by the middle of the 7th century in the area around Thebes[10]. It is significant that this earliest evidence appears in a purely architectural context: the blocks that display traces of the claw formed part of the dado level of a tomb structure, a place that was not intended to receive sculptural decoration. Palagia and Bianchi's research proves that the tool was first developed in Egypt in the 7th century and brought to Greece only at a later point in time. Concurrent with the Athenian examples, it was also used in some areas of the Cyclades in the first half or second quarter of the 6th century, particularly on Naxos, Paros, and Delos[11]. The claw is securely attested in the second quarter of the 6th century on Delos, for example, where it has been noted on the south end of the first step of the House of the Naxians, as well as on Building Δ[12]. There is also the unfinished kouros or sphinx head of Parian marble in the Munich Glyptothek, dated to the late second quarter of the 6th century, although its original provenance is unknown[13]. These examples in the Cyclades may indicate that the claw was adopted more or less simultaneously in the islands and Attica[14]; it remains notable, however, that of the sites on the mainland,

[8] Acropolis Mus. inv. no. 9. Some scholars have restored these figures on the opposite Bluebeard pediment, alongside the antithetical lions and snakes, although this reconstruction has not been accepted by most (Beyer 1974; Stucchi 1981, 74–80).

[9] Nylander has been the strongest proponent of a Greek origin for the claw (Nylander 1965, 54; Nylander 1970, 54–56; Nylander 1991, 1040–1042. 1049).

[10] Palagia – Bianchi 1994. The structure in question is the Tomb of Nespeqashuty D. They also document the appearance of the claw on Theban Tomb 197, the tomb of Padyneith, which has been dated to the very beginning of the 6th c. Palagia has also published a photograph of claw marks on a limestone block from the Minoan palace at Mallia (Palagia 2010, 42 fig. 2), which may indicate that the claw was used during the Bronze Age, fell out of use during the Iron Age, and was rediscovered or reintroduced from Egypt into Greece in the Archaic Period. I thank Olga Palagia for sharing her photos and discussing these issues with me.

[11] Ohnesorg 1993, 15 f. n. 163; Palagia – Bianchi 1994, 185; Gruben 1997, 338; Ohnesorg 2010, 1161. The question of why the claw makes its earliest mainland appearance in Attica is unknown, although it might hint at a more complicated relationship between Athens and Egypt than previously suspected.

[12] Gruben 1997, 338 n. 206 (further noted by Hellmann 2002, 83). For the Oikos of the Naxians, dated to the first quarter of the 6th c., see Bruneau 2005, 173; for Building Δ, dated to the middle of the 6th c., see Bruneau 2005, 189.

[13] Inv. no. 48. The claw marks attested here were first noted by Blümel 1969 (first edition 1927), 25–28, but see also Nylander 1991, 1042; Palagia – Bianchi 1994, 187 f. figs. 2. 3; Gruben 1997, 338 n. 206; Palagia 2006, 252.

[14] Palagia argues that some sculptural techniques were transferred to Athens from Naxos and Paros with the advent of large-scale stone statues, the implication being that the Athenians learned how to carve kouroi and korai from Cycladic masons, who also introduced specific tools like the claw into the Attic repertoire (Palagia 2006). Although the chronology may not be fine-grained enough for these conclusions, it remains clear that there is a connection between Athens and the Cyclades during the early 6th c. and that both areas employ the claw at an early stage.

Athens displays use of the tool prior to any other areas, including such Pan-Hellenic sites as Olympia and Delphi, where we might expect to see its markings earlier[15].

In Egypt, as noted, the claw-tooth chisel was first employed in a purely architectural setting. We might expect, then, that the adaptation of the tool in Greece would have entailed a similar use. In general, the use of new stonecutting and tool technologies tends to follow the pattern of an initial period of use on architectural components, such as flat, horizontal planes, and then a broader application to more plastic architectural members and stone sculpture[16]. The adaptation of the claw in Greece would have certainly followed the same pattern, first being applied to the planar surfaces of architectural blocks and then progressing to the finer work of modeled sculpture. We can assume that the masons and sculptors would have shared tools and techniques, and it is not unexpected that the appearance of the claw on both architecture and sculpture is contemporaneous. Among modern scholarly discussions of stone working tools, there seems to be general agreement that masons and sculptors shared tools and, moreover, were usually the same people, or at the very least worked closely with each other[17]. Detailed mouldings for the orthostates, anta capitals, geisa, and sima courses can be considered ›sculptural‹ types of architectural blocks, employing shapes and contours more akin to figural sculpture than the rectilinear blocks that made up the majority of a built structure. Yet there is little question that the cymations of architectural blocks were carved by the same masons who cut the bands of anathyrosis and fitted the wall blocks together.

Although a distinction between masons and sculptors may have become more common during the later 5th and the 4th century with increasing specialization of production, in the Archaic and Early Classical periods there is scant evidence for their segregation[18]. In the Erechtheion building accounts, for example, a distinction is made between men working with stone and men working with timber. The terms πρίσταις (sawyers) and τέκτοσιν (joiners) are used to refer to men working with timber, whereas the masons are described based on the work they have completed, such as the laying of stones, or the dressing and the shaping of blocks[19]. The lists of payments refer specifically to carpenters and painters, but stone workers are treated as a whole, with no clear distinction between sculptors and masons[20]. While there were certainly stone cutters in antiquity who specialized in sculpture, it would appear that many were expected to work as both masons and sculptors. Perhaps the true distinction is between masons and those stone cutters skilled enough to have made their income entirely from sculpting. For the 6th and the early 5th century, though, it seems safe to assume that the majority of laborers who worked with stone dealt with both architectural and sculptural blocks.

[15] The claw is attested at Delphi on the Siphnian Treasury, dated to ca. 525 (Daux – Hansen 1987, 32–42. 233; see also Bommelaer 1991, 123–126), and on the Clazomenian Treasury, dated to the second half of the 6th c. (for the use of the claw: Dinsmoor 1913, 8; for the date: Bommelaer 1991, 159 f.).

[16] Casson remarks that, »Probably, like many sculptors' tools, the claw-chisel was taken over from the architect and mason and so employed by the latter before it was part of the sculptor's tool-box« (Casson 1937, 107). Plommer further argues that the claw would have been used first on horizontal surfaces, such as euthynteria blocks (Plommer 1960, 132).

[17] Martin 1965, 179–189; Nylander 1991, 1039; Palagia – Bianchi 1994, 185; Hellmann 2002, 82 f.

[18] The most famous example of a mason-sculptor combination is the mythical Daedalos.

[19] For the carpenters, see the accounts of 409/408, IX, ll. 10–28; XI, col. III, ll. 16–31, which discuss payment to carpenters for the planning and laying of the roof. There are also discrete references to painters and gilders, listed separately from the masons and carpenters (e.g. XI, col. III, ll. 43–45; XIII, col. I, ll. 43–55).

[20] Within the payment lists, stone workers who performed specific tasks are treated together, such as those who cut the channels for the columns. Men who worked on the frieze figures, therefore, are listed together, but they are not given a different heading than the other stone cutters, nor are they distinguished from them, as the carpenters and painters are. The frieze may have been designed by a master sculptor but the work was evidently carried out by subordinates who appear to be no different from the other masons employed in the construction of the temple.

The survival of claw-tooth chisel marks on both sculpture and architecture of the second quarter of the 6th century in Attica and the islands further indicates that sculptors and masons were often identical at this time, or were – at the very least – working with similar tools. In addition to the Bluebeard Monster from the pediment of the Archaic temple on the Acropolis, K. Kissas also notes the use of the claw on various members of the superstructure: the checkerboard pattern of the raking geison, the acroteria bases and volutes, and the sima; Naxian marble roof tiles from the Acropolis may belong to this temple and also show traces of the claw[21]. These examples, combined with the evidence from Delos, indicate a simultaneous adoption and use of the claw for both sculptural and architectural blocks in the second quarter of the 6th century both in Athens and on the Cyclades. This revised chronology for the claw has major implications for the dating and siting of several of the Archaic monuments on the Acropolis, and can be used as a tool for investigating these problems. In particular, the issue of the location of the Hekatompedon, or Bluebeard Temple, can now be reconsidered in light of the early Archaic use of the claw.

THE HEKATOMPEDON PROBLEM

In 1885, P. Kavvadias began the first full-scale scientific excavation of the Athenian Acropolis[22]. Within a single year, the entire terrace to the south of the Erechtheion was exposed and the foundations within this space were recognized by W. Dörpfeld as belonging to a peripteral temple[23]. Dörpfeld postulated that the foundations held the superstructure whose entablature was built into the north wall of the Acropolis. This temple, he argued, was the Temple of Athena mentioned by Herodotus and burned by the Persians in 480/479[24]. During the following decade, the continuing excavations brought to light the immense ›poros layer‹ immediately to the east and south of the Periclean Parthenon[25]. The finds from this

[21] Kissas 2008, 8. 102–104. Ohnesorg correctly points out that several of the examples of the claw documented by Kissas are in fact instances of the flat chisel (Ohnesorg 2010, 1162), although not all of his examples can be dismissed. The marble roof tile, for instance, shows clear claw markings along its narrow side edge (Kissas 2008, 16 A11 pl. 3, 1), as does the checkerboard sima fragment (Kissas 2008, 103 fig. 21). Ohnesorg is correct, however, in her criticism of some of the other examples; the sima fragment illustrated by Kissas (2008, 103 fig. 20), for instance, has more likely been worked with the flat chisel than the claw. These criticisms, however, do not negate all of Kissas' evidence, nor do they significantly lessen his conclusions that the claw was employed on some of the architectural blocks of the superstructure of the Bluebeard Temple. The main problem, it seems, is the use of the claw on marble elements compared to limestone elements; it is the latter elements, in particular, that Ohnesorg disputes as examples of claw work. The images published by Kissas, along with my personal study of available examples on display in the Acropolis museum, confirm many of Ohnesorg's observations regarding the limestone pieces. The fragments of the H-architecture in the storerooms were not available for study during the preparation of this article, so all observations had to be gleaned from the current museum display and published photographs.

[22] Kavvadias – Kawerau 1906. For the early history of excavations on the Athenian Acropolis, see Bundgaard 1974, especially 9–14. Dickins also provides an overview of the early excavations (Dickins 1912, 1–5).

[23] Dörpfeld 1885; Dörpfeld 1886; Dörpfeld 1887a; Dörpfeld 1887b contain his most comprehensive remarks and explanations of the foundations, their superstructure, and the building history of the Archaic and Classical Acropolis. Bancroft provides a brief chronological summary of Dörpfeld's hypotheses (Bancroft 1979, 10 f.).

[24] Dörpfeld 1885, 277. Dörpfeld suggested a Peisistratid date for the temple, comparing the form and materials to the Temple of Olympian Zeus and the Archaic Telesterion at Eleusis. At the same time, though, he noted that the profile and decoration of the marble sima had more suitable comparanda in the 5th c. (Dörpfeld 1886, 349). He goes on to note, however, that many of the »older« simas on the Acropolis share such forward-looking profiles and decoration.

[25] The details of this discovery are summarized in Stewart 2008, 378–380. ›Poros‹ is now generally recognized and labeled as limestone, but the terminology ›poros‹ is retained at points here due to its ubiquitous association with the particular sculpture and architectural elements associated with the Bluebeard Temple (H-architecture) and the Old Athena Temple.

area included vast amounts of sculpture and architectural members, the majority of which are known as the ›H-architecture‹ fragments. The poros discoveries were comprehensively studied by Th. Wiegand in 1904, including the large-scale pedimental figures of Heracles wrestling Triton, the Bluebeard Monster, and the antithetical bull and lion compositions. After these discoveries, several new problems emerged: where should this new limestone temple be located, how should its relationship with the entablature fragments built into the north wall be understood, and what is the role of the Dörpfeld foundations for these structures?

Early on, one of the most problematic pieces of evidence surrounding the Dörpfeld foundation controversy was the use of the claw-tooth chisel. Traces of pick work had been noted on the inner and outer foundations by both Dörpfeld and Wiegand, but the specific use of the claw was not recognized until W. B. Dinsmoor's publication in 1947[26]. The use of the claw on both sets of foundations is important because the inner and outer foundations are constructed of two different materials and in two different techniques. The inner foundations are made of the hard blue Acropolis limestone itself, laid in approximate horizontal courses with relatively small stones, without the use of clamps or dowels. Some of the highest preserved courses of these inner foundations clearly show the use of the claw-tooth chisel *(fig. 3)*. The outer foundations are constructed of a slightly softer pink Kara limestone that is found on Mt. Hymettus[27]. The stones for the outer foundations are large, polygonal blocks with meticulously fashioned joins. These outer stones are more carefully worked, on both their horizontal and vertical faces, than the inner foundations and are, in general, more carefully laid. Kissas found evidence that the euthynteria blocks were fastened with vertical dowels and iron clamps, but the other blocks of the outer foundations do not appear to use clamps or any other joining mechanisms[28]. Due to the material and technical differences between the inner and outer foundations, some scholars believed that the technique employed in the inner foundations pointed to an earlier date, with the outer foundations added at a later date for an auxiliary peristyle, although the presence of the claw on both sets is now assumed to imply their co-terminus nature[29].

In an argument that has come to dominate subsequent discussions of the siting of the Bluebeard Temple, Dinsmoor asserted that the claw-tooth chisel was introduced to Greek sculptors at some point before the middle of the 6th century, but was not used for architectural blocks until well into the second half of the 6th century[30]. He therefore dates the Dörpfeld foundations – which display clear evidence of the application of the claw – to ca. 529, claiming that they were constructed solely to support the Old Athena Temple, which was, at that time, thought to have been erected by the Peisistratidai[31]. His proposed dating of the

[26] Dörpfeld 1886, 345; Wiegand 1904, 50. 120; Dinsmoor 1947, 116 f. (later confirmed by both Plommer 1960, 132, and Beyer 1974, 648–651).

[27] For the use of Kara limestone generally in the 6th and early 5th c., see Wycherley 1974, 58.

[28] Kissas 2008, 105. Personal examination of the foundations did not reveal any cuttings for clamps or dowels, but it is possible that some of the free-floating blocks were in different locations when Kissas inspected the foundations, thereby allowing him to see parts of the euthynteria. Pry marks are highly visible throughout the foundations, both inner and outer.

[29] The separation of the foundations was Dörpfeld's preferred view (Dörpfeld 1886, 346, although he also notes that they might be contemporary). He has been followed by Wiegand 1904; Heberdey 1919; Buschor 1922; Schräder 1939; Bancroft 1979. Most scholars since Dinsmoor 1947 consider the foundations as a single unit.

[30] Dinsmoor 1947, 116 f. pl. 27, 3. 4. Dinsmoor's unsubstantiated claim regarding the claw, i.e. that it was used by sculptors nearly half a century before it was used by masons, was never thoroughly challenged at the time, nor has it been properly addressed in the case of the Acropolis until the work undertaken by Kissas 2008.

[31] Dinsmoor 1947, 116 f. The ›Peisistratid‹ temple, better known as the Old Athena Temple or Old Temple of Athena Polias, is now dated by most to ca. 500 (see Childs 1994). Scholars who associate the Dörpfeld foundations solely with this temple have thus been compelled to down-date the use of the claw on architecture even further, to the end of the 6th c. This would result in a gap of at least fifty years between the use of the chisel on sculpture compared to its use on architectural blocks.

Fig. 3 Dörpfeld foundations, inner blue foundations, detail of claw-tooth chisel marks on block 19

foundations to the later Archaic period thus created a problem for placing the Early Archaic H-architecture and limestone sculpture on them. At that time, traces of the claw had not yet been noted on the sculpture or architectural members associated with the H-architecture, and so it was not believed that they could have been erected on foundations with these tool marks. This dissociation between the Dörpfeld foundations and the limestone sculpture and H-architecture posited by Dinsmoor has resulted in an oft recycled myth about the chronological divide between the use of the claw on sculpture versus architecture, and the resulting conclusion that the H-architecture and limestone sculpture *cannot* be located on the Dörpfeld foundations.

The fundamental issue is that there is a single set of observable foundations on the Acropolis suitable for a monumental building that date to the 6th century (the Dörpfeld foundations), but there are two sets of architectural members and sculpture belonging to two different peripteral temples, one dated to the first half of the 6th century (the H-architecture and limestone sculpture) and the other dated to the end of the 6th century (the Old Temple of Athena and the marble sculpture)[32]. Wiegand was the first to connect the poros sculpture recovered from the excavations around the east and south sides of the Parthenon with the Dörpfeld foundations. He measured and documented all of the architectural and sculptural fragments known at the time, a process that allowed him to reconstruct an early

[32] For the sake of clarity, I will refer to the two 6th c. temples by the following names: the Bluebeard Temple, for the early Archaic temple consisting of the H-architecture members along with the limestone sculpture, and the Old Athena Temple, for the late 6th c. temple with the marble pedimental sculpture. The Bluebeard Temple has been called the Peisistratid temple, the Hekatompedon, the Urparthenon, and the early Archaic temple in other scholarship. The Old Athena Temple has been labeled the Peisistratid temple, the Old Temple of Athena Polias, and the *archaios neos* in other scholarship. While the first of these alternate terms is certainly incorrect, the other two labels are just as suitable to the structure as my chosen name.

Archaic temple that he placed on the inner foundations[33]. Wiegand postulated that the so-called Hekatompedon, composed of members of the ›poros‹ architecture, only stood on the inner Dörpfeld foundations until a later point in the 6th century, when it was replaced by the Temple of Athena, which he, like Dörpfeld, attributed to the Peisistratidai[34]. The later temple included the addition of a peristyle and therefore stood on both the inner and outer foundations. This solution of separating the inner and outer foundations chronologically with the two temples remained popular for some time and was a convenient explanation for the difference in material between the blocks of the inner and outer foundations.

The differences between Dörpfeld's hypothesis and that of Wiegand encapsulate a few of the major problems with the foundations and the temple or temples that are associated with it[35]. Firstly, there has been no sustained agreement as to whether the Dörpfeld foundations were initially constructed for the Bluebeard Temple or for the later Old Athena Temple. Since the early 20th century, the restored dimensions and measurements of the H-architecture fragments that constitute the Bluebeard Temple, originally studied by Wiegand, have been convincingly revised by W. H. Schuchhardt, W. H. Plommer, and I. Beyer[36]. In particular, Schuchhardt demonstrated that the marble sima fragments assigned to the H-architecture lead to a restored structure that exceeds the dimensions of the inner Dörpfeld foundations, thus disproving Wiegand's initial assessment[37]. He thus assigns the sima for the Bluebeard Temple to the outer foundations and dates both sets of foundations, inner and outer, co-terminously to the early 6th century. His hypothesis, then, combines the total Dörpfeld foundations with the H-architecture and poros sculpture, resulting in an early Archaic peripteral temple on the north side of the Acropolis (see *fig. 4* for a graphic illustration of the changing views regarding the location of the H-architecture).

Dinsmoor, on the other hand, dismissed this reconstruction with the H-architecture on the Dörpfeld foundations (considered the communis opinio at the time) in favor of a new theory: he argued that the Dörpfeld foundations only ever supported one temple, i.e the Old Athena Temple, and that their construction cannot be dated before the late 6th century on the basis of the use of the claw, which he circularly argued was not used on architecture until the late 6th century. The H-architecture fragments, then, would need a different foundation, one that does not show signs of the claw. He reconstructed this earlier temple with a non-peripteral, amphi-tristyle, in-antis design, with a cella length measuring exactly 100 Doric feet (and therefore a true ›Hekatompedon‹). Dinsmoor placed his supposititious temple in the one location where it is nearly impossible to ascertain proof of his claim: underneath the Parthenon, within its massive supporting podium[38]. His claim was succinctly answered,

[33] Wiegand 1904, 72–107.

[34] Wiegand 1904, 108–114 (the ›Hekatompedon‹). 115–147 (the ›Peisistratid‹ temple).

[35] For a cohesive and chronological treatment of the earlier scholarship up to the 1970s, see Bancroft 1979, 10–24. See also Korres 1997, 218–225, for a more up-to-date discussion.

[36] Schuchhardt 1935/1936; Plommer 1960; Beyer 1974; Beyer 1977. The measurements are listed in *table 1*. At the time of press, it was unfortunately too late to include and address the recent work of Elisavet Sioumpara concerning several newly discovered fragments associated with the Hekatompedon.

[37] Schuchhardt 1935/1936. See also the discussion in Bancroft 1979, 17. Bancroft re-measured many of the blocks of the H-architecture, and her calculations should be noted in reference to those of Schuchhardt, as well as Wiegand and Dinsmoor (see her Chapter II: The H-Building). *Table 1* documents the frieze measurements of the Bluebeard Temple, as well as all measurements for the Old Athena Temple, which unequivocally stood on the Dörpfeld foundations, and illuminates the similarities in dimensions between the two temples.

[38] Dinsmoor 1947. In general, Dinsmoor preferred to make use of the minimum dimensions of the preserved fragments of the H-architecture and, in some cases, employed inaccurate measurements, e.g. for the stepped architrave block built into the south wall of the Acropolis (cf. Dinsmoor 1947, fig. 8; Wiegand 1904, fig. 3). Plommer discusses many of the problems with Dinsmoor's measurements (Plommer 1960, 141–146).

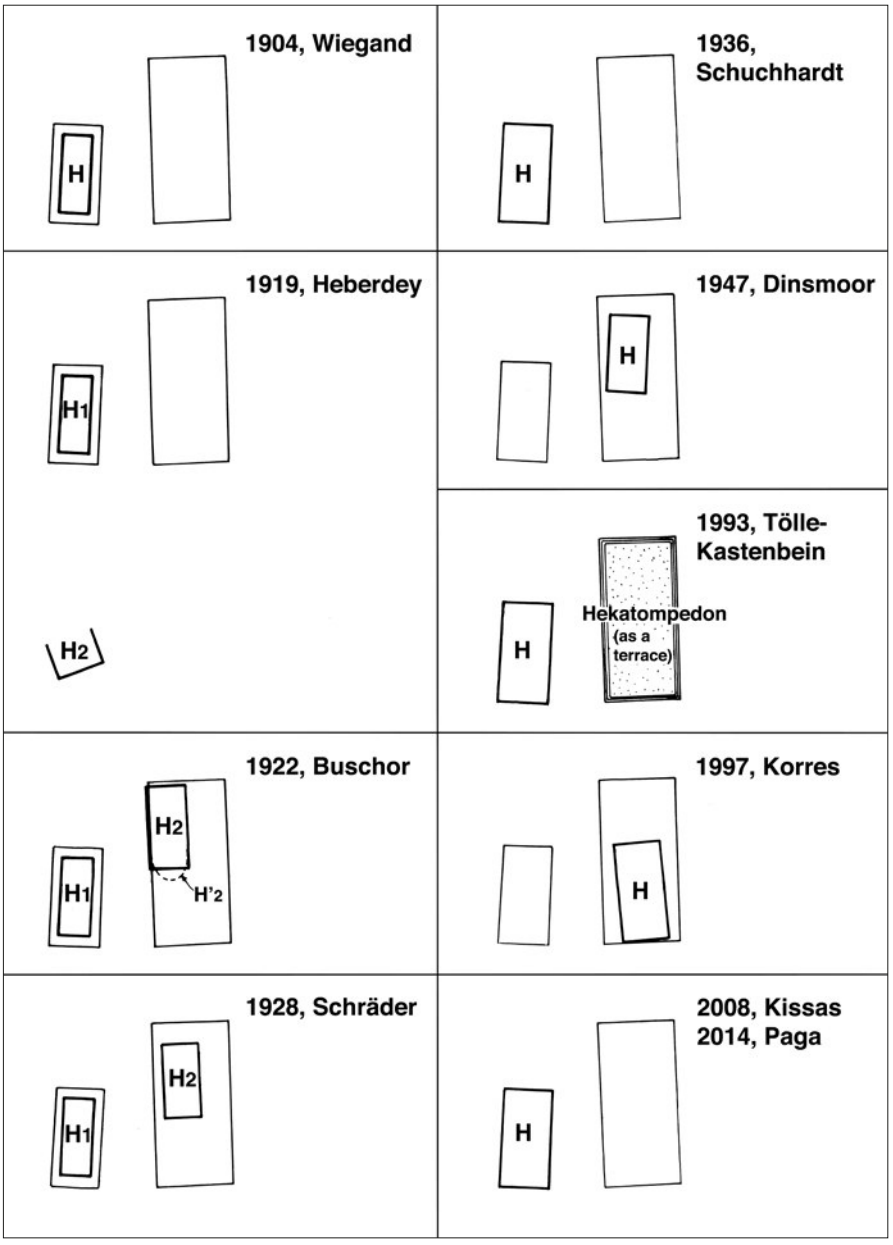

Fig. 4 Schematic rendering of proposed locations of the H-architecture (indicated by H; H1 and H2 when H-architecture members are divided between two structures) relative to the Dörpfeld foundations and the Parthenon podium

however, by Plommer, who demonstrated that the proposed temple would not be able to stand, given the physical remains of the H-architecture and circumstances surrounding the construction of the Parthenon podium. Plommer showed that the Hekatompedon as reconstructed by Dinsmoor would not be able to hold all of the limestone sculpture associated with the building, and that the architectural members and sculpture in fact easily fit on the outer Dörpfeld foundations, an argument that returns to Schuchhardt's previous assessment and also neutralizes Dinsmoor's problems with the claw[39]. In support of Schuchhardt and Plommer, and adding a further refutation to Dinsmoor, Beyer re-examined the sima fragments belonging to the H-architecture and concluded that they must belong to a hexa-

[39] Plommer 1960. Plommer does not re-date the introduction of the claw or discuss its use in detail, but he implicitly rejects Dinsmoor's proposed chronological divide between the use of the claw on sculpture and architecture when he places the H-architecture on the Dörpfeld foundations.

style peripteral temple; a smaller temple, such as Dinsmoor's Hekatompedon, would not be able to accommodate the sima. Beyer placed this building, which he still calls the Hekatompedon, on the Dörpfeld foundations (both inner and outer), where it was subsequently replaced by the Old Athena Temple[40].

For several decades, the view of Schuchhardt, Plommer, and Beyer remained the accepted theory. The H-architecture and poros sculpture, dated to the early 6th century, were associated with both the inner and outer Dörpfeld foundations and were later replaced, at some point in the last quarter of the 6th century, by the Old Athena Temple. Within the past two decades, however, this view has been challenged, and the pendulum has swung back towards an interpretation closer to that of Dörpfeld and Dinsmoor[41]. Much recent scholarship has preferred to place the so-called Hekatompedon on the south side of the Acropolis, as a predecessor for the Old Parthenon and Periclean Parthenon, thereby retaining the northern foundations solely for the Old Athena Temple. The main proponent of this revisionist theory is M. Korres, whose arguments have been followed in the majority of subsequent publications on the Acropolis[42]. A few scholars have resisted and kept the H-architecture on the Dörpfeld foundations, notably W. Childs and R. Tölle-Kastenbein[43]; no one, however, has cogently argued for a return to the previous theory that would place both temples on the Dörpfeld foundations, nor has there been any sustained critical response to Korres[44]. In light of new observations and recent work, however, it is possible to address several of the questions and issues raised by the preceding century of scholarship. A reappraisal of the evidence is not only appropriate, but necessary at this time.

The thesis that would locate the H-architecture on the south side of the Acropolis, within the podium constructed for the Old Parthenon, consists of five main elements: (1) a cutting in the bedrock along the west side of the Parthenon podium, near the middle of the façade, and oriented at a deviation of 3.5° to the left (i.e. running from northwest to southeast); (2) a second cutting or bedding, slightly further west than the first cutting, more irregular and running roughly parallel to it; (3) several stones in the eighteenth or nineteenth course of the podium, just to the south of the cuttings near the southwest corner of the podium, which are set in an oblique line, again at a deviation of 3.5° to the left; (4) several stones in the eighteenth course of the podium, along the south side near the southwest corner, and oriented 3.5° to the left; and (5) the reconstructed shrine to Athena Ergane, located within the north pteron of the Periclean Parthenon near the eighth column (from the eastern end), which is also oriented at a 3.5° deviation to the left from the podium[45]. This evidence, when taken to-

[40] Beyer 1974; Beyer 1977.

[41] This revision concerns Dinsmoor's topographic argument, as opposed to his reconstruction of the Hekatompedon. To my knowledge, the general dimensions and measurements of the Bluebeard Temple are accepted to correspond with those given by Schuchhardt, Plommer, and Beyer; no one has followed Dinsmoor's argument regarding the size and form of his Hekatompedon.

[42] For the various elements of this hypothesis, see Korres 1994a, 38 f.; Korres 1994b, 177 f.; Korres 1994c, 56; Korres 1996, 84–95; Korres 1997; Korres 2003, 5–9.

[43] Tölle-Kastenbein 1993; Childs 1994.

[44] The work of Kissas 2008 goes some way towards re-establishing the Bluebeard Temple on the Dörpfeld foundations, but he does not directly engage with the evidence offered by Korres.

[45] These arguments can be found in Korres 1996; Korres 1997, 225–229. In the 1997 publication, there is an accompanying drawing (Korres 1997, fig. 2); the cuttings are indicated as a1, the stones near the southwest corner are a2, the stones in the southern area of the podium are a3, and the shrine to Athena Ergane is 7. Regarding the third piece of evidence, i.e. the stones within the podium on the west side, near the southwest corner, Korres writes in his 1996 publication that the stones in question are in the nineteenth course of the podium (Korres 1996, 89), whereas in the 1997 publication, they are said to be in the eighteenth course (Korres 1997, 227). Given the location of the fourth piece of evidence, the stones in the south side of the podium, positioned in the eighteenth course, I am inclined to believe that the stones on the west side are in this same location. The approximate area of the cuttings observed by Korres on the west side of the Parthenon is indicated in the present paper in *fig. 5*, box 1.

gether, has led Korres to postulate that the Bluebeard Temple was located on the south side of the Acropolis and effectively functioned as the great-grandfather of the Periclean Parthenon; he calls this temple the »Urparthenon«. He then argues for three successive phases, Parthenon I, II, and III: Parthenon I, an intended (but never completed) massive hexastyle limestone temple for which a large podium was constructed at some point near the end of the 6th and beginning of the 5th century; Parthenon II, also called the Old Parthenon, the construction of which began after the battle of Marathon in 490; and Parthenon III, the Periclean Parthenon. Korres also argues that the *Urparthenon*, or at least distinct parts of it, such as the cella, would have remained standing during the construction of Parthenon I and Parthenon II, and would have continued to serve the cultic needs of the polis[46].

To address his five pieces of evidence in turn, I will begin with the two cuttings on the west side of the podium, herein labeled Korres cutting 1 and Korres cutting 2 *(figs. 5. 6)*. Fundamental to any theory that would locate the Bluebeard Temple on the south side of the Acropolis is the topography of the sacred rock itself. The Acropolis is not a flat projection, but a craggy thrust of bedrock that peaks to the north of the northeast corner of the Parthenon[47]. To the north of this point, the rock slopes slightly towards the northwest, before dropping steeply near the area occupied by the Erechtheion, whose elevation betrays this change quite clearly. To the south of this peak point, however, the slope is steep and abrupt: approximately 20°, beginning at the third intercolumniation of the east façade of the Parthenon (the slope is indicated on *fig. 5*). The slope does not affect the west side until the fifth column, but is similarly steep[48]. In order to reconstruct the Bluebeard Temple on the south side of the Acropolis, it is imperative to demonstrate that a podium of appropriate size and mass was constructed to support a monumental temple.

Yet the two cuttings in the bedrock to the west of the Parthenon podium do not constitute positive evidence for a pre-existing podium to support an *Urparthenon*. One cutting, Korres cutting 2, is very rough and uneven, only ca. 0.40 m long and is better considered a bedding rather than a cutting[49]. The truncated nature of this feature, in addition to its rough form, makes a true orientation and function difficult to ascertain. The first cutting, Korres cutting 1, on the other hand, is clear and noticeable along the west face of the podium *(fig. 6. 7)*. The widest point of this cutting begins to the south of the third column (from the north) and continues, narrowing, to at least the fifth column[50]. It is rather shallow, around 0.10–0.12 m deep, and somewhat irregular in its course, especially as it progresses towards the north[51]. The west vertical side of the cutting, moreover, is not flat, but bulges and slopes perceptibly outwards *(figs. 6–9)*. This cutting was not designed to receive blocks flush against its face and could not have served as a stable platform bedding for any large-scale structure.

[46] Korres 1997, 241. In Korres 1994c, 56, he postulates that there might also have been an even earlier temple, dating to the Geometric period, on the south side of the Acropolis (the great-great-grandfather of the Periclean Parthenon).

[47] Plommer 1960, 141, citing Kavvadias. The highest point has an elevation of 156.60 m.a.s.l.

[48] Plommer 1960, 141.

[49] I thank Kevin Glowacki for sharing an image of this feature with me.

[50] See *fig. 5* for the approximate location of all cuttings. It is possible that the cutting extends further south than this, but due to scaffolding and scrap metal present at the southwest corner of the Parthenon in 2010, I was unable to measure the full length. The visible measurable length of the cutting at that time was approximately 7.17 m. The cutting does not continue further to the north, nor does it turn to the east. The cutting is now impossible to measure, due to the concrete platform for the crane used for restoration work on the west façade of the Parthenon. A photograph of this area, reproduced by Kissas, shows the cutting continuing slightly further south than I was able to discern, possibly an additional full intercolumniation, which would extend the cutting to at least the sixth column from the north (Kissas 2008, 107 fig. 30).

[51] The precise 3.5° orientation that Korres (1997, 227) measured can only have been approximate due to the inexact line of the oblique cutting, although it is noticeably skewed from the line of the podium.

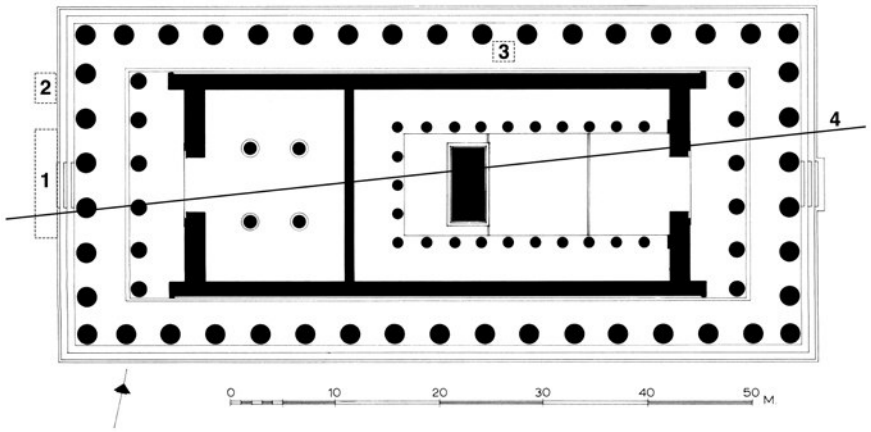

Fig. 5 Plan of the Parthenon. 1: location of Korres 1 and 2 as well as Paga A; 2: location of Paga B and C; 3: location of Classical Athena Ergane shrine; 4: line indicating approximate place at which Acropolis slopes steeply to the south

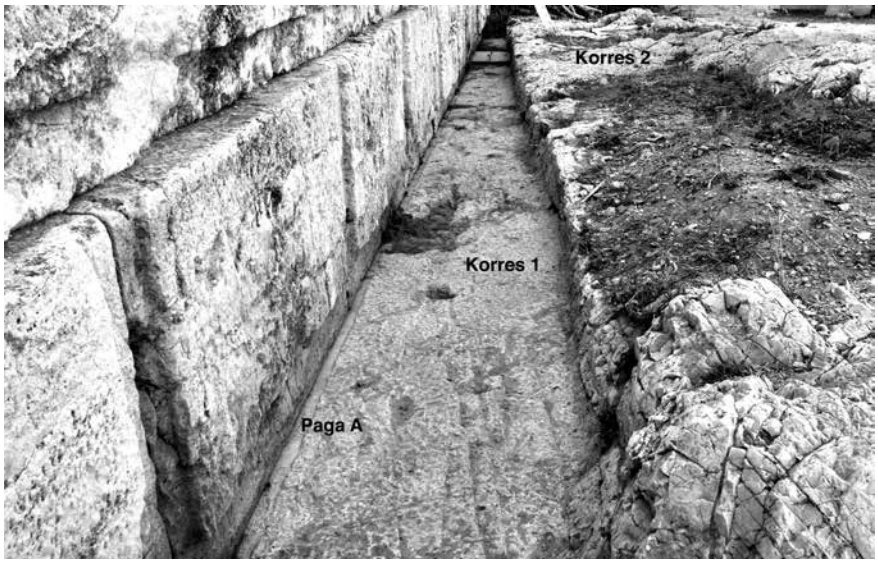

Fig. 6 View along the west face of the Parthenon podium, view to the south, showing Korres 1 and 2 as well as Paga A

Fig. 7 View along the west face of the Parthenon podium, view from above, showing Korres 1 and Paga A

The oblique cutting, Korres 1, contains within it a further cutting, not mentioned or indicated in any of the relevant publications discussed above[52]. This further cutting, herein labeled Paga cutting A, runs parallel to the edge of the podium in a carefully chiseled band, precisely worked with the claw-tooth chisel *(figs. 6–9)*[53]. This band cutting is approximately 0.025 m wide and follows the line of the lowest blocks of the podium, rather than the oblique line of the cutting within which it rests. The lowest course of the podium at this point consists of blocks with drafted margins on the bottom and two sides[54]. The carefully drafted margin at the bottom of these blocks, together with the precise parallel cutting along their base (Paga A), indicates that the blocks and cutting are co-terminus elements involved in the construction of the podium. The band cutting was carefully worked and smoothed with the claw in order to prepare the bedrock to receive the blocks of the podium. The oblique cutting, Korres 1, therefore, is most logically explained as part of a rough trimming of the bedrock along the west side, a preparatory exercise that provided a relatively flat area within which the builders could work. The narrow band, Paga A, running parallel to the podium was cut for the actual placement of the blocks, whereas the oblique cutting allowed the builders more space to cut the precise parallel band, as well as maneuver and place the blocks that are thus partially sunk into the bedrock itself.

Fig. 8 View along the west face of the Parthenon podium, view to the north, showing Korres 1 and Paga A

There is another cutting, further to the north of Korres' two oblique cuttings *(figs. 5. 9)*. This cutting, Paga B, runs parallel to the podium and is ca. 1.364 m long, and 0.305 m wide at its base *(figs. 9. 10)*[55]. To the north of this parallel cutting, the bedrock projection of the Acropolis juts to the west and becomes relatively low and even. In certain areas, such as near the northwest corner, the topography was less of a problem and required fewer cuttings or trimmings. At the site of the parallel and oblique cuttings, however, it was necessary to cut

[52] This additional cutting is not noticeable in the photograph provided by Kissas (2008, 107 fig. 30), nor in any other photographs or drawings of this area, to the best of my knowledge.

[53] The cutting is particularly noticeable between the third and fourth columns, continuing to the south of the fourth column, as well as partially between the fourth and fifth columns.

[54] The width of these margins varies, but average measurements are 0.110 m on the bottom, and 0.042–0.052 m for the sides.

[55] Paga B is located between the second and third columns, just to the north of the third column (*fig. 5*, box 2). It is possible that the cutting extends further to the north, but it is not possible to ascertain the line of the cutting at this point, due to the presence of a large modern concrete block at the second column. The terms ›oblique‹ and ›parallel‹ are employed here not in strict geometric terms, but in an approximate manner. The ›parallel‹ orientation of Paga A, B, and C denotes that the cuttings are not necessarily in exact alignment with the podium, but are approximately parallel. The ›oblique‹ orientation of Korres 1 and 2 indicates that these cuttings are distinctly not parallel. The relative difference between the two sets of cuttings allows for the reasonable designation of ›parallel‹ and ›oblique‹ (see *figs. 6. 10* for the relative differences in orientation).

Fig. 9 View along the west face of the Parthenon podium, view to the north, showing Korres 1 and Paga A–C

Fig. 10 View along the west face of the Parthenon podium, view from above, north at the top, detail, showing Paga B and C

deeply into the bedrock in order to lay the blocks of the podium. The parallel cutting, Paga B, in fact, is precisely in line with a protruding course of the podium that appears slightly further to the north, close to the northwest corner, and which is an additional indication of the structural nature and function of the cutting. The entire interior surface of this cutting is smoothly worked with the claw-tooth chisel. The bottom is even and flat (compared to the somewhat irregular or roughly-worked bottom surface of Korres 1), and the vertical western edge is somewhat straighter than that of Korres 1, although it is not precisely vertical. A slightly recessed band, Paga C, runs along the interior of the parallel cutting against the podium, and has also been worked with the claw *(fig. 10)*[56]. As with the thin band to the south (Paga A), Paga C seems explicitly designed to present a smooth band to receive the blocks of the podium, ensuring proper joining and stability.

The use of the claw-tooth chisel in Paga A, B, and C, however, presents the same potential problem as the use of the claw on the Dörpfeld foundations. If the claw-tooth chisel, as has long been argued, was only introduced in Greek architecture in the second half of the 6th century, its presence here would provide a terminus post quem for both Korres 1 and Paga A, B, and C, placing all of the cuttings more in line with the podium of the Old Parthenon than an early 6th century predecessor. The argument that would place the H-architecture on a set of foundations below the Parthenon because of the hypothetical gap between

[56] This band is wider than Paga A, measuring ca. 0.107–0.120 m wide. Paga C does not run for the full length of Paga B, but is parallel to both it and the podium (see *fig. 10*).

the use of the claw on architecture versus sculpture (i.e. the argument that states that the H-architecture cannot be placed on the Dörpfeld foundations *because of* the presence of the claw on those foundations), is now rendered null and void, given the presence of the claw within the bedrock cuttings supposedly connected with this earlier podium on the south side of the Acropolis.

It is notoriously difficult, though, to date bedrock cuttings, and there is no stratigraphic or other type of proof that these cuttings are Archaic. There is nothing, in fact, to prove that they even pre-date the Parthenon podium, other than the fact that the blocks of the podium are precisely fitted into Paga A and C *(figs. 9. 10)*. Rather than positing an early Archaic predecessor, the more likely explanation is that all of the cuttings were made in order to facilitate the laying of the current podium; at this point on the west side, near the fifth column (from the north), the courses of the podium begin to cut into the bedrock and it had to be smoothed and cut down in order to lay the courses. Then the entire area would have been backfilled and landscaped up to the level of the euthynteria, resulting in a complete covering of the bedrock cuttings, thus erasing any traces of the construction practices, as well as any mistakes or anomalies.

In regard to Korres' third and fourth pieces of evidence, the stones angled at an oblique line near the southwest corner in the eighteenth course on both the west and south sides of the podium, it is not possible to say much. The area is no longer accessible, due to vegetation, dirt, and the general use of the area as a work space, and no detailed information about these stones has been provided; for example it is not clear how many stones there are, whether the same angle exists in other courses, what the approximate or average size of the blocks is, whether they were worked differently from other blocks or other courses, or how they should be dated. They are located in the eighteenth course of the podium and are approximately oriented at 3.5°[57]. This orientation is not apparent when looking at the podium, as the exterior faces of the blocks are flush with the rest of the podium; it is their sides, extending into the thickness of the podium, that were found to be angled[58]. Without further details, the internal orientation of the sides appears to be the only basis on which the presence of a large-scale temple here in the early Archaic period can be put forward. It is important to note, however, that the courses of the Old Parthenon podium are not all flush on the exterior, but, with the exception of the uppermost courses, there is a considerable amount of variation in their projection; we might expect this roughness to extend to all faces of the blocks, although each block would, by necessity, have to be relatively rectangular. The general roughness of the exterior would not have been visible in antiquity, as the surrounding area would have been backfilled and landscaped. Little is known of the quarrying practices of the Piraeus limestone that was used for the construction of the podium, so it is also possible that the blocks were not all uniformly cut or that some may have been reused. Unless every block of the podium is measured for a similar angle and none is found, the deviations noted by Korres may be meaningless. Furthermore, in the drawing that accompanies the 1997 publication of this information, the stones on both the west and south sides are drawn in line with Korres' postulated Parthenon I, the structure he dates to ca. 500 and which is not the same as the *Urparthenon* or Hekatompedon[59]. In short, it is not possible to assert that the slightly angled stones constitute positive evidence for the existence of an *Urparthenon* on the south side of the Acropolis, although their angled sides may be evidence of reuse or quarrying techniques.

[57] Korres 1996, 89–91; Korres 1997, 227.

[58] This is not stated explicitly in Korres 1997, but is treated in more detail in Korres 1996.

[59] Korres 1997, 226 fig. 2, a2. a3. These two features form the hypothetical outline for feature 8, which is Korres' first postulated Parthenon phase. The implication would be that although the stones form part of what Korres calls Parthenon I, their angled orientation indicates that they were built up against a pre-existing structure (cf. Korres 1996, 91).

Korres' fifth piece of evidence is the reconstructed shrine of Athena Ergane, located within the north pteron of the Periclean Parthenon. The evidence for this shrine is not plentiful, but it is enough to make the Classical naïskos credible. The presence of a stone socle surrounded by limestone blocks has been interpreted as the foundation for the base of a cult statue[60]. The problem, however, is the retrojection of this Classical structure to the pre-Persian period. Korres' argument for an Archaic naïskos seems to be based primarily on a single foundation stone that supported a hypothetical cult statue base, which was then raised or replaced at a later date near the mid-5th century[61]. This foundation stone is not visible in the current restoration of the Parthenon and no photographs of its initial discovery were published, but it appears in the reconstructed profile drawings provided in the 1997 publication.

Based on the drawings provided, the elements that seem to imply a hypothetical predecessor in the Archaic period include the use of limestone blocks around the socle and the orientation of the shrine. The use of limestone blocks within the Classical naïskos, however, does not necessarily imply a pre-Periclean date[62]. The foundations of the Old Parthenon and Periclean Parthenon frequently consist of limestone blocks in areas where visibility was not a concern[63]; the use of limestone does not, by itself, warrant a pre-Classical date. The other element that suggests an Archaic date for the naïskos is its orientation.[64] The deviation in the orientation of the shrine may have been caused by specific cult requirements, distinct from those served by the Parthenon. Moreover, the orientation of the shrine seems to have been measured from the Periclean naïskos rather than the single ›Archaic‹ block: it is not possible to determine whether this orientation was unique to the Classical shrine or if it is a reflection of the hypothetical predecessor. There does not appear to be any positive evidence that the ›socle‹ dates to the Archaic period, or that it was originally intended to support a statue base. Finally, even if the orientation of the Classical shrine is a holdover from an Archaic predecessor, a small Archaic naïskos does not imply the presence of a massive contemporary podium in the vicinity.

In sum, all of the evidence adduced by Korres in support of an *Urparthenon* is circumstantial at best. The two cuttings as well as the angled podium blocks have been shown to be elements that could easily be used to fit a variety of potential circumstances or arguments. The bedrock cuttings are better explained as a means of aiding the laying of stones for the podium of the Old Parthenon or as a simple construction mistake, rather than evidence for a hypothetical earlier platform, which has left no positive physical evidence. The angled blocks in the podium may be more indicative of the quarrying practices in Piraeus and construction practices in building the podium, rather than evidence of an earlier podium. The shrine to Athena Ergane has no stratigraphic evidence connecting it to a period prior to 447

[60] Korres 1997, 227 f. fig. 3 (in the drawing, the supposed socle is labeled A and the limestone blocks are labeled D).

[61] Korres 1997, 227. The hypothetical statue base support is labeled B or B′ (the use of dashed lines to outline the stone leads me to believe that it is reconstructed). Korres does not provide any detailed evidence for why he believes that the naïskos is »ein Heiligtum aus älterer Zeit« in either the 1997 publication, the brief treatment of the shrine in the 1996 article (Korres 1996, 94 f.), or the original report in BCH (Korres 1988, 612 fig. 3). In all three publications, the shrine is assumed to be a continuation from the Archaic period but no evidence – stratigraphic, stylistic, or contextual – is provided.

[62] Korres does not claim that the limestone blocks are evidence for a pre-Classical original date for the naïskos, but this seems to be implied in his drawing of the shrine (Korres 1997, 228 fig. 3, 2).

[63] I owe this observation to Margaret Miles, who shared with me several photographs she took before the interior spaces of the Periclean Parthenon were sealed with concrete, and prior to much of the reconstruction work on the northern colonnade, which has now hidden these areas. These photos clearly show limestone blocks employed below the area where the cult statue would have stood, as well as underneath the toichobate near the eastern end.

[64] Similar to the case of limestone use, this is not explicitly stated, but seems to be implied in the later publication (Korres 1997, 227); it is also briefly mentioned in the earlier report (Korres 1996, 95).

and, even if it did replace an earlier shrine or cult area, there is no means of connecting this hypothetical naïskos directly (or even indirectly) with the H-architecture.

Furthermore, Korres himself has supplied evidence to contradict his theory: during the course of work on the Parthenon connected with its restoration, he has been able to take several cores and test drillings through the Parthenon and into the podium. These tests were undertaken in order to determine the structural stability of the podium, but they also allowed archaeologists to examine the lowest parts of the Periclean and Old Parthenon, as well as the nature of the podium itself. The drillings revealed the massive nature of the podium and did not show any evidence of internal structural or chronological phases [65]. These drillings revealed no indications of the possible existence of older foundations within the podium. Similarly, investigations in areas where there were gaps from the excavation of Medieval graves within the Parthenon helped archaeologists understand the foundations for the Old Parthenon and the podium, but did not reveal any traces of older foundations or structures[66]. If the podium, constructed for the Old Parthenon soon after 490, is a single, massive, solid stone entity, as the test drillings and stratigraphy associated with its construction demonstrate[67], then both Korres' argument that the *Urparthenon* remained standing as the podium was constructed, as well as his very siting of the temple on the south side of the Acropolis, are structurally impossible. The Bluebeard Temple cannot, physically, be placed on the south side of the Acropolis[68].

THE DÖRPFELD FOUNDATIONS

Where, then, should the Bluebeard Temple be located? According to Dinsmoor, the issue of the claw-tooth chisel seems to prohibit reconstructing the temple on the Dörpfeld foundations[69]. Yet, we now know that the claw was in fact used on some of the limestone sculpture as well as on H-architectural fragments and the foundations themselves. They can all be considered contemporary: the chronological ›gap‹ between the foundations and the archi-

[65] Korres 1997, 225. In Korres 1994c, he mentions that core drillings undertaken in 1984 in four different areas of the podium passed only through compact stone, indicating that the podium represents a solid stone construction (Korres 1994c, 66 n. 3).

[66] Korres 1997, 225.

[67] The strata excavated and recorded by Kavvadias and Kawerau in 1886 (Kavvadias – Kawerau 1906), following observations made by Ziller in 1865, demonstrate the construction technique used to erect the podium: the bedrock was cut for each course, the working chips were swept away, the limestone blocks were laid, and then earth and debris were used to backfill the area and raise the ground level so the masons could continue to work as the podium progressed. In some cases, the limestone blocks were trimmed during installation and the working chips produced in the process were also swept into the earth that abutted the podium. This sequence is shown in the profile drawing by Ziller (see Bundgaard 1974, pl. 227) and was more recently discussed by Stewart 2008, 400 f. The stratigraphic sequence indicates that the construction of the podium was a single undertaking, and the lack of any traces of stone *not* associated with the podium (i.e. stone that is neither Acropolis bedrock nor Piraeus limestone, which was not extensively quarried prior to ca. 490) in the stratigraphy further demonstrates that no large-scale structure existed in that location prior to ca. 490. Furthermore, the ceramic evidence recovered from the excavation of the fill along the south side of the Parthenon solidifies a date no earlier than ca. 490 for its construction (Stewart 2008, 399).

[68] One additional argument has been put forward in support of a southern location for the H-architecture: the majority of its sculpture and architectural components were found in the dumped fills (particularly the massive poros layer) that stretch along the south side of the Parthenon (Korres 1996, 89; Stewart 2008, 401). The findspots for sculpture and architectural members destroyed by the Persians and buried in the following decades, however, do not prove – or necessarily even hint at – the original location of these objects, as Stewart masterfully demonstrated in his article on the beginning of the Classical style (Stewart 2008; cf. his conclusion regarding the H-architecture: Stewart 2008, 401).

[69] Dinsmoor 1947, 116 f.

	Element	Dimensions	Source
Dörpfeld Foundations	stylobate	21.34 × 43.44	
Bluebeard Temple	triglyph width (façade)	0.81	
	triglyph width (flank)	0.76	
	metope width	1.11	Wiegand 1904 (max.)
		1.055	Wiegand 1904 (min.)
		1.23	Bancroft 1979 (max.)
		1.16	Bancroft 1979 (median)
		1.01	Bancroft 1979 (min.)
		1.13	Bancroft 1979 (average)
		1.185	Kissas 2008 (max.)
		1.125	Kissas 2008 (min.)
		1.20	Plommer 1960
	frieze height	1.37	
	frieze length	20.014	Wiegand 1904 (max.)
		19.464	Wiegand 1904 (min.)
		21.214	Bancroft 1979 (max.)
		19.014	Bancroft 1979 (min.)
		20.214	Bancroft 1979 (average)
		20.764	Kissas 2008 (max.)
		20.164	Kissas 2008 (min.)
		21.020	Plommer 1960
		20.250	Schuchhardt 1935/1936 (on basis of re-constructed pediment)
		20.235	average
	façade width	20.564	based on Bancroft 1979 (average)
	flank width	41.079	based on Bancroft 1979 (average)
Old Athena Temple	triglyph width (façade)	0.822	
	triglyph width (flank)	0.753	
	metope width	1.20	Plommer 1960, based on Wiegand 1904
	frieze height	1.34	
	frieze length	21.596	

Tab. 1 Measurements (in m) for the Dörpfeld Foundations, Bluebeard Temple, and Old Athena Temple

tecture no longer exists. This evidence, however, still does not prove that the H-architecture should, or even must, be located on the Dörpfeld foundations; all it does is remove the chronological hindrance that prohibited its placement on the north side of the Acropolis.

Proponents of the ›south side theory‹ might point to the fact that there are no traces that the Dörpfeld foundations were re-used. It is worth noting, however, that it would be exceedingly difficult to find any such traces, given the fact that very little was changed in the structure and form between the Bluebeard Temple and the Old Athena Temple *(table 1)*, and the time lapse between the two structures was relatively short, approximately sixty years. The Old Athena Temple had nearly identical measurements as the Bluebeard Temple, so no structural changes would have been necessary to adjust the foundations. There are pry marks visible throughout the foundations, but it is impossible to date these marks

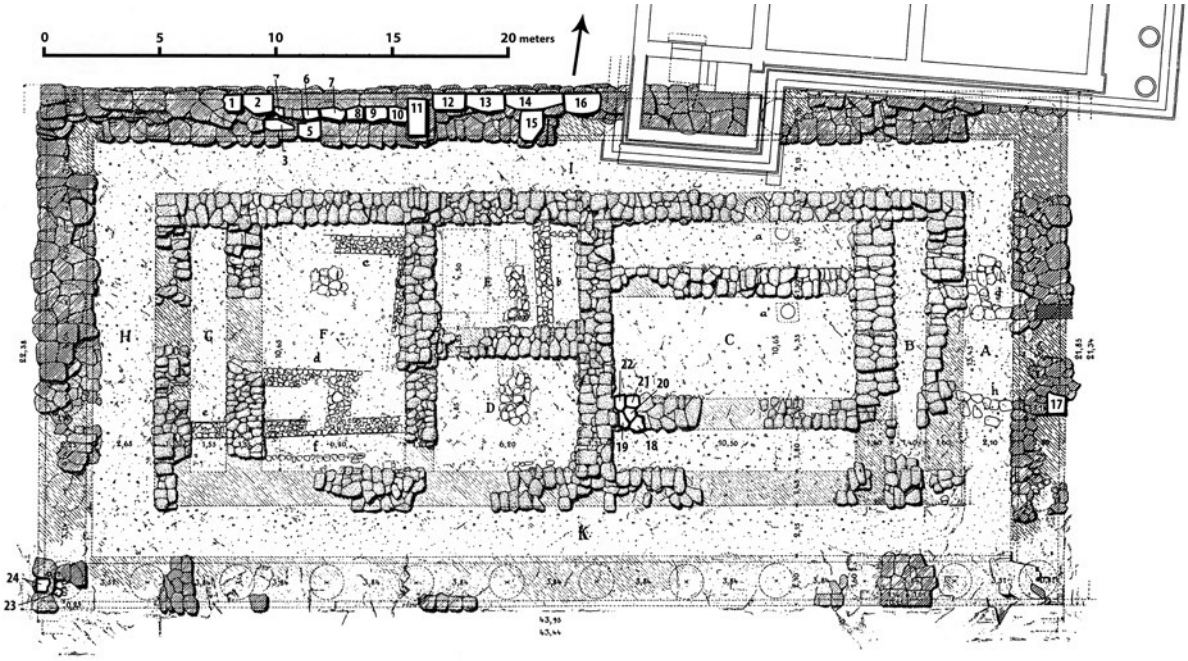

Fig. 11 Dörpfeld foundations, state plan, blocks with claw-tooth chisel marks numbered

with any precision, or even conjecture that they might post-date the original laying of the foundations.

Prior to the work by Kissas, one might have pointed to the claw-tooth chisel marks as an indication of the re-working of the foundations: the Bluebeard Temple could have been dismantled and the foundations redressed with the claw in order to prepare them for the Old Athena Temple. If that were the case, the re-use of the foundations would be clearly written in the stones themselves. The claw, however, is applied selectively on the Dörpfeld foundations *(fig. 11)*. It is detectable on five blocks of the inner foundations, blocks 18–22, located at the corner between the southern internal colonnade of the east cella and the north-south cross-wall that divides the structure into its eastern and western halves *(fig. 3)*. These blocks show traces of the claw over much of their upper horizontal surfaces, but the chisel was not used on their vertical sides. The other blocks that constitute the inner foundations and display clear signs of picking are dressed with the point; the majority of the blocks, however, are only roughly dressed. This assessment of the chisel and pick work corresponds to the overall nature of the construction of the inner foundations: smaller blocks, more roughly worked, with greater attention paid to the corners and major structural elements.

In the outer foundations, marks from the claw can be seen on at least nineteen blocks. Sixteen of these blocks are located in the north wall, one makes up part of the eastern wall, and two can currently be found at the southwest corner[70]. Four of these blocks, numbers 2, 15, 17, and 23, bear signs of the claw in their bands of anathyrosis, primarily along the vertical fascias. For example, block 17 in the eastern façade has anathyrosis on both its south and west faces. No traces of the claw were detected on the west face, where the anathyrosis is

[70] These blocks, or their approximate location in the cases of later re-arrangement (i.e. blocks 3, 15, 23, and 24, all of which are ex situ) are marked and numbered on the state plan, *fig. 11*. The plan was drawn by Wiegand in the early 1900s and there are several discrepancies now between what he saw and what is currently preserved on the ground. In cases where the block in question is not present on the original plan, I have attempted to indicate the general area where it is currently located.

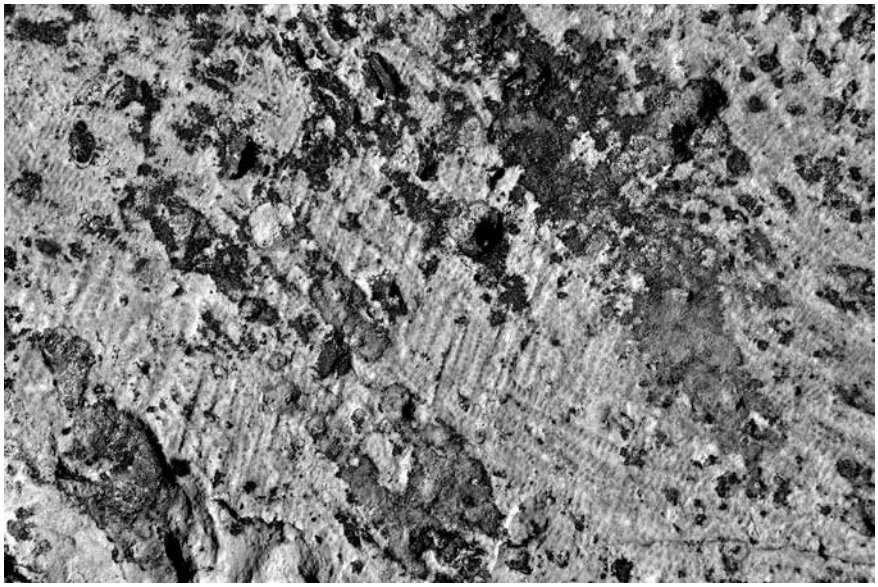

Fig. 12 Dörpfeld foundations, detail of block 7

partial. The south face, however, shows clear claw marks along the left vertical anathyrosis band[71]. Elsewhere in the outer foundations, the claw can be seen applied to the top surfaces of the blocks. The series of blocks along the north wall, blocks 1 through 16 (excluding blocks 11 and 15), show a consistent use of the tool as a means of smoothing and preparing the upper surface to receive the next course *(fig. 12)*. It is not only on the top surfaces of the uppermost course of blocks, however, that the claw can be detected. Block 5 lies in the preceding course, below the topmost preserved course in the north wall, and has clear signs of the claw-tooth chisel over its visible upper surface. The presence of the claw in bands of anathyrosis, as well as on block 5, indicates that the claw was not solely used for the topmost course of the foundations, although that does seem to be its preferred use at the time. The variety of areas where the claw was employed, however, both within the foundations as well as on the blocks themselves, demonstrates that the tool was used during all stages of construction and not as an afterthought or subsequent reworking.

These selective uses of the claw on the Dörpfeld foundations can do more than help establish the date of the introduction of the chisel: they also demonstrate the type of places that are most likely to be worked with the claw-tooth chisel and, moreover, provide us with information concerning Archaic Athenian building practices. The instances of the claw on the outer foundations seem to imply that this chisel was primarily employed for upper surfaces and for bands of anathyrosis, in both cases to prepare the block to receive the next stone, either horizontally or vertically[72]. The joins between blocks would have been of utmost importance in the Dörpfeld foundations, due to the fact that no clamps or dowels were employed (with the possible exception, as noted above, of the euthynteria). The claw was therefore used to smooth the surfaces of the sides and top of the blocks, but also to provide a small measure of traction, to ensure that the blocks would join properly.

[71] The anathyrosis on the south face is actually a partial ›double anathyrosis‹, having two vertical fascias along the left side, the inner band alone showing signs of the claw.

[72] Adam remarks that the claw was a particularly useful tool for »mak[ing] an edge«, in places where a straight edge was needed, such as the steps of a coffer or to differentiate between hairline and forehead in sculpture (Adam 1966, 19). We might view the use of the claw in bands of anathyrosis or along the horizontal planes of blocks in a similar manner.

The presence of the claw in the anathyrosis bands and on the top surfaces of the blocks speaks to the general concern of the builders for the stability and strength of the outer ring of foundations. The outer foundations needed to have a greater load-bearing capacity than the inner foundations, a structural necessity that also explains the fact that the outer foundations are constructed of larger and more carefully worked blocks[73]. In particular, the blocks along the north and west sides of the outer foundations are considerably larger than any others employed in the structure[74]. The slope of the Acropolis surface under the Dörpfeld foundations drops steeply to the north and more gradually towards the west. The slope, as well as the structural integrity of the outer foundations, explains the larger size of these blocks, as well as the use of anathyrosis and concern for proper joining between courses of blocks in these areas. The blocks of the inner foundations, on the other hand, do not show any traces of anathyrosis. In addition to indicating the lesser structural importance of the inner blocks, the lack of anathyrosis may also explain why there are fewer instances here of the claw-tooth chisel. It is possible that the tool was originally employed specifically as a variation of a smoothing chisel, in order to prepare blocks to receive the next stones and for close joins[75]. This interpretation would help explain why the claw is used here explicitly for anathyrosis bands and the preparation of upper surfaces. The blocks of the inner foundations that show traces of the claw are located at a significant juncture. The use of the claw here might indicate that the builders felt some trepidation about the cross-wall, another area in the building that had an important load-bearing function.

Overall, the construction of the foundations, both inner and outer, as well as the selective use of the claw-tooth chisel indicates that the Dörpfeld foundations supported a monumental building of great importance: the care taken in the laying and dressing of the foundations implies a heightened level of awareness of the topographical nature of the Acropolis itself, as well as general concern that the building to be placed on these foundations be as stable and well-supported as possible. The attention paid to the north wall indicates that this area was the most crucial for the builders: the north wall effectively created a platform to support the temple, much in the way that the podium on the south side of the Acropolis later supported the Old Parthenon. The structure placed on these foundations was a monumental

[73] This structural difference between the outer and inner foundations was originally used by Dörpfeld as one of two possible explanations for their differences in material and technique (Dörpfeld 1886, 345 f.). He discarded this interpretation, though, in favor of the second, namely that the differences were chronologically based and indicated that the inner foundations were earlier than the outer ones.

[74] The average size of the blocks in the north side is 1.08 × 0.87 × 0.46 m. The average size of the blocks in the west side is 1.16 × 0.78 × 0.55 m. Compare these dimensions with the average size of the blocks in the south side: 0.77 × 0.50 × 0.3 m; and the average size of the blocks in the east side: 0.69 × 0.48 × 0.43 m. The inner foundations have an average block size of 0.61 × 0.42 × 0.31 m, although there is considerable variation. In general, the blocks for the inner foundations of the cella walls, the corners, and the cross-wall dividing the eastern and western halves of the temple are larger and more carefully worked and joined than those for other elements, such as the internal colonnade in the east cella and the cross-walls in the western half of the building.

[75] In addition to this specific use of the claw, it seems to have been tentatively used on other architectural blocks, such as the sima. Moreover, of the two metope blocks from the Bluebeard Temple that were reused for IG I^3 4A–B, the Hekatompedon Decrees, one shows traces of claw marks on its sides (Metope B). It is possible that these marks are from the second period of use, when the inscriptions were carved (this is the opinion of Dinsmoor 1980, 25; Butz 1995, 35). It is equally possible, however, that the metopes were originally worked with the claw: the sides of the metopes could have been considered areas where joins were considered worthy of extra care – despite the fact that they were slotted into place between flanges on the triglyphs – and so they received attention in the form of the new tool. The lack of claw marks on Metope A could be due to its more fragmented survival and fewer preserved edges than Metope B. Adam notes a similar example in NM 966, where the claw was used on the sides of the grave relief to provide a joining surface for the surrounding niche (Adam 1966, 22).

temple and most likely the largest building on the Acropolis until the decision to build the Old Parthenon. The dimensions of the Dörpfeld foundations at the level of the stylobate are 21.34 × 43.44 m, measurements that would support a hexastyle peripteral temple with twelve columns along its flanks[76]. The reconstructed dimensions of the Bluebeard Temple, insofar as they can be calculated, accord well with those of the foundations: the front width of the Bluebeard Temple, based on the measurements of the frieze, can be calculated to be between 19.014 and 21.214 m (minimum and maximum reconstructions, respectively; see *table 1*). On the basis of the reconstructed interaxial spacing, the front width should be 20.564 m and the flanks, with twelve columns, should measure 41.079 m long[77]. The dimensional correlation between the Dörpfeld foundations and the Bluebeard Temple is argument enough to place the early 6th century temple on the north side of the Acropolis. Moreover, no other large-scale architectural structure was present on the Acropolis until the construction of the Old Athena Temple around 500 and the Old Parthenon soon after 490. The Bluebeard Temple was thus the sole temple on the Acropolis during the 6th century and should therefore be placed on the only set of verifiable foundations from the Archaic period, namely the Dörpfeld foundations.

The long-standing sanctity and importance of the cults on the north side of the Acropolis further strengthens the association between the Bluebeard Temple and the Dörpfeld foundations. The most important cult on the Acropolis was dedicated to Athena Polias, and her cult statue, the ancient olive wood *agalma* that was believed to have fallen from the sky, was the supreme object of worship throughout the Archaic and Classical periods. Pausanias, visiting the Acropolis in the 2nd century C.E., described the statue as ›the most sacred‹ object for the Athenians: »τὸ δὲ ἁγιώτατον … ἐστὶν Ἀθηνᾶς ἄγαλμα«[78]. The cult of Athena Polias was situated on the north side of the Acropolis and the ancient *agalma* resided in what is termed the ›old temple‹, or *archaios neos*.[79] It is this statue that received the new peplos during the festival of the Great Panathenaia and to whom a hecatomb of cattle were sacrificed[80]. The Great Altar of Athena was also most likely located on the northern half of the Acropolis, just to the east of the Dörpfeld foundations and Erechtheion[81]. The combined evidence points to the fact that the cult of Athena Polias was the most sacred cult on the Acropolis and it involved the worship of the ancient *agalma* of Athena, which was located within the *archaios neos*, as well as sacrifices on the Great Altar of Athena: all of these elements – the cult, temple, statue, and altar – were contained in the northern section of the Acropolis. Given the fact, therefore, that the Bluebeard Temple was the only temple in existence dur-

[76] The dimensions of the stylobate are, in fact, slightly problematic. The width of 21.34 m is secure, but Dörpfeld provides three different lengths: 43.44 m, when measured from the center of each side; 41.70 m, when measured from the centers of the corner columns; 42.25 m, when 0.25–0.30 m is added to the measurement from the centers of the corner columns (Dörpfeld 1886, 342 f.). Childs gives the length as 43.15 m (Childs 1994, 1). In the scholarship concerning the foundations, there is no consensus, and frequently the length of the Dörpfeld foundations is not even stated (only the width). Here, I have used the maximum length, as provided by Dörpfeld, as it strikes me that the center-to-center measurement is probably the most accurate, given the fact that the corners of the outer foundations are not all equally preserved.

[77] These calculations are based on Bancroft's proposed interaxial spacing of 3.84 m for the front and 3.61 m for the flanks: 5 × 3.84 + 0.81 (triglyph) + 2 × 0.277 (corner adjustment) = 20.564, and 11 × 3.615 + 0.76 (triglyph) + 2 × 0.277 (corner adjustment) = 41.079. See *table 1* for all measurements.

[78] Paus. 1, 26, 6. Pausanias goes on (1, 26, 7–1; 27, 1–3) to describe other objects related to the cult of Athena Polias, as well as the Temple of Athena Polias itself, the structure now referred to as the Erechtheion.

[79] IG I^3 474. The Acropolis inventories frequently refer to a building called the *archaios neos*, in which the ancient *agalma* is located. This building is distinct from the Parthenon and the cult of Athena Parthenos. See Herington 1955, 16–23.

[80] For the important role of the peplos in the Great Panathenaia, see Shear 2001, 163 f. 669–700. 754. 799.

[81] For the Great Altar, see Bancroft 1979, 58–60. She associates several fragments of the H- and A-architecture with this altar.

ing the early 6th century, it must, by necessity, be the temple in which the ancient image was housed, a conclusion that further supports the identification of the Bluebeard Temple with the Dörpfeld foundations.

The Bluebeard Temple represents a new stage in Athenian building practices. Many scholars associate the temple with Peisistratos (and label it the ›Peisistratid Temple‹), but the chronology does not allow such a direct connection: the Bluebeard Temple dates to ca. 570–560, on the basis of its sculpture and architectural members, whereas Peisistratos did not seize his first tyranny until 560/559, held this tenuous position for perhaps a year or two, and did not gain more solid control of the polis until 546/545[82]. Nevertheless, the Bluebeard Temple was the most important cult building during the period of Peisistratid control, regardless of whether the tyrant took a direct hand in its construction or not. The hexastyle peripteral temple was the largest building on the Acropolis at the time of its construction, and heralded a long-standing focus on the cult structures of the northern side of the sanctuary. Most importantly, the construction of the temple entailed the use of a new tool on both the architectural and sculptural blocks, possibly for the first time in mainland Greece: the claw-tooth chisel.

EXPANDED USE OF THE CLAW-TOOTH CHISEL

Based on the evidence accumulated since Dinsmoor's discussion of the claw in 1947, I postulate a gradual but pronounced adaptation of the use of the chisel on architectural blocks during the Archaic period in Athens and Attica, from the second quarter of the 6th century through the first quarter of the 5th century. The claw was first used selectively on only certain surfaces and specific areas as the masons gradually became more comfortable with the new tool. Eventually, the claw was applied to a greater number of surfaces and types of blocks, as well as different types of stones, an indication of changes in how the chisel was utilized within the stonemason's repertoire. The tool itself seems to undergo a transformation over time, a process that is mirrored by the increasing confidence in the application of the strokes of the chisel.

As the Dörpfeld foundations represent the earliest appearance of the claw on architectural blocks, they form the best example of how the tool was first used by Greek stone cutters. As we have seen, the majority of the blocks with traces of the claw are located at areas of structural importance, where the masons would have been conscious of their load-bearing integrity and support. The claw was primarily used on these blocks across their horizontal upper surfaces, although it also appears in some bands of anathyrosis along the vertical sides. The claw was applied relatively systematically to the upper surfaces in question, although it is used more hesitantly – or haphazardly – on the anathyrosis[83]. This highly selective application of the claw would seem to indicate that the tool was first used in areas of structural concern; furthermore, the presence of the claw on the horizontal upper surfaces of the blocks, as well as in the bands of anathyrosis, shows that the masons were using

[82] Hdt. 1, 59–64; Aristot. Ath. pol. 14. 15.

[83] It is possible that the ›hesitancy‹ that I identify on these blocks is actually evidence of a different angle of stroke or a different amount of force being applied to the chisel head. The randomized scatter and selectivity in the application of the claw is why I have interpreted these early traces as evidence of ›hesitancy‹ or tentativeness on the part of the masons; the earlier claw marks are frequently non-uniform in the length of stroke across the surface of the block, nor does it appear that the chisel was consistently applied to the total surface area, but was rather used in patches in some cases.

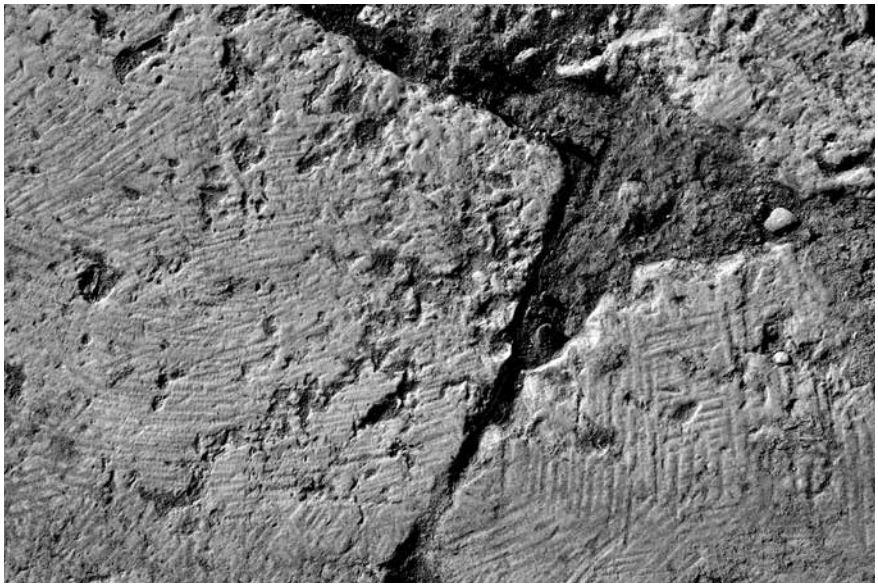

Fig. 13 Southeast Fountain House, Agora, detail of north-east corner

the claw as a means of ensuring proper joining between courses of blocks, with the claw's marks providing an element of traction. The claw was not used on all surfaces of the blocks, nor was it used on every block; in some cases, it was not applied universally or evenly to the horizontal surfaces of blocks, but appears in patches.

When the claw next appears in consistent use on monumental architectural structures, it is in the Agora. It can be found on the in-situ remains of the Southeast Fountain House and on the preserved north wall of the Stoa Basileios. The Fountain House has previously been dated to the early fourth quarter of the 6th century, an assignation that encourages associations with the Peisistratidai[84]. It has recently been re-dated, however, to the late first or early second quarter of the 5th century[85]. The Fountain House was a large structure, although not as monumental as the Bluebeard Temple, nor is the topography in the Agora as difficult to adjust for as on the Acropolis; these two factors should be taken into account when we consider the application of the claw on the Fountain House.

At the northeast corner of the Southeast Fountain House, the claw can be seen on the horizontal upper surfaces of all the blocks, but is noticeably absent from the anathyrosis bands *(fig. 13)*. It is applied more consistently across the surface of the blocks on this structure than it was on the Dörpfeld foundations, a possible indication that the stonemasons were more comfortable with the tool at this point. The Fountain House was constructed of blocks of hard, gray limestone, not dissimilar to the materials employed in the inner foundations for the temple on the Acropolis. The claw was used here on all of the extant blocks of a relatively small structure: the building measures only 6.80 × 18.20 m. Although the preserved blocks form the northeast corner of the Fountain House – an important structural area, as further indicated by the use of a Z-clamp and careful polygonal jointing – the systematic use of the claw on all of these blocks indicates that the tool was no longer reserved solely for areas of structural concern and was being used in a more comprehensive or consistent way by this time. It is important to note, however, that the chisel was still being used to prepare horizontal surfaces to receive the next course of blocks, a function that was first employed

[84] Thompson 1953, 30–32; Thompson 1956, 50; Thompson – Wycherley 1972, 197; Camp 1977, 85 f.

[85] Paga 2015.

Fig. 14 Stoa Basileios, Agora, detail of the north wall's interior vertical face

on the Dörpfeld foundations. This specific use of the claw remains consistent throughout the 6th and 5th centuries.

At the northwest corner of the Agora stands the Stoa Basileios. Although attempts have been made to date the initial construction of this building to a period after the Persian Wars, a date around 500 seems more likely, given the style of masonry, the pottery recovered from within and near the building, and the historical context[86]. The building itself is relatively small, measuring 17.72 × 7.18 m, but was built in a monumental style with a Doric façade. The walls were constructed of soft, yellow limestone, a material quite different from the harder limestone used for the Dörpfeld foundations and the Southeast Fountain House. The difference in material is important because the claw marks on the Stoa Basileios are different from those on the Dörpfeld foundations and Fountain House; the application of the chisel on harder versus softer limestone may represent part of the changing evolution of the claw: the use of the claw on softer stone might signal that the masons in the early 5th century were using the tool in a new way. Equally possible – and not mutually exclusive – is the hypothesis that the difference in material may be the reason for the variation in the type or form of the tool markings, as well as their location on the structure (cf. *figs. 3* and *13* with *fig. 14*[87]).

The application of the claw on the Stoa Basileios is most noticeable on the interior vertical faces of the orthostate and wall blocks of the preserved north wall *(fig. 15)*. The drove and flat chisel were also used. On some blocks, the claw appears over the entire vertical face of the stone, and its marks indicate a closely-tined tool somewhat smaller than that used on the Acropolis and Southeast Fountain House, and applied primarily with short, brief strokes. In other places, a slightly larger claw was used, but only in the middle area of the vertical face, whereas the bottom and side edges were smoothed. It is these blocks that tend to have

[86] For the suggested post-Persian dating of the Stoa Basileios: Thompson 1978, 63; Thompson 1981, 345 f.; Thompson 1982, 136 f.; Thompson 1988, 202 f.; Francis – Vickers 1988, 163; Martin-Mcauliffe – Papadopoulos 2012, 344–352. For the stronger and more persuasive arguments of a ca. 500 dating for the Stoa Basileios: Camp 1986, 53; Shear 1993, 427–429. 459–561 (pottery catalogue); Shear 1994, 237–239; Camp 2010, 79. For an earlier date, in the middle of the 6th c.: Shear 1971, 243–255; Shear 1975, 365–370 (pottery dated to the first decade of the 5th c., architectural members dated to the mid-6th c.).

[87] Nylander discusses the use of different chisels on different materials (Nylander 1970, 52 f.).

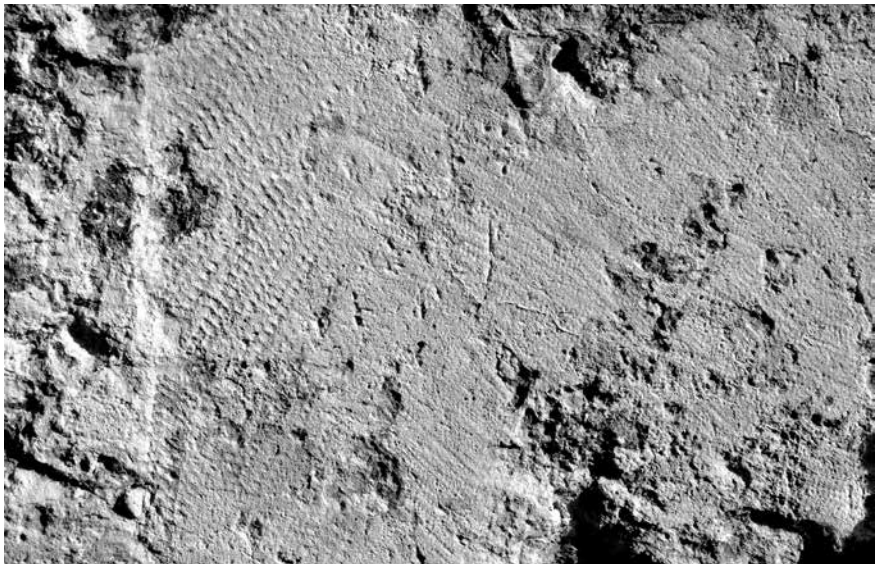

Fig. 15 Stoa Basileios, Agora, detail of the north wall's interior vertical face

the marks from several different types of chisels next to each other. The claw was also used along the bottom third of a line of blocks that form the second visible row of the north wall. It is likely that a bench was originally constructed here that ran around the interior of the stoa, in which case the claw was used to prepare the surface against which the bench blocks would have rested[88].

The use of the claw on the interior vertical faces of the blocks of the Stoa Basileios is distinct from its earlier application: it is used in short, small punches of a closely-tined claw that cover the entire visible surface of the block and are of a relatively uniform depth, giving the stone's surface a scalloped appearance. The use of the claw here is not quite fluid, but it is a significant development from the manner in which the chisel was deployed on the Dörpfeld foundations. The trademark ›scalloping‹ is present, but there are places where the chisel was struck with greater force thus creating pockets of uneven depth across the surface of the block (cf. the claw marks in the middle of *fig. 15* with the claw marks on the right side). In general, there is only minor hesitation discernable in the use of the claw here, and it is still used in conjunction with the flat chisel or drove. Although different types of claw-tooth chisels were used on the Stoa, the primary chisel appears to be smaller in width than that used for the Dörpfeld foundations and the Southeast Fountain House; the tines or teeth of the chisel, moreover, are narrower and spaced closer together. A possible explanation for this change, as well as for the use of the chisel on the vertical faces of the blocks, is illuminated by the penultimate example.

Deep within the Athena Nike bastion are the in-situ remains of the earlier, limestone naïskos and altar dedicated to the goddess. This structure is notoriously difficult to date, but it is safe enough for our purposes here to place it in the first half of the 5th century[89]. The

[88] For the bench, see Shear 1971, 244–248, where it is noted that the three limestone foundation blocks for the bench that are currently in situ likely represent the subsequent rebuilding of the Stoa after the Persian destruction.

[89] The claw was used on both the temple and the rectangular altar associated with it. The cyma reversa mouldings at the base and crown of the altar share similarities with those of the early 5th c. altar of Aphrodite Ourania in the Agora (Shear 1984, 30). Mark dates the naïskos and altar to the 440s on the basis of his interpretation of IG I^3 35 (Mark 1993, 115–122), although his arguments regarding the decree (and by extension, its implications for dating the phases of

Fig. 16 Limestone naïskos of Athena Nike, Acropolis, detail of interior vertical face

walls of the small shrine were constructed of soft, yellow limestone, visually identical to that used for the Stoa Basileios[90]. The exterior and interior vertical faces of the orthostate blocks of the naïskos are entirely covered with the delicate tool marks of the claw *(fig. 16)*. The horizontal upper surfaces of the euthynteria blocks also show traces of the claw, although it is applied less uniformly and does not cover the entire surface of the blocks.

The vertical surfaces of the wall blocks display a consistent and uniform length and depth of claw marks; the use of the claw on the exterior face of the blocks is identical to its application on the interior surface. As with the marks on the Stoa Basileios, the claw used on the wall surfaces here was a relatively small instrument, about 4–5 cm in width, with closely set narrow tines[91]. It is noticeable that the claw is absent on the anathyrosis bands (or perhaps the traces of the tool were smoothed or erased), as well as on the drafted margins on the bottom of the interior faces of the orthostate blocks. The chisel marks on the exterior and interior faces of the blocks are highly visible and contrast with the smoothed areas of the drafted margins. The overall surface of the wall blocks has a lightly textured appearance and it seems certain that these tool marks would have been visible to those using the naïskos.

This use of the claw on the vertical wall surfaces of the Athena Nike naïskos and the Stoa Basileios is quite different from its initial application on the horizontal surfaces of the blocks in the Dörpfeld foundations. In its early use, we saw how the claw was primarily utilized as a means of simultaneously smoothing and slightly roughening the surface, in order to prepare the blocks to receive their next courses and to add a level of traction for proper joining. In the case of the limestone Athena Nike shrine, traces of plaster were noticed near the bottom of the orthostate blocks and along the edges of the euthynteria in some places; it was

the Nike temple) have not been met with universal agreement or acceptance (Mattingly 2000; Gill 2001). For a rebuttal of Mark's conclusions and a re-assignment of the limestone naïskos and altar soon after the Persian destruction, see Shear 1999, 120–125; for a possible date just prior to the Persian destruction, see Paga 2012, 162–170.

[90] It is not confirmed that the limestone used for the Athena Nike naïskos is the same as that used for the Agora structure, but such a relationship seems likely.

[91] The claw used for the euthynteria blocks was slightly larger, with wider-spaced tines. This chisel is discussed by Mark 1993, 50 with n. 19; 66 n. 79.

believed that this indicated the presence of a plastered floor[92]. A different possibility is that the plaster was originally applied to the interior vertical wall faces of the naïskos. The lightly roughened wall blocks, carefully and consistently worked with the claw, would have provided an ideal surface for the application of plaster: the marks of the claw would no longer have been visible, but their careful indentations would have provided the necessary traction for the proper adhesion of the plaster. Although no traces of plaster were noted in the Stoa Basileios, it is possible that this hypothesis could also explain why the claw was used on the interior vertical wall surfaces there[93].

One final example can be adduced to demonstrate the spread of the claw throughout Attica during the Late Archaic Period. The limestone blocks of the Archaic Temple of Poseidon at Sounion preserve traces of a fairly close-tined claw on a variety of their surfaces: the flat upper surfaces of euthynteria blocks, lifting bosses on steps, unfinished column drums, and on the soffit of a geison[94]. This temple dates to ca. 490–480 and thus corresponds most closely with the structures in the Agora. The claw is used here on nearly all elements of the monumental structure, not just the load-bearing sections. Its use is confident and even, compared to the earlier markings on the Dörpfeld foundations, and further shows how this tool had become a common component of the stonemason's repertoire within one or two generations.

CONCLUSION

When the claw was first introduced in Attica, in the second quarter of the 6th century, it was applied to both architecture and sculpture. The first large-scale temple to be erected on the Acropolis, the Bluebeard Temple, showcases the adoption of the claw and its use on both architectural and sculptural blocks. The appearance of the tool on the blocks of the Dörpfeld foundations suggests a selective employment of the chisel, with a concentration of use at areas of structural concern, such as peristyle corners and interior cross-walls. When the claw was first used in Athens, it was a relatively broad chisel with thick tines. By the Late Archaic and Early Classical period, however, the claw used by Attic stonemasons became more flexible both in its use and form. The tool began to be used in a wider variety of places and on a wider variety of surfaces, such as wall faces and within bedrock cuttings. The size of the tool saw greater variability, with the appearance of narrower chisels with more closely-spaced tines. The changes in the form of the chisel during this period were possibly due to the fact that it was being applied to different types of stone; a closer-tined claw may have proved more suitable for softer limestone, such as that used for the Stoa Basileios and the Athena Nike naïskos, whereas a broader-tined claw was more suitable for the harder limestone of the Acropolis foundations and the Southeast Fountain House.

Concurrent with the use of the claw in Athens, the chisel was also adopted by masons working in the Cycladic islands. The shared technical vocabulary between Attic and Cycladic stone workers, particularly given the similarities in building materials, is a possible reason for the transfer of the chisel to these places from Egypt prior to its appearance elsewhere on the Greek mainland or in Ionia. The simultaneous adaptation of the claw in Attica and the Cyclades also hints at the close relationship between these two areas during the Archaic

[92] Mark 1993, 43.

[93] Nylander also suggests this function for the claw (Nylander 1965, 51 n. 13).

[94] The Archaic Temple is currently being published by Paga and Miles; for an abstract, see Paga – Miles 2011.

period[95]. The success of the claw in Attica and the Cyclades, due, primarily, to its versatility and variability (in terms of form, application, and the material being worked), seems to have sparked the eventual adoption of the claw throughout the Aegean and into Ionia[96].

Over the course of the 6th and in the early 5th century in Athens, the claw was used primarily as a means of preparing the surface of the block, either to receive a further course of stones or to receive a substance such as plaster. This function of the claw emphasizes its technical importance in an architectural setting: the claw was useful for the removal of large quantities of stone from the surface of a block, but it could also be used to create a lightly-textured surface. The indentations of the tines served to roughen the surface of the block, thus providing an element of traction that would ensure the proper joining of additional blocks or the adhesion of plaster. The use of the claw in this way demonstrates the flexibility of the tool, and shows how Athenian stonemasons were able to adapt the claw for a variety of purposes.

The increasing use of the chisel in the late 6th and early 5th centuries is evidenced by the greater number of structures that bear traces of the claw[97]. In addition, the presence of claw markings consistently across the surface of blocks and throughout the structures implies that the tool was being used with greater frequency by this time. The increased use of the claw, combined with the greater confidence with which the tool seems to be used, indicates that the Attic stonemasons of the early 5th century had fully integrated the claw-tooth chisel into their tool repertoire. The use of this new tool altered building techniques by allowing the rapid removal of excess stone and an intermediate level of block shaping between the rough pick of the quarry and the smoothing rasp. The flexibility and adaptability of the claw made it a particularly useful tool, and it is not surprising that it became a common stone-working instrument by the first half of the 5th century.

A fuller understanding of the place of the claw in Athenian architectural practices of the 6th and the early 5th century further illuminates the topographic problems on the Acropolis and helps to clarify the position of the Bluebeard Temple. This structure, fundamental to religious practice in Archaic Athens, was located on the north side of the Acropolis, on the Dörpfeld foundations. It was subsequently replaced around 500 by the Old Athena Temple; the reuse of the foundations – and thus, the reuse of the basic plan and dimensions – signals the important place of the cult of Athena Polias on the Acropolis, and emphasizes the sanctity of the north side of the sacred citadel. The architectural monumentalization of the south side of the Acropolis, on the other hand, did not occur until the construction of the Old Parthenon in the years following the Battle of Marathon in 490.

Despite these attempts to clarify a murky situation, the Archaic Acropolis remains a place of mystery and confusion. At best, we are forced to work in the realm of probability

[95] Palagia 2010.

[96] Nylander 1991, 1049.

[97] The apparent gap between the first uses of the claw in ca. 570–560 and its later appearances in ca. 500 is most likely due to the relative absence of large-scale stone buildings in the second half of the 6th c. in Athens and Attica, and the low survival rate of structures destroyed by the Persians, rather than an actual period of absence when the claw was not employed. An instance of the claw that is somewhat intermediate between the Bluebeard Temple and the Agora structures is Building A from the Acropolis, dated ca. 560–550. A fragment of the lateral geison (Acropolis Museum inv. no. 7390) preserves clear traces of a broad claw with relatively thick tines (discussed, with a detailed photograph, in Klein 2015). Schuchhardt also documents a fragment of a marble sima from the Acropolis, incised with rosettes and clear traces of the claw over much of its surface, which he ascribes to one of the small buildings (perhaps Building A or a similarly-sized structure) from the Archaic period (Schuchhardt 1963, 814 fig. 12).

Sources of illustrations: *Figs. 1–3. 6–10. 12–16*: original photographs by J. Paga – *Fig. 4*: J. Paga after Korres 1997, 221 fig. 1 – *Fig. 5*: J. Paga after Travlos 1980, 446 fig. 564 – *Fig. 11*: J. Paga after Wiegand 1904, 116 fig. 117.

and hypothesis, augmented by scarce or incomplete empirical data, when attempting to reconstruct both the appearance and the location of individual structures on the Acropolis. That one of the most important buildings in Athenian cultic history has remained unmoored for so long is testament to the need for increased and careful attention to this period of history on the Acropolis. The details of this building and the circumstances of its construction, however, also underscore the rich interplay between architecture and sculpture, as well as domestic and foreign influences at work in 6th century Athens. That this period was a dynamic moment of experimentation and growth is illuminated by the role played by the claw-tooth chisel and the Hekatompedon in Athenian architectural practice: they are both enigmatic and pivotal, beguiling traces of the ancient hand at work.

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