CHAPTER 4 - TOWARDS THE FOUNDING OF THE ARCHAIC IONIC CAPITAL

Sub problem 3 To describe the process of form-making during the founding process and to isolate those remaining aspects necessary for the construction of a probable founding narrative for the early Ionic capital.

Hypothesis 3 Discernment of significant elements of the achieved ordering and analysis of the early Ionic capital and related artifacts will provide a basis for a future formulation of a probable founding narrative for the early Ionic capital.

4.1 TOWARDS A FORMAL SYNTHESIS: THE EARLY IONIC CAPITAL

4.1.1 Design of form: An evolution from voluted non-standard to standard Ionic capital

4.1.1.1 Early experiments with articulated form

In the Geometric and Archaic religious buildings, in which timber columns rest on stone column bases, we find at the Phase III Dionysos Temple (Bld-3c) at Iria of *ca* 700 BC the first known Hellenic architectural use of marble, together with a conscious attempt at formally articulating the base form. This detail, as well as the detail of square stylobate stones under the columns and [the proposed] formalisation of wall copings, encourages one to ponder the probability for the use of stone capitals, like stone disks or brackets, rather than timber (The form proposed by Gruben (1996, Fig.2)). Because the extensive archaeological remains, which allowed for detailed reconstruction of the four phases of this building, do not show up any such stone pieces, the use of timber apparently is a foregone conclusion. Whilst we know that Hellenic sculpture in stone emerged roughly in the same period, the lack of stone capitals for this temple demands that we should see this attempt at architectural articulation of the bases as explorative and in advance of similar experiments with the rest of the column. The aforementioned information also requires us to reconsider the probability of the use of timber construction for the column-beam connection, which in the tradition of half-timber construction, was most probably a bracket with volute decoration of differing types [*intaglio* or metal appliqué, noting that at this point there is nothing with which to prove that the bracket would have fully formed, hanging volutes]. The use of round timber columns in this building, as well as the scale of the temple, unfortunately opens the debate again. As a start, a more informed speculation of the type of capital used for this temple may possibly come from working backwards from the earliest known examples of Hellenic stone voluted capitals that we have, namely those from Delos [Preion-1] and Didyma [Preion-2].

From our chronology and description of buildings in Chapter 2 it appears that any evolution of voluted capital design before these two could have occurred in the colonnade of the Artemision 'B' (Bld-2b), the prostyle of the *Hekatompedos* II (Bld-2c) at Samos, the hypothesised amphi-prostyle Temple 'X' (See Note on Table 2.6)

at Delos of which no remains exist, and the single column in the pronaos of the Older Athena Temple (Bld-9) at Miletos (The typology of the temple with gorgon on Paros, identified by Gruben [1997, p.411] is not known. See Note on Table 2.6) Whilst the colonnades of the first two examples are deemed to have been all-timber structures, there are no stone remains from the colonnade of the Delian example and the interior or *in-antis* column of the Miletian example to prove the existence of stone voluted capitals before our oldest known stone examples. All this speaks in favour of a timber capital for our Iria Phase III (Bld-3c) temple but, just to argue the case, others could argue that any extant stone bracket capital examples may have been so fragmented as to hamper identification of the remains as being parts of capitals, identification already coloured by a view that Seventh Century architecture necessarily employed timber bracket capitals.

It is necessary to look more closely at our first known examples of stone voluted capitals from just before 600 BC. Both occur in a tradition of articulated architecture with rectangular/square timber columns, rather than round. The stone bracket capital Preion-1 (supposedly from the amphi-prostyle Artemision, Bld-14) of Delos would have rested on a rectangular column of *ca* 130 x 450 (The short side on elevation!), and the stone bracket capital Preion-2 from Didyma, also on a timber column, but of unknown dimension. (Whilst the depth of the capital fragment has never been published, and the length remains speculative, the photograph would suggest a rectangular column with the long side on elevation). One sees that this architecture already had two distinct capital types, one longer stretched out type with Height : Length (G:A [*Gesamt Höhe Volute: Gesamt Länge Kapitell*]) = approx 1 : 2,5 and with smoothly descending volutes (hereafter to be formalised in the design of the Naxian sphinx column and the Dionysos Phase IV temple at Iria, and at the one end of the spectrum of preferred Archaic capital lengths shown in the analysis in Chapter 3), and the other shorter and deeper (If the length is correctly reconstructed from the fragment) with Height : Length [G:A] = approx 1 : 2,0 (Being at the other end of the preferred Archaic capital length spectrum) and with what already appears as a rudimentary abacus (an architectural capital form type later formalised in the design of the Naxian *Oikos* which, although it is more stretched out [G:A = 1:2,7, not least due to the demands on capital design posed by the use of round columns], still showed the distance between volutes being shorter than the depth of the bolster, rather than longer). Furthermore, both capitals are not very plastic in their execution, indicating a very exploratory phase of the form in a period when some form of softness in execution had already been achieved in sculpture through the use of chisels and abrasion techniques. Importantly, there is no chance (Again if the supposed length of capital Preion-2 is correctly reconstructed) that any decoration in the middle section of the canalis could have been of the vertically ascending volute channel ascribed to the Aeolic/Aeolicising capital type. The capitals are clearly of a different outline, horizontal, and in short, 'Ionic'. Whilst these forms may be said to mimic block-like timber forms, it is known that the nature of Early Archaic stone-work technique was itself very dependent on and closely resembled the earlier tradition in timber, making such a supposition less certain. There will be later discussion of the later effect these capitals may have had in the design of block-like Archaic Ionic capitals, most notably those from Athens.

Firstly one realises from these early capitals that one has to do with the beginnings of a type, rather than an evolved type. Again the argument for the capitals of the Dionysos III temple being timber is strengthened. However, an equally important realisation provided from analysing this voluted stone bracket on a rectangular support is that, in accepting the existence of similar capitals in the parallel tradition of architecture with round timber columns, it is exactly the use of a round column wider than the canalis which must have prompted the introduction of the stone disk form (an echinus or cyma) between column and canalis of the standard Ionic capital form. (A canalis wider than the column would obviate the echinus, as capital Iver-3 clearly shows). One will have to reach a conclusion about whether the fact that we have no relevant remains of stone [echinus] disks in the archaeological record for architecture with round timber columns, means that the record is not representative, alternatively that early stone bracket examples for round timber columns - of which we have no extant examples - could have been placed on the column tops without echini (asking how these column tops would have been protected), or lastly that the evolution may have occurred in the parallel tradition of votive column design, where any archaeological find of a round stone disk may not have lead a researcher to the conclusion of a composite column form? Until remains are brought to light, any conclusion must remain pending. Some of these questions will however be taken up in the last section of the Chapter.

Whilst it is tempting to ascribe an Ionic capital to the [surmised amphi-in-antis] 'Marble *Hekatompedos*' at Ephesos from the turn of the century, knowledge thereof and the remains of the building are too scant to pass any comment at this point. There are no known traces of columns for the exterior, however their potential presence may not be ignored in future research. Like for Walter-Karydi (1987, p.49; 1994, p.128), it was and still is,tempting to hypothesise an Ionic capital for the monumental stone column of Ionic type from Kolonna (See discussion Chapter 2, Col-8), dated to 620 BC due to the detail of a sphinx sculpture deemed to relate to the column, but which relation cannot be proven. The date is very early for a monumental stone column of this stature and detail, if related to contemporaneous architecture and votive columns. The column may therefore be older, at the youngest just before the similar Aphaia column with Ionic capital of *ca* just after 600 BC, if the fluting detail is anything to go by. Likewise, the presence of this column should feature in future research.

4.1.1.2 The pioneering group: The earliest stone standard Ionic, Aeolicising and Aeolic examples

In order to proceed, one must turn attention to the stone sphinx column type which emerged in the Cyclades, followed by experiments in the architectural domain referring to its capital form. Chronologically seen, the achievement of a stone colonnette (Col-1) with Ionic capital (Ion-1) at Sangri, Naxos is followed by three Delian Aeolicising capitals (Iver-1, -3 and -4), also a first attempt at monumentalisation of the capital (Ion-22) at Aphaia, Aegina (Col-5), and another contemporaneous experiment in Ionic capital design from Naxos on Delos (Ion-4; Lost votive column), all in the early Sixth Century BC. These early examples are joined by the first architectural application of the Ionic standard capital on Delos (Ion-24; Bld-) and a capital of a lost votive column from Naxos (Ion-9), both showing a steady evolution towards a monumental form of the type. The

Cycladic examples alone indicate intense experimentation within the period of a decade, followed by two mature, contemporaneous Naxian works, namely the Dionysos Temple IV at Iria (Ion-7; Bld-) and the Naxian made monumental sphinx column erected at Delphi (Ion-6; Col-7), both of which may be seen as the culmination of a (in itself initiating) regional monumentalisation process and the achievement of precision on a monumental scale in marble. These earlier stone experiments are preceded by examples like the palm capitaled column from Arkades, the small *kouros* column from Thebes and the monumentalised Samian stone kettle-stands with torus capitals (Tor-3; Col-9 and Ion-4; Col-10), and also accompanied by others, like the Aeolic architectural experiments at Old Smyrna (Aeol-1; Bld-Aeol3) and Larisa (Aeol-3; Bld-Aeol8), a supposed Aeolic leaf-cyma capital from Phocaea (Cym-8) and an architectural experiment with torus capitals at the First Dipteral Heraion at Samos (Tor-1; Bld-1d). All these capitals will also receive their share of attention.

4.1.1.3 Samian experiments in column type - A new formalised stone capital in the Ionic sphere

From the context in which Buschor (1930, p.46) describes the age of the earliest known stone kettle-stand column type from Samos (The example Col-9 being a smaller stone imitation of the real stands), a date at the end of the Seventh Century seems to be indicated. In the changes required in monumentalising bronze monumental kettle stands (Fig.4.1.3) as such stone stands (There is no evidence for the timber-and-bronze phase posed by Kirchhoff (EIV, p.148)), the attention given to the connection between shaft and kettle-form remained. The Samian kettle-stand replica's smooth column shaft, itself ended with a turned smooth 'rundstab', is topped by a rather disk-like torus shape (Tor-3), facetted by chisel on a turning-wheel (The turning marks may also be seen on the shaft). Column and capital detail alike are clearly derived from the technique employed to manufacture them, and importantly, show clearly articulated parts. The larger scale kettle-stands may very well have had separate shafts and tori. This example makes it clear that the disk-like torus shape was a very early part of the Ionic stone form vocabulary. One must indicate that, whilst this column-capital ensemble was the product of a turning wheel, the making of a simpler disk shape is not dependent on it, and in other artifacts could have been manufactured earlier. Whilst this artefact manifests the disk-like echinus form as connector form-type to be used in further evolutionary experiments in round-columned architecture and in votive columns, one would want to during the course of the analysis explore further whether the disk-like capital shape could have referred to earlier stone disks on round architectural timber columns, or to a previously evolving timber sphinx column type.

4.1.1.4 The Cycladic achievement - the datum for the stone, standard Ionic capital

In looking at the achievement of the datum of the Ionic standard capital, we must first visit some relevant and important finds, the first being fragments of a stone column for a *kouros*, harking from Thebes [in Attica] (See Ducat (1971, p.386, No.386, Plate 131 No.239)). The illustration shows a smooth torus capital monolithically fixed to an unfluted column, and on top of this, a long rectangular tablet for fixing the statue's feet. There is

no established date for this piece, but Ducat himself - and also Kirchhoff (EIV, p.164, Note 563) - sees this piece as a pre-form for the (to him oldest) Ionic votive column from Delos (the one with capital Ion-4, which harks from *ca* 600 BC). Ducat therefore sees the piece as existing before the Sixth Century BC. The important aspect of the form, being a horizontal base for a standing *kouros*, is the combination of disk torus and horizontal element, two of the main components for the Ionic capital, as completed form just waiting for the addition of volutes to the side of the cubic tablet form which would resulting in the early capital shape like the oldest one from Naxos (Ion-1). This idea is strengthened by a specific illustration from pottery shards from Perachora of 650 BC (as shown in IDO, p.403, Fig.139), where a very similar column with torus (Either completely stone or stone torus on timber column), carrying a rectangular tablet, is portrayed.

The position of the Sangri votive colonnette capital (Ion-1; Col-1) as the datum for the Ionic standard capital form is indicated by its established date. Its position as datum has, up till now, not been challenged. This capital is contemporaneous with the two stone voluted bracket capitals on rectangular columns from Delos (Preion-1) and Didyma (Preion-2), but precedes the earliest known Aeolic stone capital experiment at Old Smyrna (Aeol-1, dealt with later). The Naxian achievement, incorporated in defining this specific form, cannot be overemphasised. Because of Gruben's (1989; 1996) assertion that the Sangri colonnette is a stone concretisation of a preceding timber form of Ionic architecture, it begs the question regarding the form of a timber Ionic architecture with round timber columns - like that of the Older Athena temple (Bld-9) from Miletos mentioned above - be further explored. Such an exploration follows this section in Chapter 4, and will be brought in relation with artifacts from the minor arts, like the Thebes column and others. For now there is concentration on the capital form of the Sangri colonnette (Col-1), in order to establish its role in the contemporaneous and further evolution of capital form, as well as leads regarding its possible heritage.

Similar to the contemporaneous small stone Samian imitation of a kettle-stand (Col-9), the Sangri colonnette's shaft and capital are monolithic. Due to the round section (actually oval, incidentally then not literally referring to a round timber column derived from a tree-trunk)of the votive colonnette's column , the monolithic connection between canalis and column was a design issue quite different from the rectangular connection between the Delos (Preion-1) and Didyma (Preion-2) capitals and their rectangular columns. The torus echinus of capital Ion-1 is both physically and visually very much part of the column, with the capital façade at first glance appearing as a rectangular tablet with large, U-shaped, hanging additions. Seen as a three-dimensional object, one sees that the U-shapes are cylindrically shaped bolsters with vertical sides terminating in an overhanging ridge at the top. The vertical bolster sides are the result of the obtuse angle in which the volute side meets the top bearing plane as well as an additional increase of the top bearing surface through the addition of angular pieces at the top edges of the bolster cylinder [Such extension of the top bearing plane, ie by means of abstractions of the bolster palmette motif, was already common in non-Hellenic Aeolic examples preceding this capital, eg Shiloh (1979, Fig.11.E, Plate 13.3, 15.2)]. The reason for having a different capital shape than Preion-1 and -2 through elongation of the capital's top bearing surface is obvious (as is possibly

the width), if one takes the function of the column into account. Kirchhoff (EIV, p.177) rightly argues (and this will be taken up later) that the capital shape was dependent on its function as statue carrier (specifically a sphinx statue). Although the capital totality could be read by some as a block with U-shaped forms suspended from a horizontal top part, as for a much younger Aeolicising capital from Delos (Iver-3), on closer scrutiny one realises the intention: The capital is a unified form, but reached through a composition of discretely separate well known elements: A discretely articulated, linear canalis element (used for the inscription) with two volute elements (also used for inscription), complete with volute-angle spandrel palmette, added quite abruptly (with an offset) onto both sides of the canalis. (Further discussion of this offset-type of connection of volute element and straight canalis will appear in the analysis of other examples later on). If the angular pieces on the bolster top were to be, visually speaking, 'removed', the so-articulated volute sections appear, in shape, exactly like the volute elements (with spandrel palmette in the canonic position at the opening of the volute) used as decorative elements in Cycladic minor arts of the Orientalising period immediately preceding the manufacture of the capital (eg Hampe *et al,* 1981, Fig.260 [Thasos Museum] and Schefold, 1966, Fig.10 [National Museum, Athens]). From this 'deconstruction' of the capital form the remaining canalis section is isolated as a vertically thin and horizontally very short element. This visual reading is to become important in the argument regarding the probability of the Sangri capital (Ion-1) exactly mimicking a timber Ionic pre-capital, an argument in which older, hypothetically possible stone capitals could also be involved. For now, from close analysis of this portion of the capital, one can state that the capital appears much more as statue plinth with added volutes, than as voluted bracket.

An important achievement of this capital is the good resolution of the connection between canalis, volute and echinus by means of the first known plastic application of the volute-angle spandrel decoration, here in the shape of a droplet or bulged leaf and little triangular pieces alongside. The offset connection between volutes and canalis needs comment: From the lack of evidence one cannot state that the use of the decorative scheme of two connected volute elements with bow-shaped canalis was known from any previous stone example, but such a scheme was a very well-known form which had been artistically transferred through many cultures from the Aegean right up to the Hellenic Archaic period in both pottery and metal examples, and also in the Cycladic artistic sphere long before the making of this capital, eg the vases from Kamini, Naxos [Naxos Museum]. We cannot therefore surmise an inability to copy the well-known bow shaped decorative line. Neither can the straightening of the bow-shape in this specific composition be surmised from a need for a straight band for lettering, because the inscription continues on the curving volutes. The offset connection was the result of the specific additive composition of form, together with the fact that the thin letter band on the canalis was dropped down to touch the echinus top so in order that there be no gap left underneath which would have been an unclear connection (and which only appeared in capital design in Attic examples much later). The use of the volute-angle spandrel element shows a similar concern for clear connections, by filling in the gap between canalis and echinus.

The volute channels are only defined by an incised or *intaglio* groove, terminating in a small, not well-defined eye. The volute surface does not seem to be referring to three-dimensionally shaped metal appliqué work, but rather looks like a rolled metalwork or clay volute with flattened surface, or else a flat metal plate with incised volute lines. Although being of flat section, the capital's canalis and volute lines are nevertheless very plastic in their expression, achieving an integration of the vertical and horizontal dimension of the capital by the size and spacing of the volutes relative to the canalis. The capital front has a very compact form, with the volute : distance between volute (D:E) ratio being 1:1,45. The analysis of the capital indicates metrication and three-dimensional co-ordination by the possible use of a 295,5 foot standard (an early variation on the Solonic-Attic foot standard of 294-6), rather than the slightly later 291,4, as well as the use of a helix spiral, a form already achieved in decoration in other Orientalising minor arts, here geometrically constructed from 90° arcs around an ordering rectangle.

The Sangri capital (Ion-1) definitely shows a search for an integration of column, torus shaped echinus and canalis, but its totality presents the viewer with a dualist content (similar to most Hellenic glyptic art in the Archaic and Classical era): On the one hand we experience the capital as a very plastic, three-dimensional form, and on the other we know it to be a composition employing the principle of addition of discrete elements based on metric order and geometric fundamentals. The appearance as sculptural unit in this case is more pronounced than in the later Aphaia example (Ion-22) and following capitals with their separate but interconnected, geometrically shaped tectonic elements. As sculptural form, the capital does show a strong similarity to very plastic metalwork forms like those from Geometric Cypriot works (Eg that shown by Matthäus (1985, No.708, Table 108); Detail drawing by H.G. Buchholz & V. Karageorghis [1973, *Prehistoric Greece and Cyprus*, London, Plate 1865b] in Shiloh (1979, Fig.48)). Whilst this similarity is strong, the vision of a flat, rectangular plate-like element - one would rather think of a plate or plinth than a bracket, which has a much larger height - on an echinus and decorated with volutes added to the sides, competes with it.

From the side capital width is slightly wider than the column shaft, and only slightly narrower than the echinus diameter. We saw above that the echinus is more part of the column than of the capital form, and even though there is a slight vertical aspect to the side of the torus bulge, it reminds of a smooth, metalwork form, or alternatively a broadly faceted, turned stone form (although it wasn't in actuality turned). The idea that the Thebean stone column example with torus (as mentioned above) could be related to the torus and the horizontal portion of the Sangri capital's canalis, is partly suggested by the small height of the Sangri capital's canalis relative to size of the torus. In relating these two artifacts, the large abacus (with engraved spiral decorations) on top of the Seventh Century BC Cretan palm capital from Arkades (Demargne, 1964, Fig.508; [Herakleion Museum]; Also see Wesenberg, 1971, p.45) should also come into play, as should possibly the Doric abacus as existing at this time. These relationships must eventually help one to decide whether Kirchhoff's (EIV) idea that the *terracotta* kettle stand with torus (some with little volutes at the connection

with the kettle), and later a hypothetical *terracotta* votive column topped with a flat rectangular tablet decorated with clay or metal appliqué work (ie the statue plinth), should be seen as precursor for the Sangri capital Ion-1, or whether we should look at timber forebears, or other as yet unmentioned alternatives. In the light of the form and position of the stone abacus forms mentioned above, as well as the analysis of the capital, it is Kirchhoff's idea of small volute additions to the sides of the *terracotta* tablet which may yet find application. Visually, this composition of a rectangular tablet with two U-shaped attachments on which the volutes and canalis were decoratively applied and placed on a column with torus element, would read as two, separate superimposed elements. This is indeed the case for the Sangri column (Col-1) which, even though made of one piece of stone, is expressed as divided into canalis and torus through the thin divisionary line below the canalis, even though this division is actually underplayed and is almost fused due to the fact that the Sangri torus does not project that much past the canalis façade. The clear expression of wide, disk-shaped echinus and narrow canalis form on top only happens later, with the capital (Ion-4) at Delos and thereafter in the capital of the Naxian sphinx column (Col-7) at Delphi. In Sangri the additive nature of the totality, as expressed through its articulation, in all probability showed the way towards the possibility of the insertion of a flatter, larger and more disk-like object between canalis and column (like the disk shape achieved in the Samian kettle-stand and the stone column with abacus from Thebes). Whilst this disk form in all probability was previously known both in Hellas and abroad, its attachment to a rectangular canalis form rather than to a column before now seems improbable: If such an element had existed by this point, the Sangri capital would surely have taken note if this invention?

From the above the author express the idea that the capital is a compositional creation rather than a mere copy of any one, already existing, *terracotta* or stone artifact, and also that it is the plate (abacus) or plinth typology, rather than the bracket capital typology, with incorporation of visual clues from other artifacts, which in the Sangri example is transformed into a more plastic additive entity. The analysis shows that whilst the idea of a long, relatively deep bracket capital is not present in this compositional creation, it may have been part of the 'memory' of a bracket in another way, namely in the sense of reminding one of the decoration on the architectural bracket capital. We also should accept that the Samian (Tor-3) and Thebean torus capitals (or similar types), or the possibility of separate stone echinus disks in hybrid timber-stone architecture, may just as well be seen as impetus to the 'bulge' of the Sangri capital's echinus rather than the 'bulge' of any pre-existing timber column. (This timber detail will be dealt with later). In terms of the Sangri colonnette's shape, the smooth, oval shaft shows a searching, voluminous and sculptural approach towards making a new form, which in totality does not owe much allegiance to timber columns or the roughly contemporaneous Thebes or Samos columns, but rather looks like that of *terracotta* or metal standers (The conical bronze plate type rather than the three-legged type described in Kienast (1985, p.384, Fig.15-16), which existed at the time. One must acknowledge that, as regards the shape of the Sangri colonnette's shaft, Kirchhoff's choice of *terracotta* preform which tapers concavely upwards and terminates in a torus, may be right and therefore adds more weight to his identified capital pre-form. As regards the volute detail, the form expressed at Sangri leans

towards the voluminous metalwork forms found in the Cypriot bronze kettle stands, as well as in north Syrian and Phoenician clay model temples and houses, in which the scale conversion makes for very broadly rolled up volutes, but also to that of the contemporaneous stone bracket capital Preion-1 of Delos, definitely reminiscent of incised metalwork. If the capital is to be seen as a xylolithic copy of an architectural timber capital of approximately 100 years before (ie of the Dionysos III temple), the fact that the capital is part of a one-off artwork in which an idea can find free expression free from the rigours of tectonic interactivity and manufacture, stands in the way of coming to a clear and rational decision. Just as the case of illustrations of architecture on Hellenic pottery, where there is artistic license in the depiction, one must be careful in the case of the Sangri capital.

From the above, the author poses that other than merely a timber voluted capital there is a series of *scenarios* for the impetus of the concretisation of the datum of the standard Ionic stone capital which must still be regarded before a final verdict can be formed. These *scenarios* will be further embroidered upon in a following section of this Chapter.

4.1.1.5 The Aeginetan experiment with monumental form

After the small colonnette from Sangri, and contemporaneous with other early Cycladic experiments described below, there is a bold attempt to monumentalise the sphinx column type at Aphaia, Aegina (Col-5). Whilst the capital of the Aphaia sanctuary in Aegina consists of many elements which are deemed to be essentially part of the Ionic standard capital, namely the (first known) cord shaped canalis, the (first-known) shallow double trumpet shape for the bolster, and an echinus completed on the inside of the bolster, it may be seen as a distinctly separate type of standard capital. The capital was clearly not conceptualised to read as a single plastic form, as the Sangri capital was (even though it was an additive composition), but was an additive junction of two simple 3-dimensional geometric forms, ie the dome and block-like bracket, together providing a tectonically plausible capital for carrying a sphinx. The capital is innovative in that the domed leaf-crown echinus, possibly referring to a metalwork appliqué crown of a timber votive or other metalwork forms but up till now not used in Hellenic monumental stonework in the leaf cyma format (The preceding Arkades capital used the palm leaf format), was paired with the simple architectural bracket shape, decorated with volutes and in the space remaining above the dome, with a cord shaped canalis. The form nevertheless visually appears to be following the dictates of rudimentary stone-cutting technique and form making. In trying to fathom the evolution towards this capital form, one must re-acknowledge that the round column with domed, metal sheathed top may have been a well-known type of free-standing timber column form, but that one requires an explanation for the combination of the dome with a bracket shape in timber votives or architectural pre-forms. Did free-standing, domed timber votive columns have volutes sprouting from the dome as in a bronze decoration from Olympia (Shown in Wurz *et al*, 1925, p.95, Fig.240 [They refer to Curtius & Adler. *Die Bronzen von Olympia.* Bd.IV, Table.XLVIII, Nr.824]). From recent inquiry it was ascertained that this

piece has still not been dated. Whilst we can in no way connect the artefact to the Aphaia capital, there are interesting parallels. The little bronze decoration shows a domed shape projecting above the horizontal elements, and with wide volute channels - much like the channels of the capital from Sangri, Naxos (Ion-1) and Delos (Ion-4)), apparently sprouting from the dome. As an aside: The volute spandrel palmette in the form of a droplet also appears in the canonic position - much like the capital from Sangri (Ion-1) - in this artefact. It is clear the small bronze decoration, part of a ritual instrument or small votive, did not carry something on top, and clearly the form was not immediately suitable as form for a sphinx-column capital. From this analysis it appears as if one should see the Aphaia capital as a new stone experiment dealing with both being a carrier for a statue as well as solving the junction between a rectangular (canalis) and cylindrical element (the column shaft). Whilst this experiment seemingly had in part an artistic timber prequel, could it be possible that the raising of the canalis/bracket surface higher than the dome top to carry an element could have related to previous architectural antecedents for this capital form, where the timber epistyle had to be carried? If so, there must have been a tradition of round columned timber architecture in which the connection between column and bracket had already been solved, a solution which would have been available as pre-form for the Sangri capital (and the Cycladic capitals following the Aphaia capital). Because this solution was not used at Sangri and soon afterwards, one may pose that the Aphaia capital seems to have been a separate experimental form, combining separate elements from art and architecture in a novel way. In itself this experimental inventiveness and bold combination of known forms is an important indication for our study, one that will be revisited in the last section of the Chapter.

In visually "slotting the bracket into" the domed echinus, the canalis decoration appears to be above and separate from the echinus, resulting in a relatively very small canalis depth in relation to the echinus, very much like the previous Sangri capital and those immediately following. Apart from this similarity, the Aphaia capital otherwise does not follow any of the main proportions of the Sangri capital. The Aphaia capital's incised volute is of the involute type, the first not to show a defined centre point. The volute and canalis together, applied as decoration, seem to refer (More clearly than the Sangri capital) to earlier traditions of incised decoration on timber brackets. Painted volute angle palmettes may have appeared on the façade for the first time in paint. This capital may have shown ordering through three-dimensional modular co-ordination and metrication. Cycladic sculptural influence has been indicated for the column's capital and shaft. Due to the fact that metrication may be proven in Cycladic capitals before this column, the author identified possible use of the 291,4 Cycladic variation on the Solonic-Attic foot standard of 294-296 as base dimension.

Even though the existence of a similar capital for a similar column at Kolonna (Col-8) is not an archaeological fact but archaeological speculation, a context related argument has been proposed by Walter-Karydi (1994) for its existence. Also, the fact that the early monumental columns of Ionic type were without exception used as sphinx columns, together with the existence of the Kolonna sphinx used by Gruben in his Aphaia reconstruction, poses us with a still to be solved possibility of either the very early (*ca* 620 BC) existence of

a stone, standard Ionic capital, or at least one that is contemporaneous with the Aphaia capital. In the first *scenario* the history of the Ionic capital will look much different, and require a re-evaluation of the Cycladic roots of the standard capital form. The founding context indicates an Aeginetan artistic system working in *poros* and Cycladic marble between 700-650 BC, where the Aeginetan masons were manufacturing the first Hellenic *stele*, and were also applying representational decorative schemes to the stone. Apart from the idea that Cycladic artists often accompanied the sought after stone, the extent of their involvement in the start-up of the Aeginetan school remains speculative. The close links between Aegina and Crete, the early emergence of a sculptural tradition in stone on Crete (which in its turn was stimulated by the strong presence of Near Eastern artists there from the Eighth Century BC), the achievement of the making of a stone votive column in Arkades, Crete, by the mid Seventh Century BC, and the emergence of the idea of monumental stone sculpture in Gortyn and Prinias on Crete preceding the limestone Kolonna and *poros* Aphaia column and also a marble sphinx from Kolonna, is speculated to be the most important artistic influence in the evolution towards monumental sculptural works, specifically the evolution of the monumental column by the Aeginetan school. It has earlier been shown that the monumentalised marble sphinx from Aegina follows from earlier examples on the Hellenic mainland. From current interpretation of Aeginetan sculpture however, it seems as if the Aeginetan sculptural school was a fully fledged and influential artistic entity at the time of the emergence of a monumental sphinx statue at Kolonna, concurrent with the making of the sphinx at Kolonna (To Walter-Karydi [1994, p.128, Note 6] apparently in 620 BC, but possibly contemporaneous with the Aphaia column), implying that many of the possible influences and preceding foreign impetus had been integrated and applied beforehand.

Apart from the innovations mentioned above, there are significant form aspects of the capital (Ion-22) which pre-empt others, like the aesthetic use of vertically inclined volute faces and the ordering of echinus leaves around the capital axis. Because it is not dealt with later, it is stated here that the Athenian capital type with domed echinus (For example Ion-67) clearly refers to the Aphaia example.

4.1.1.6 The Cycladic evolution toward monumental form

The Aeginetan monumentalisation process of the Ionic votive column occurs contemporaneously with further small scale experimentation in the Cyclades. Two marble Aeolicising columns from Delos (Capitals Iver-3 and 4), due to the material probably manufactured in a Cycladic workshop, are similarly very geometric and block-like in form, but show no indication of the sophistication achieved in the Aeginetan capital form and ordering. They have no echinus, and whilst volutes are incised like the example from Sangri (Ion-1) before, there is no plasticity on the volute surfaces. Both have bolster elements which at the bottom are cylindrical like the example from Sangri (Ion-1), but the bolster sides of Iver-3 are vertical, geometrically block-like rather than the similar but softer form of Ion-1. These forms are compositions in an outline which are approximating the thus far achieved Ionic capital shapes, but rather than being pre-forms for the standard Ionic capital

(already achieved) are searching form experiments in their own right. Importantly, these capitals appear before the first known stone Aeolic capital from Smyrna, discussed below. The bottom plane of capital Iver-4 stretches to the underside of the bolsters, and whilst this form could indicate its timber antecedents, from all appearances it may have had a rectangular connection to its [lost] column. Capital Iver-3 however has a round fluted column piece (in one piece with the capital), a detail which becomes incredibly important in the light of the now held idea (Kuhn, 1986, p.57 [Earlier Wesenberg, 1971, p.83]) that the first Aeolic capital reflects a heritage of timber buildings with rectangular columns. We apparently witness in Iver-3 a stone evolution of a timber bracket capital type in that the new material allowed the volutes to hang past the bracket form similar to the early stone capitals Preion-1 and -2, and furthermore an achieved form with 'Aeolic' capital motif which was designed for a round column, but without echinus. This means that a similar 'missing link' block like stone capital, but with 'Ionic' capital motive as decoration and designed for a round (timber or stone) column, may have existed somewhere as part of the evolutionary process. (See the author's introduction, and example in Fig.4.1.19). An important detail is again a capital wider than the round column, and the lack of echinus. Are we witnessing an Aeolic approach to capital connection here, or does this mean that historically capitals, even the timber ones, were routinely wider than the *round* columns because the disk connection was not yet used? The floral motive between the volutes of Iver-3 is a detail only copied in much later Ionic capitals, but the clear definition of the volute eye is a significant addition to Ionic capital design, oddly not initially pursued in the Cycladic sphere.

An Ionic votive column (since lost) from Naxos, dedicated on Delos, with standard capital form (Ion-4), is a contemporary to the above series of columns from Naxos, Aegina and Delos. The capital takes up the theme of the first Naxian capital from Sangri (Ion-1), in that there is a very good integration of the volute, canalis and echinus elements. In terms of proportions, there is correspondence only in the proportions B:A [*Tiefe Polster insg.: Gesamt Länge Kapitell*] and H:A [⌀d. *unteren Auflagers: Gesamt Länge Kapitell*]. In terms of its morphology, the capital shows the integration of various advances in capital design thus far, as well as further evolution. The volutes and canalis are harmoniously united, but a radically new design approach may be seen for the echinus. The shape is flat and disk-like. It is important to see that the echinus visually reads as being a separating, cushioning element between column shaft and canalis. It is well defined, flat and disk-like, again sticking out past the canalis side on the front and back elevations (due to the relative smallness in depth of the canalis, like in the Aphaia example), and being resolved as a continuous form next to the bolster insides, and united to the canalis and volutes by means of a flat, leaf shaped spandrel palmette, thus being the first capital where this canonical, unified composition is reached in full. Like the Aphaia capital, the capital width is less than the column diameter. The canalis which, like the others before still a very stretched out horizontal member, now has a much more bracket like form, a trend that will be continued in later Naxian capitals as well as soon after at Ephesos. The canalis bottom is still flat like the Sangri (Ion-1) example, with a hardly noticeable curvature. The volute outlines are now descending in the standard fashion, and the bearing surface is defined by two angle pieces (not palmette spandrels) where the volutes start descending, a theme

taken up in many later capitals using this device. The volute angle spandrel palmette now has a distinct leaf shape. The total capital form is flat and stretched out, with a Volute : Distance between volute [D : E {or *V:Va*}] ratio of 1:2,2. In respect of this formal resolution of the main elements of the Ionic capital and the overall proportion this example defines a first interim canonic phase. However, the volutes surfaces are still flat and incised like the Sangri precursor (Ion-1), but the bolster now takes up the double trumpet shape, flat-like as in the earlier example from Aphaia (Ion-22). The reconstruction of the capital shows the use of a smooth torus for the echinus shape, as the Sangri precursor. The typological analysis interpretation shows the possible use of the Cycladic Ionic foot standard of 291,4 in the modular co-ordination of the capital, and volutes geometrically constructed employing 90° arcs around an ordering rectangle. Like the early capital from Didyma (Preion-2), the volutes are not defined by a centre point, a method to be followed in Naxian examples henceforth.

4.1.1.7 The datum for the architectural standard Ionic capital - The Naxian *Oikos*

Our architectural datum for the standard Ionic capital (Ion-24), the capital of the interior and in-antis tristyle [As per Gruben, 1997] west façade of the Naxian *Oikos* at Delos (Bld-12b), which follows the above capitals, is marked by its bold new direction in terms of form. Although the *Oikos* capitals' façades are badly damaged, and no reconstruction of the echinus decoration is definite, Kaster's reconstruction (See Ohnesorg (1996, Fig.1)) allows for certain comparisons. In terms of its morphology, an abacus appears for the first time in a standard capital (Both Kaster and Courbin [1980, Fig.6, Plate 49] agree on the abacus. Martin's [1973, Fig.18] reconstruction showed an obtuse angle at the volute and top bearing plane meeting point, but for those who have not seen the capital, Courbin's photograph clearly shows the abacus). The abacus here echoes the earlier architectural use on Delos, described at Preion-1 above. The prevalent use of the horizontal connecting device in metalwork examples with proto-Ionic capital forms and linear elements above them most probably suggested the aesthetic possibilities in expressing tectonic qualities that were later expressed in the formal tectonic rules inherent to the Ionic Order and capital (Refer to the analysis completed in Chapter 3). Whilst the abacus was a common form in earlier capitals of Syria and Cyprus (Shiloh's (1979, p.19) types C and E), this artistic form may also be advanced as part of the heritage of the abacus. Due to the Ionic capital's specific physical link with the sphinx image up till now, the author would like to put forward the idea that the relatively thin linear horizontal base of the sphinx statue provided another visual clue for the inclusion of the abacus into the Ionic architectural capital, where a base for sculpture was obviously not needed, but provided a clue as to how to visually separate capital and epistyle.

The volutes of the *Oikos* capital seem to be extensions of a straight canalis element of flat section, with volutes either incised or painted. However, after the first full winding of the volute element the capital is too badly damaged to be sure of anything. Martin's reconstruction with volute spirals which consists of four complete and tightly spaced windings - with the first three known 90° arcs of the volute then ordered around a rectangle-

is pure speculation, and may just as soon have had less windings. The bolsters both have a very deep, completely smooth double trumpet shape, partly cylindrical in the middle section, but ending in a broad, flat edge on the sides.

The canalis section of the capital is very small in height, and as in the Sangri capital Ion-1, there is no definite reference to a substantial bracket element. However, different from Sangri, the relatively large size of the volutes take away any illusion of the capital being a plinth shape. Kaster's 1962 reconstruction of the capital (See Ohnesorg, 1996, Fig.1) shows a pronounced, smooth echinus, with a smoothly round rather than perpendicular connection to the thin canalis above, the resulting section of the echinus being in the shape of a 'hanging' Ionian cyma similar to the profile of the temple's east cornice (See Courbin, 1980, Plate 31; Ohnesorg, 1996, Fig.2). Whilst the detail of decoration has disappeared from the cyma, it nevertheless shows the hollowed out underside overhanging the column. This hollow is deemed to be an important detail, in that (Even though this detail occurs on an inner capital) prior knowledge of the problems of water falling on architectural façades is indicated by a cyma detail present where there was no need to express direct representation of falling leaves. From the dimensions known, the cyma bottom bearing plane actually overhangs the column top. From Kaster's drawing one may say that this torus form and its connection to the canalis does not refer to a pre-existing idea of a separate echinus disk between column top and bracket capital, which from the polster elevation would have had a perpendicular division of horizontal disk and vertical bracket face, but rather refers to a bracket fixed in a more domed shape column crown. However, Courbin's (1980, Plate 49.2) photo shows a more definite perpendicular connection, indicating a definite disk shape, indicating the existence of a definite trend in Ionic capitals excluding the Sangri capital. Nevertheless, the canalis and echinus were one, differently from the Sangri capital. One could argue that, if that capital expressed a tradition in timber architecture, this first Ionic standard architectural capital would take up and continue the tradition. Again we should come to the conclusion that the Sangri colonnette could have rather referred to the stone torus detail. Another important detail is the close similarity in width of the polster and the shaft at the apophyge. The author reads in this a correlation between beam width and column diameter, an expression of boldness in structural design, similarly echoed in the extreme slenderness of the columns (inside and slightly less outside).

Regarding its proportions, there is resemblance with the overall outer dimensions of the Sangri capital in terms of proportions G:A [*Gesamt Höhe Volute: Gesamt Länge Kapitell*], B:A [*Tiefe Polster insg.: Gesamt Länge Kapitell*] and H:A [ød. *unteren Auflagers: Gesamt Länge Kapitell*], but other proportions give it a radically different appearance. The Volute width : Distance between volute (D:E {or *V:Va*}) ratio of the capital is 1:0,9, resulting in a very dense capital shape, much more so than the Sangri capital (Ion-1) of 1:1,45. The volutes appear huge, as a result of the small space between them and the canalis-echinus depth, and with volutes on the façade being moved in past the column width. This compact capital shape is at this early stage very much like the Late Archaic capital form. The important realisation from this capital is that the first known

architectural application of the standard type is so startlingly different from the first known artistic example. As mentioned in the discussion around the Sangri colonnette, the rigours of tectonic execution in the architectural realm bring ratio and preciseness to the creation. From the abacus length relative to the echinus bearing diameter, as well as the capital width, one sees the mind of an architect involved with tectonic issues: Forces, integration of elements in a structural whole, integration of elements within a stereometric façade composition, parsimony, and so forth. The abacus length is long enough to carry a known load, rather than to support a sculptural object (Devation from this structural logic however occurs in the next major architectural work, the Dionysos IV temple at Iria (Capital Ion-7; Bld-3d). What is astonishing is the amount with which the *Oikos* capitals (and column shafts) are more sophisticated than that of the Sangri colonnette. Given the small time lapse from then to the start of the *Oikos*, it remains astonishing how much sophistication was gained from the time of the Aphaia column[s] and the preceding Cycladic votive columns.

4.1.1.8 Aeolic beginnings in stone

Soon after the Naxian Oikos, by *ca* 580 BC, there is a new stone experiment with architectural language at the Athena Temple II (Bld-Aeol3) at Old Smyrna. From Kuhn's (1986) recent re-evaluation of the building, as well as (as much as is possible) reconstruction of its capital (Aeol-1), the following becomes pertinent: The first stone Aeolic capital follows earlier Ionic examples, the capital has no echinus (the leaf cyma found at the site is the column base), the highly ornamented capital shows vertically growing, bound volute channels, and lastly also a rectangular bearing surface at the bottom. (See Kuhn, 1986, p.52, Fig.4). Whilst the opposing, bound, double volute motif clearly has a different origin than the flat, double volute motif of the Ionic capital, the rectangular bottom surface flowing from this motif is here a clear indication, much clearer than for the Ionic, that the capital form had a rich evolutionary phase as capital in timber architecture with rectangular columns. The capital design did not have to deal with the difficult transition from vertical column to horizontal canalis. Whilst the Old Smyrna temple had round stone columns, the first stone form of the Aeolic capital shows that it was still an experimental form which did not connect well with the round column top, a realisation one would never have gained without Kuhn's realisation of the more probable position for the bulging leaf cyma, namely as base element. Finally there is a further confirmation of Wesenberg's (1971, p.78, 128, 133, Note 54, Fig.164) realisation of the importance of the leaf cyma as Aeolic base type (shown in his reconstruction of the outer colonnade at Neandria).

In the light of this new realisation of the evolutionary history of the Aeolic capital, one must see the "Aeolicising" capitals from Delos in a different light: Whilst Iver-3 used the vertically ascending volute motif it was clearly a search for form from another origin, from the Ionic capital form, but without having grasped the possibility of the connection to the column shaft with an intermediary disk form. Capital Iver-4 on the other hand, shows all the traits of having been an antecedent in the line of the Aeolic form type, immediately springing from a rectangular vertical support.

Although existing later than a few of the Ionic capitals discussed in the chronology hereafter, it is opportune to discuss the use or non-use of leaf cyma echini in later Aeolic capitals. For the architectural capital from Larisa (Aeol-3) of ca 575-50 BC, Wesenberg (1971, p.79) earlier argued, on the strength of his reconstruction of the Neandria (Aeol-2) capital-shaft-base ensemble, that the Larisa capital did not have a leaf cyma echinus as postulated by Akurgal and Martin (See Wesenberg, 1971, p.78, Notes 383-5). In the light of the now re-stated lack of leaf cyma as echinus for the Old Smyrna capital Aeol-1, and Wiegartz's (1994, p.130) identification of the bulging leaf cyma as base for the peripteros with small (side/back) and larger (front) Aeolic capitals, and an inner colonnade with leaf cyma capitals, Wesenberg's early stated opinion is deemed to be even more grounded. Another leaf cyma from this period, the cyma from Phocaea placed in the catalogue as Cym-8, was apportioned as echinus for a (missing) Aeolic capital for the Athenaion I by both Akurgal and Martin (See references at Cym-8), but in the light of these realisations surrounding the role of the leaf cyma in Aeolic architecture the piece will have to be re-evaluated. Analysis of the Larisa and Neandria capitals show that the use of the cylindrical shaft piece as bottom connection for the capital at Larisa, and later the cylindrical shaft piece and thin torus moulding for the capital bottom connection at Neandria by ca 550 BC, is yet another attempt at solving the connection of an essentially orthogonal capital form with a round column shaft, a connection only really satisfactorily solved at Klopedi (Aeol-5; Bld-Aeol2b). From these two examples we may state that, at the early phase of stone Aeolic architecture, the capital design had to grapple with the issue of connection in a totally different way than the Ionic. We can also see that the early Aeolicising capitals from Delos were dialogues in the Aeolic tradition (One more than the other), but that after that the early Ionic capitals forged ahead without much transference of ideas from the Aeolic system, with the later Aeolicising capitals with developed echinus drew more from Ionic resolution than from the Aeolic. The startling new realisation that the Aeolic capital did not use a leaf cyma echinus, indicates that the Ionic inclusion of that form element was divorced from the Aeolic design enclave. There are two Aeolic capitals which are deemed to have had leaf cyma echini. The first is the ca 550 BC capital from Aegae (Aeol-9). Due to size and proximity the capital could be linked to a pronounced, bulging leaf cyma (possibly Archaic), but Radt (1991, p.483) indicates there is no definite proof for their connection as yet. Secondly, Martin (1958, p.125), in similar vein to his argument for the Larisa cyma, argues that the leaf cyma from Thasos, described in this study as Aeol-8, is part of an Aeolic capital ensemble. Because his argument was linked to that for the Old Smyrna capital, this idea must be re-evaluated.

4.1.1.9 The Cycladic Ionic experiment with monumental form continues

The next slightly later (lost) votive column of 580-70 BC, like the first stone Ionic colonnette, also heralds from Sangri, Naxos. Its capital Ion-9 (of which only a volute segment remains) takes up the same theme as its earlier sister capital Ion-1, namely the vertical side to the bolster, formed by a large bolster palmette, and the volutes descending in the standard way. Whilst the capital is too damaged to allow analysis of its total form and its proportions, the existing volute details show that there is a strong relationship in design with capital

Ion-1 (and also later Athenian block-like forms). The volutes are still defined by an incised line, and show a lack of defined centre point as the previous Naxian capital Ion-4 from Delos. However, here the volute channel is abrased to a concave form, and the edges on both sides of the channel have a smooth upstanding round shape on each side, almost appearing as double round beads where the volute channels abuts. This motif becomes a recognising feature of Naxian capitals. The hint of a volute spandrel palmette creates the impression that the form achieved thus far was continued in this example.

The next Cycladic examples are capital Ion-7 from the Dionysos Temple IV (Bld-3d), from the earliest ca 580 BC at Iria, Naxos, and capital Ion-6 of the famous monumental Naxian sphinx column (Col-7) at Delphi, of ca 570-60 BC. Proportionally, the capitals are related to the preceding Naxian capital Ion-4 in terms of G:A [Gesamt Höhe Volute: Gesamt Länge Kapitell], D:E [or V:Va] and L:B [Gesamt Höhe Kapitell - von oberem Kanalis zu unterem Auflager : Tiefe Polster insg.], and whilst the two are proportionally fairly similar, there are differences. Morphologically these two capitals are closely related, almost facsimiles but not quite, and with both retaining the by now achieved, integrated capital form. Through the different articulation of the echinus element, very different results are attained. Both capitals use the leaf pattern introduced in Aegina (Ion-22), but here in the Cyclades for the first time in the disk-like cyma format and with the (flat- and round-ended) leaves plastically expressed through rounded beading. In the next section below there is an expression of an idea that the leaf cyma capital type may have found its first concretisation in eastern Ionia (following the accepted chronology), thus being the source form, or if the roughness of dating is accepted, that the types occur simultaneously, as parallel stone inventions or as import from Naxos. In the sphinx capital Ion-7 the cyma leaves overhang the column top, and the column top diameter is much smaller, resulting in the leaves being read as a column crown. In the Iria example Ion-6, the leaf bottoms line up with the column top, and the column diameter is greater, resulting in an echinus which is visually much more a part of both, and in other words a separating element between canalis and column shaft. The canalis bottom beading flows into the echinus top, and the concave volute channel stops at the volute-canalis junction, creating the impression that the canalis is a block with two added volutes (In capital Ion-10, of another Parian votive column, the example is followed, but the canalis separated with the volute channels having rounded ends, increasing the idea of a column with leaf crown, sprouting to horizontally fixed volute elements). Due to the loss of the canalis element of the Naxian sphinx column capital, the same detail as the Iria capital cannot be proven, but is suspected.

Both capitals show the, by now achieved, integration of volute, flat echinus and canalis, with all the elements mentioned being clearly articulated. However, the sphinx column capital's bearing surface shows small angle pieces to create a longer bearing surface for the sphinx statue as required, but slightly different than in the Naxian capital from Delos (Ion-9). The sphinx capital had concave volutes with double rounded beading on both sides, and the volutes were geometrically ordered around a gridded square ordering device. The Dionysos IV capital (Ion-7) has far simpler decoration, in the form of flat flutes without borders which are

divided by single round beads (misleadingly indicating older age for the Dionysos capital). The capitals show a very shallow, almost cylindrical polster form, those of the sphinx capital subdivided (for the first time) by five concave flutes which are rounded on two sides like the volute channel from Capital Ion-9, and divided by double round beads, the whole looking very much like metalwork appliqué, but the flatness and closeness to the block outlines derives from the use of local emery for the moulding and incising work. The Dionysos capital polster has six similar flutes. The bolster of the outer Dionysos capital has a deeper curve, on the face of it showing progression from the flatter curve of capital Ion-6 in terms of known progression in sculpting technique (a misleading conclusion in terms of the known chronology). Both capitals had well-defined, bordered round leaves on the echinus, but with those of the sphinx capital being more rounded. The Volute width : Distance between volutes (D:E [or *V:Va*]) ratio of the sphinx capital is 1:2, indicating in part its extreme slenderness on the façade. The same ratio for the Dionysos temple capital is 1 : 2,15, even more stretched out. If this is related to the trend in capital design in the Archaic era (App.1, Table 1.1; Chapter 3 Table 3.1; Fig 3.1) and in the First Generation Cycladic group (App.1.Table 1.3; Chapter 3, Table 3.2; Fig 3.2), the Dionysos IV capital should be the older of the two. (This shows again how the typological trendlines can be misleading). The most startling difference between the *Oikos* capital and the sphinx column and Dionysos temple capitals is this particular aspect of their frontal proportion. For the sphinx capital the length is easily explainable from the functional aspect, but the proportion can only be understood from viewing the sphinx column as a total aesthetic entity, and realising the importance of the visual effects of the base in the sphinx-and-base typology. It is put that this capital is deemed to be the maturation of the idea imbedded in the earlier example from Delos (Ion-4), and whilst it cannot really be identified as a regional canonic type, it had a lot of influence in later capital design in other regions.

Because the Naxian sphinx column as a whole exhibits almost all the traits of the Ionic Order of the Dionysos IV Temple (which is closer to the canonic Ionic form than that of the Naxian *Oikos* with its postulated conical *spirae* for the portico columns and no known leaf cyma on the echinus), it has been an issue to establish if the column preceded or postdated the Dionysos IV temple (See Gruben, 1989, p.172; Ohnesorg, 1996, p.43), showing whether architecture or the arts lead the way towards the Order. Whilst the chronology shows the architecture in this case leading the arts, some further anomalies in style development between the two capitals, over and above those mentioned above, should be pointed out: Whilst the typological analysis shows that the volute of both the above capitals were ordered in the same manner, and both show the use of metrication and modular co-ordination of elements, that of the Dionysos temple is more intense. Furthermore, the back sides of the Dionysos outer capitals show an abstracted, shorthand volute spandrel palmette. This diminishing of detail is interpreted by the author as parsimonious design in an architectural situation where repetition and speed, as well as the vantage point from which the capital is read, may discourage greater detail. The sphinx column, being a single artistic monument, demands a far greater amount of detail attention and a more sculptural approach. The sphinx capital has an angle addition for creating a longer bearing surface for the sphinx statue, a necessity up till now, whereas the Dionysos capital shows for the first time a capital

without such additions: The capital bearing surface gracefully falls away into the volute arc. (This detail appears later in Naxian and Thasian capitals, and at Didyma). Another detail which is deemed important, is the deep *cavetto* below the sphinx column capital's leaf cyma, and its far overhang over the column top, in contrast to the shallow cavetto of the Dionysos capital, and the correspondence of the capital's cyma bottom to the column top. Although it is difficult to see a time progression from the greater overhang to the lesser, in part possibly due to the different heights and viewing requirements of the two capitals, it may be probable to see the Dionysos capital as the younger due to it showing stronger design control in the relationship between elements of the capital (for example the 18 ordered echinus leaves against the unordered 17 of the sphinx column capital). The column shafts and bases of the two capitals also provide useful insight. The bottom of the column shaft and base of the Naxian sphinx column seem to be closer to the design of the earlier Aeginetan column from Kolonna (Col-8). The Dionysos IV temple shows the introduction of a new element, namely a torus (attached to the spira base for the interior columns) between the shaft and cylindrical spira base. The Naxian sphinx column would possibly have utilised this detail if it had been erected after the Dionysos IV Temple. The fact remains, Gruben (1996, p.67) provides a start date of 580 [-75] BC, earlier than but roughly contemporaneous with that accepted for the sphinx column of 570-60 BC. When Gruben also (1993, p.104) mentions a manufacture date of *ca* 570 BC for the Dionysos temple capital, one might start working with the time lapse it took to reach the upper phase of the building, but with the building still preceding the sphinx column. That being the case, and in the awareness of the inadequacies of his method, the author would like to indicate the above stated chronology as an hypothesis to be more rigorously tested through further archaeological inquiry.

The more important question to answer here is, why does the Dionysos IV temple capital have roughly the same proportional schema as that of the Naxian sphinx column capital, rather than its architectural predecessor the Naxian *Oikos* capital? Because the Naxian *Oikos* proved irrevocably that short capitals were structurally adequate for an epistyle, it remains unclear exactly why the capitals of the Dionysos temple did not follow their form, but initiated a new architectural direction following the artistic example of the Delian sphinx column?

The above analysis clearly shows the dialectic relationship between the Naxian capitals, allowing one to think of a recursive feedback system existing in the design process, which is extremely inventive in nature. The capitals discussed above all came about, as will be shown, before a single stone Ionic capital existed in eastern Ionia. Before the first known east Ionian standard Ionic capital, that of the Artemision 'D' of *ca* 560 BC, quite a few other Ionic capitals were manufactured, each with its own addition to the achievement thus far. (See Chapter 3.2.2.1-2 and Tables 3.2-3). These are from Paros (Ion-10) and Delos (Ion-11, 20, 18, 19, and the capitals (Ion-5) of the *prostôon* of the Naxian *Oikos* (Bld-12c, of 550 BC), which were done at more or less the same time as the Artemision 'D' (Bld-2d, building start and design *ca* 560 BC, the capital manufacture slightly later). Proportionally there is no indication yet of a real canonic Cycladic regional form, but morphologically there are definite regional traits indicating a regional style.

At a slightly later time within the Parian artistic system, *ca* 550 BC, there is more diverse experimentation. In the Parian Aeolicising example dedicated at Delos (Iver-2) the well-known Aeolic capital form with rising volute channels is re-interpreted with concave volutes and with the addition of a smooth torus echinus, similar to the evolving Aeolic form but with the volute stems not descending to the volute bottoms. This detail occurs simultaneously with the move towards the torus connection in Aeolic Neandria (Aeol-2). A lesser form of experimentation is seen in Iver-2 in pairing what was deemed to be an abacus with the bolster palmette, but in this case exaggerating the "abacus" size, most probably due to its functional requirement as column base for the upturned column-water stand. A more important addition to the form composition is the deeply concave volute channel, paired with a round volute bead, as well as a huge, raised but flat volute eye. The deep, smooth double trumpet bolster form is now retained in the repertoire.

As a postscript to the above Ionic capitals it must be highlighted that none had a geometrically, rectangular block-like form - like the mentioned Aeolicising capital from Delos (Iver-3)) or a block form with U-shaped appendages like post-550 BC Aeolicising examples from Athens (For example capitals Iver-8/9). This means it was neither a rectangular timber-like block - the deep rectangular block form or the much sought after stretched out rectangular block form, which as a timber bracket capital would have been adorned with an incised, painted or applique Ionic capital form - nor a block form with half-cylinders at the bottom of the block, which would in timber form have been a pre-form of the Ionic capital. Other than the early Aeolicising capitals which had such geometrically pure forms, but which post-date the Ionic, the form of the earliest Ionic capitals are more complex than forms would be had those forms been dictated by the logic of timber construction and timber detailing only, and therefore do not appear to be xylolithic skeuomorphs. However, due to fact that the canalis and volutes of the early Aphaia (and possibly a [hypothetical] Kolonna) sphinx column capital (Ion-22) exist within a block shape, the possibility of the design concept springing from the idea of expressing a horizontal block element resting on an echinus element should be kept in mind.

Next, the author poses a distinct evolutionary movement in Eastern Ionia.

4.1.1.10 The east Ionian achievement: A new regionalism

a) The east Ionian non-standard capital experiments

After the early small experiments with timber and stone architecture there are a few novel expressions in terms of capital form: is an astonishingly bold event on Samos around 575 BC: Whilst the Artemision 'C' could have had composite capitals with metal applique, their actual existence (as is the case for stone capitals) is improbable, most possibly due to the incompletion of the specific stage of building shown by the material record, as well as the absence of evidence of any influence such capitals would undoubtedly have had elsewhere. The first real innovative event in the region was the building of the first of the super-scaled

temples, namely the first dipteral temple at Samos. The capitals of this temple (Tor-1) were turned stone disks, hypothesised to have been topped by timber brackets. Because the Ionic capital at this point had achieved a first canonic form in terms of morphology and in this sense was not directly influenced by the Samian experiment, and also because it suits the argument to deal with these Samian capitals in the section concerned with the corner capital, the reader first taken to some other capitals.

After 575 BC the first known Ionic stone leaf cyma capitals Cym-2, and Cym-3, with flat, rounded leaves similar to those of the Naxian capitals from the Dionysos IV temple at Iria (Ion-7) and the sphinx column of Delphi (Ion-6), appear as elements in votive columns from Didyma. We also know of the introduction of the leaf cyma capital in the cella of the Aeolic temple of Neandria a bit later. If we accept the chronology as is, we must come to the conclusion that the leaf cyma capital type could have been the origin for the introduction of the leaf cyma for the echinus of the Ionic standard capital, but from our insight into the intense experimentation in Naxos and from a rougher grained chronological view it may well have been the other way round, or otherwise they may have been parallel form inventions in stone. Importantly though, both types exist before the use of the leaf cyma in the design of the Artemision 'D' capital (Ion-16), where it appears in east Ionia in the standard Ionic capital for the first time.

b) The early east Ionian standard Ionic capitals

The first known stone standard Ionic capital in east Ionia, after the early experiment at Didyma (Preion-2) and possible experiment at the Old Athena Temple at Miletos, is Ion-16 of the colossal Artemision 'D' at Ephesos. This is a good time to remind the reader, who did not pick it up in the description of Ion-16 in the catalogue, that this capital, the first of the super-scaled Ionic capitals, was a sculptural work of more than three metres long and one metre high, in itself an enormously staggering achievement, with not little thanks to the Samian achievement before. A study of an artistic context will show up the existence of artistic links between Naxos and Samos, Naxos and Miletos, between Samos and Ephesos, and Ephesos and Lydia. The Ephesian capital shows various details pre-existing in Cycladic forms, like the still flattish, rounded leaf cyma, the volute channel offset and accompanying straight canalis, the shallow curve of the bolster's double trumpet shape, the volute spandrel palmette (here with many more leaves), the inclined capital façade (achieved in the Aphaia capital) and the undefined volute centre. The capital however projects another image than most of the Naxian forebears. It is shorter and higher, more compact than most, and in terms of its main façade proportion G:A [*Gesamt Höhe Volute: Gesamt Länge Kapitell*] only it is most closely related to Ion-1 and -24. Importantly, from a morphological perspective a new simpler vision for the volute façade is stated, namely a volute channel bead ending without an eye, like before, but now being a single bead with a pointed end. The detail further serves to make the façade less busy and complicated, and serves to draw attention to the thinnest volute spiral line, now a sinuous curving form rather than the attention grabbing volute channel of the Naxian precursors. The bolster flutes are reminiscent of the Naxian type on the Naxian sphinx column capital, but are deeper and

sharply defined with a rectangular edge, and there are only four, like at the preceding capital Ion-10 from Paros, in stead of six. The sharpness of detail of the volute bead and the bolster beads, so evocative of the edges and connections of Phrygian metal work, as well as the deepness of the bolster flutes (foreshadowing the later, deeply concave and edged canalis form) suggest input from a highly developed artistic system working in hard stone, like that suggested by the *finesse* achieved in glyptic art in east Ionia from 570 BC - but which in itself was connected to the Cycladic and Samian systems - and also as a result of the introduction of the claw chisel slightly earlier. The other truly new additions to the form *repertoire* are the convex canalis and volute channels and the outwardly curving abacus (although the abacus had already achieved at the Naxian *Oikos*, the reconstructed form of it remains speculative. In any case Gruben (1960, p.88) finds the Ephesian abacus a developed one with a local heritage), with ovolo pattern more pointed than those on the echinus, but not yet sharp. The interesting part of the abacus is that it starts at exactly the point where the volute starts its descent. The capital form at this point is very reminiscent of the smooth transition from bearing surface to volute arc at the capital of the Dionysos Temple IV at Iria (this same form is later often used in Ephesian capitals, with abacus present), at Milesian Didyma (with bolster palmettes), or at Myus (without the abacus). Naxos's strong leadership in the evolution of sculpture technique, and the strong sculptural relationship between Naxos, Samos and Miletos, may lead us to suspect the transfer of Naxian skill and predilections to these quarters also). Other detail which appears for the first time is the bead-and-real moulding below the echinus, but which is part of the column shaft rather than the capital. There is a slight convex half-moulding on top of the bead-and-real, a detail which does not appear in later capitals, but which very clearly defines the separation of echinus and column top. Even though the study indicates no existence of corner capitals with diagonal volutes in this building, mainly because they have not been found in the archaeological record, these capitals are postulated to have been a reality, for many reasons mentioned in preceding discussions, as well as in that to follow.

What was responsible for the introduction of the very slim abacus element, the single round volute beading as well as the sudden change in canalis section from concave to convex? Also, how could the achievement of the corner capital have come about? In terms of the abacus, it is put that the specific choice of capital shape suggested its introduction. The author indicates the capital of the Demeter Temple IV at Iria, Naxos, as the main inspiration for the form outline of the Ephesian capital shape (as well as the later one from the Lower Temple at Myus). They express the same treatment of smooth transition from bearing to volute. The addition of a highly decorated abacus on the Ephesian capital actually serves to accentuate this smooth and graceful descending volute even more, exactly because of its contrasting nature, but also because it introduces a division between the two bearing surfaces of capital and epistyle, as well as a tension. (One must remember that the Iria example was there for inspection of its results). In this case then, design criteria are seen to be decisive factors. Another factor is regional differentiation, meaning that the Ephesians wanted to have their own distinctive capital type (including a distinctive abacus type). This is also later seen in Samos, and in many other instances, and the idea is underscored by a similar regional differentiation in column bases in the Archaic

period. The specific heritage of the abacus element may be debated - the options are discussed above - but the author would like to propose that, apart from suggested copying of the first example of use at the Naxian *Oikos*, the prevalent Syrian and Cypriot use of this element in capitals - either from the Cretan architects' own experience, or the Ephesians' own knowledge of it - provided the next main stimulus.

In terms of the convex canalis and volute spirals (together with the well formed single round bead) it is put that, apart from examples with flat volutes, the Near Eastern capital types used the convex section exclusively (together with the similarly well formed round bead), and in the same Ephesian design process of creating a distinctive regional type, this form reference and the practical skill was conveniently available for this early Ephesian example. The choice of this type over possibly the deeply concave canalis which needs a claw chisel, cannot be explained by a lack of availability of sculpting techniques and tools, because these were available at the time, and had actually been used in the deeply grooved spira of the column of the Artemision 'D'. The graceful and visually riveting effect of the use of the single bead is also a result of artistic design judgement, of realising a potential previously hidden. The volute channel offset (ie the sharp connection between volute and canalis) refers directly to the early Naxian example from Sangri, Ion-1. The author comes to the conclusion that this capital form has a lot in common with the mature Naxian type, but differentiates itself through proportion, detail and additions. The author feels justified in advancing mainly reasons of a design nature for the choices given above, especially in the light of the fact that the analysis of this capital included in Chapter 3 has brought to light the extremely sophisticated design input in this capital. This input includes intense use of metrication and modular co-ordination, sophistication of capital base layout, as well as extremely precise workmanship in marble. This Ephesian capital is deemed to be the next interim canonical example (But here in terms of both proportion and morphology) to be followed by another distinct early group of capitals. The question of the corner version of this capital is dealt with later below (See Chapter 4.1.1.11).

Capital Ion-15 from Myus takes up morphological detail achieved in of Ephesos. There is the use of similar proportions for the canalis and volute parts, but the totality appears more compact due to echinus being much higher, and the bead-and-real being much more pronounced. No abacus is used as for Naxian types. The polster (from the reconstruction) is tripartite, a detail repeated in the Ephesian sphere to be seen in capital Ion-29 below. However, it is difficult to stand by all these interpretations because the capital is a plaster reconstruction from very few fragments. Capital Ion-45 from a temple (?) in Miletos is very close to the Ephesian capital in both proportion [except proportion B:A] and detail, but is distinguished by its very formalised symmetrical volute angle palmette detail. There is no detail regarding the polster elevation, but Koenigs (1979, Beil.3) speculates the possible use of polster palmettes. The abacus is not used as for Naxian capitals. The echinus detail, for the first time, shows the egg-and-dart elements rather than the simple rounded leaf. One could state that the capital essentially follows that from Ephesos but with slight variation in detail. Following this capital there is a new architectural experiment at Ephesos in the form of capital Ion-29 from an unidentified temple from Ephesos. There is a proportional resemblance to capital Ion-16. In terms

of its morphological resemblance to Ion-16, the abacus is retained, but the sharp volute channel canalis offset of the Artemision is replaced with a gracefully curving hanging cord shape, a shape achieved in a very stretched out format the Aphaian sphinx column bracket element (Ion-22) and the Naxian capital Ion-4 (later attempted in more triangular fashion in a votive column capital (Ion-20) at Delos from *ca* 560 BC), and now perfected in the standard Ionic shape. The echinus again shows the egg-and-dart elements. Due to severe mutilation of the capital nothing can be said about the bolster elevation apart from it seemingly being tripartite. A fragment from capital Ion-82 from a very small votive column from Didyma, which Gruben would like to see as remaining chronologically before the Didymeion (Ion-28), shows the by now accepted convex volute channel and single bead of the Ephesian architectural examples being accepted into artistic capitals at Didyma, but in a much less rigid and precise way. The capitals of the Archaic Didymeion (Ion-28) are proportionally very similar to that of Ion-29 from Ephesos. In terms of its morphology, it shows the same volutes as the Ephesian Artemision (Ion-16) and similar detail, but not the half-round bead between echinus and column beading. Whilst it has a less busy volute-angle spandrel palmette, it shows the same bolster details but with deeper contraction. Importantly it contains a bolster palmette in stead of an abacus, a detail reminiscent of the early Naxian votive column capital Ion-9 but smaller, retaining the effect of smoothly descending volute edge (It is important to note that in the earlier limestone phase for the Artemision temple there was an experiment with torus capitals - namely Tor-2, similar to those from the First Dipteral Heraion at Samos - supposedly for the inner capitals. The role of these capitals in the subsequent marblification of the temple has not been sufficiently defined as yet).

4.1.1.11 An evolution from standard Ionic to diagonally voluted corner capital?

The form of the early stone corner capital (for example Dinsmoor, 1927, p.131) has been addressed from various opinions, amongst others Bakalakis (1946), Gruben (1960, p.89-91; 1963, p.159-177), Bammer (1968-71, p.11 flw), Koenigs (1979, p.192-4) and also Kirchhoff (EIV, p.209-12). Gruben (1960, p.90) correctly identifies the main (aesthetic) design problem of the corner capital as the resolution of the formal conflict of two perpendicularly joined capital façades, this being the only reasonable solution for a building with a surrounding peristyle in which the bolster sides of the capitals were not to be shown on any façade. The question will be addressed from examples from stone architecture, after which earlier timber architecture will be analysed from this perspective.

What was for some time deemed to have been a very early corner capital (Ion-32) (previously dated by Gruben as being made anywhere from 546 BC [Late Archaic] onwards, and to him at the time therefore made before the Didymeion) of an unknown building from Delos (often previously thought to have been the *Porinos Naos*), has recently been identified by Gruben (1997, p.368) as belonging to the prostyle façade of the Propylon II next to the *Oikos*, and belonging to between 520-500 BC. This capital with the upward flaring echinus quarter-section in the inner corner and incomplete inner volutes is therefore is now of less importance in the

chronology of the evolution of the early corner capital overall, except for difficulty to explain the tentative inner solution which initially lead Gruben to his early date. Gruben (1997, p.369) rightly indicates that this capital with its experimental corner volute was probably the first corner attempt in the Cyclades. (Whilst it is known that the upper portions of the *Hekatompedon* at Palati were never finished, Gruben does not reflect on the [lost] capitals of the contemporaneous amphi-prostyle Temple 'A' at Paros. The attempt at Delos was possibly contemporary to it). For Gruben the attempt was a sculptor's work (related to other detail in the building), with nothing of the theoretical background included in the first east Ionian examples.

The improbability of the existence of a corner capital at the Naxian *Oikos* is implied by the temple's in-antis typology, which designation is widely supported, most recently by both Courbin's (1980) and Gruben's (1997) archaeological interpretations. Gruben *et al* (1978) have shown from the archaeological remains of the side epistyle of the prostyle that the Dionysos IV temple at Iria, Naxos, also did not have corner capitals. From some fragments which clearly can only belong to a corner capital (See Gruben, 1963, Fig.22 [From Fragments 18-9]), together with arguments, drawings and a structural model, Gruben (1963, p.164, Fig.41-2) removed previous archaeological, form-related and structural concerns against the possibility of the existence of the corner capital (Ion-28b) for the Archaic Didymeion. This is the oldest existing stone corner capital and, from the reconstruction (Gruben, 1963, Fig.43a-b), also the first known example of a stone corner capital with complete inner volutes. A corner capital is deemed to have been possible for the peristyle of the Lower Temple at Myus and the *Hekatompedos* at Palati, but both temples were never completed. These capitals were followed by various possible capitals from Late Archaic buildings (including the Delian Propylon II), and only at the end of the Archaic period, by that of the Heraion IV. The only stone corner capital which may therefore be older than that of the Didymeion is a corner capital for Artemision 'D'. Although its corner capitals have never been found, over the years researchers have had little doubt that some formal provision was made for the corner problem: Hogarth's (1908a) elevation and plan shows a 'suggested' capital with complete inner volutes (!), Dinsmoor (1927) talks of a hypothetical cross-plan version and Krischen (1938, Table 33) shows cross-shaped capitals for the inner peristasis. (The elevation does not include the corner column). Gruben (1960, p.89) acknowledges its canonic diagonal form, and sees it as igniting the design question of the corner. Bammer (1984, Fig.112) lately offered a revised version of Krischen's side elevation, at the same time providing his vision for a standard corner capital. In the vein of Gruben's (1960) thinking, if the Artemision 'D' did not have corner capitals with diagonal volutes, one would be very hard pressed to come up with an alternative form for it. Here one thinks of the formal and structural improbability of the cruciform capital form - and the T-shape shown in Gruben (1963, Fig.41) - which Gruben (1960, p.90) calls an "*Unform*". The matter of the structural eccentricity of the canonic form of the Artemision corner capital will be dealt with later.

Whilst we cannot know exact detail, the important question is whether we should see the hypothesised stone, diagonally voluted, corner capital as an *ex nuovo* design, being done for the first time in stone and being the

fount of the type, or as being a first xylification of other, preceding capitals of material other than stone? In the first position there was no predecessor, only sheer invention. The second position clearly supposes that the capitals of the Artemision 'D' appeared as actors in a specific form tradition, ie that of peripteral application of the Ionic capital, which may be seen as being quite separate from the evolution process unfolding in the Cyclades, ie the tradition of frontal architecture. From this scenario, experiments with the corner detail in composite materials could be a necessary part of the evolutionary process, which in turn would have been directly influenced by previous experiments in timber corner brackets, scenarios which will be inquired into in more detail further along. Either way the Artemision 'D' should be seen as a vehicle for experimentation in and resolution of the formal design conflict on the corner of the outside peristyle, in stone. The scenario for a stone, *ex nuovo* corner capital for the Artemision 'D' would look like this: It seems to be quite in the realm of the possible that, in the hands of a master designer working within a sophisticated design framework that has been shown to have been achieved in the standard capital of the Artemision 'D', he may have achieved the diagonal volute form in a workshop, in stone. It is deemed that, with or without possible prior knowledge of the existence of a stone corner volute in Aeolic artifacts (like the Cadiz capital mentioned by Gruben (1963, p.160), which is inferred to be from before 610 BC, but which can also be seen as a parallel experiment, unknown to the east Ionian designers), the process of setting out the standard Ionic capital on the stone block, and the act of delineating the sharp divisions and round beadings of the bolster, as well as the round volute channel bead, give ample visual design clues which could make possible to a good designer the abstract, visual separation of the capital façade from the capital block at its corner, and 'bending' it into the diagonal plane, in order to create the diagonal volute. It goes without saying that this conceptual achievement should have been made simultaneously with the decision to apply the Ionic motif on the peristyle, therefore far before the execution stage of the building where *paradeigmata* are used more for achieving conformity in multiple replicas of the model. It means that in the conceptual design of the building the architects may have been making models to experiment with and test the design outcome. The boldness of conceptualising this novel design idea in stone for the first time seems almost too staggering for it to be acceptable, although theoretically it may have been possible and characteristic of the nature of the architect of the Archaic Hellenic period (The heroic scale of the design conceptualisation is also echoed in the glyptic arts of the time, especially in the achievements relating to the monumental *kouros* figure, but also in terms of other architectural sculptural decoration, the column and base of the Artemision 'D' as one example, and the expertise in creating a new architectural language and bold, innovative forms for the emerging Achaemenid empire at Pasargadae by these same Ephesian (Nylander, 1970, p.146) being another. Gruben (1963, p.164) and Koenigs (1980 p.62) show that, in the Milesian sphere at the altar of Myus (The oldest altar corner volute of just before 550 BC) and of Monodendri (*Ca* 540-30 BC), both soon after the Artemision 'D', the basic problem of the corner volute was sophisticatedly solved, supporting an earlier conception in temple architecture. Importantly however, in both cases the corner volutes were conceived in a rectangular rather than diagonal format. (Later altar examples show that the design achievement of the rectangular volute connection stayed the chosen norm for altar design). One should therefore rather not use the altar volute in the argument regarding the development of the

architectural corner volute. It is clearer from Gruben's (1963) work on the Archaic Didymeion II, as building following hard on the Artemision 'D', there is a good indication of the existence of a preceding example in which the extreme sophistication of the solution for the corner capital could have been achieved. Whilst these arguments argue strongly in favour of the existence of a canonic stone corner capital at Ephesos - which in all seriousness cannot be described as a 'missing link' but a matter of necessity - they really still cannot prove that the slender, curved diagonal volute was an element that was originally conceived in stone.

If we follow the line of thought that the stone capital had predecessors in composite materials, we must identify the buildings. The improbability of stone Ionic capitals for the peristyle of the Artemision 'C' may be argued from the incompletion of the specific stage of building shown by the material record, as well as the absence of evidence of any influence such stone capitals would have had elsewhere. A similar argument may hold for the occurrence of stone-timber composite capitals for this phase ['C'] of the temple (only leaving the possibility of the intention for use of such capitals). This implies that the only earlier, completed experimentation in composite capital forms, which would have been available as design inspiration, would have occurred in the peristasis of the First Dipteral Heraion at Samos. (Here the narrative picks up the thread of the First Dipteral Heraion capitals, earlier touched upon).

The First Dipteral Heraion at Samos preceded the Artemision 'D' by some 15 years. After long speculation by Gruben and Kienast, there is the now well developed argument (See Hendrich (1997) and Kienast (1999, p.141 and Note 6)) for the use of grooved torus capitals topped with timber brackets (The capital surfaces definitely indicate the use of timber at the top, either a bracket or an epistyle). Would the evolution of the Ionic capital on this site be feasible in these capitals, seen in the light of all the other buildings on the site having had torus capitals, and with the Ionic capital only appearing in the Heraion IV and the Monopteros II, buildings whose top structures were only completed after 500 BC? Importantly, we have seen the (very sophisticated) triple volute altar decoration starting and evolving from this sanctuary before construction of the First Dipteral Heraion (Kienast, 1989, Note2-5), here specifically with obtuse connection between volute edge and altar top (Kienast, 1989, Fig.2), possibly the originating form for the distinct Samian capital type. There is also the sarcophagus with Ionic peristyle temple motif from after 575 BC (Item No.267, Pythagorieion Museum, Samos; Akurgal (1961, p.129, Fig.20 and *Samos*, Band XI, 1974, p.183, Plate 76). This, together with the possibility of the First Dipteral Heraion having had voluted anta capitals, shows the early introduction of the volute into Samian architectural vocabulary. These arguments, seen together with the common usage of metal appliqué in architecture at the time, poses the possibility that the main temple was somehow differentiated from the rest, specifically in the form of volutes. Rather than speculating if the First Dipteral Heraion had voluted timber brackets, it appears as if the question of how the stone-timber composite capitals would have resolved the corners that an argument appears for this temple to have had voluted appliqué decoration, and thus being a pre-form for the Ionic capital: Kienast's (1999, Fig.3-4) sketches clearly show the superiority of the specialised timber bracket corner solution *vis a vis* the other three possible solutions (90°

angle, cross, T). He further argues that the solution for the diagonal corner volute is improbable if made from only timber (against the grain, a big timber block carved away to get the form, breakage), so leaving the use of metal appliqué to explain the very flexible, thin, plate-like effect of the diagonal volute (Kienast (1999, Notes 23-5) supports this idea of metal appliqué with examples of and arguments around the use of appliqué work for capitals and columns). It is in realising that the metal decoration of the timber bracket would be the most probable vehicle to solve the formal collision at the corner, that the most pervasive argument arises for the First Dipteral Heraion to have had timber brackets on the torus capitals. The composite capital (Tor-1) is now not merely speculative, but becomes a necessity. The author drew the capital solution (See Appendix 2, just after Tor-1), proposed to him verbally in 1997, then without having an indication of the width of the proposed timber canalis block (Also see this solution in Fig.4.1.23 and 24 below). The impact on the design of the position of the line found on the torus fragment (See Tor-1) should still be made active in this argument, specifically to determine the size of the block relative to volute and torus proportions).

In terms of Bakalakis's (1946, p.54, 56) and Gruben's (1960, p.90) idea that the Artemision 'D' corner capital [ie Hogarth's reconstruction] would from necessity be eccentric (due to the slender long form of the standard capital), and for Bakalakis would have been an impossibility (to be replaced with a frontal capital on the corner, as in Gruben (1963, Fig.41b)), and for Gruben in 1960 would still be required to be held in place by the epistyle in order not to fall off, one may take it that these structural lessons had been achieved with the experiment of timber corner brackets at the First Dipteral Heraion. (The eccentricity of a supposed corner capital of the Artemision, constructed from the dictates of the standard capital but with feedback from the Didymeion reconstruction, should ideally still be structurally tested in the manner that Gruben did for the Archaic Didymeion (See Gruben's (1963, p.159) comment on this). The above realisation strengthens the idea that the act of creation of an Ionic stone corner capital in the Artemision 'D' should be seen as transfer of ideas evolved from Samos - being the final realisation from the perturbative effect resulting from contemplating the idiosyncratic, explorative solution of the Samian composite corner capitals, a solution borne from the problems posed by creating suddenly new form in a monumental scale. The personages involved in the transfer are not known: Whilst Theodoros's work at the First Dipteral Heraion is now more acknowledged (Hendrich, 1997), proof of his involvement at the Artemision is unfortunately extant (Bammer, 1972b, p.37)).

Having defined a possible pre-form for the canonic corner capital, one should ask again: Was the existence of a timber-stone pre-form with metal appliqué and diagonal corner volutes a necessary prerequisite for conceptual speculation and resulting achievement of an Ionic corner capital in stone? The author would like to refer the reader back to the detail of the Didymeion capital, and request a re-reading of the elemental composition of the form which reads as separate canalis and echinus, and the specific form of bolster decoration and volute beading used in the standard capital façade as found at Artemision 'D', which can quite easily be read as reminiscent of plate metal decoration, both on façade and the volute edge. Analysis of the Ionic capital's design in Chapter 3 has shown that it is precisely about the addition and integration of various

well defined artistic conventions and tectonic forms, namely the flat disk, the canalis element with two volute bolsters added, and an abacus plate placed on top if needed. If one agrees with this, and remembers that the early Cycladic capitals also made the jump from inscribed to plastic volute decoration, the importance of metal decoration is underscored and the idea of a metal appliqué form of the Ionic capital's canalis and volute may in all seriousness be seen as the design tool used to experiment with proportion and visual effects of the canonic corner solution. The question of new or evolutionary design strategy may however be further enlightened by study of the corner capital solutions which may have existed in half-timber construction with surrounding colonnades, before the First Dipteral Heraion.

A solution for the jointing of the two conflicting corner brackets could have been the crossing of the brackets over the axis of the column, with two ends sticking out past the epistyle edge. The joinery connection for such a solution would have exposed the one bracket to seeping water and rot, quickly leading to the joint to disintegrate, providing another argument against its possible existence. If one sees the Ionic Order as a xylolythic conversion of timber, this detail would have survived, even more so if one looks at the Hellenic predilection for the retention of existing form types. We know that the 'cruciform' detail did not survive into the age of stone architecture (apart from the mentioned speculation by Dinsmoor (1927, p.131) that it might have been the solution in the stone corner capitals of the Artemision 'D'. (The round column with domed top and cruciform bracket detail also does not convince as a suitable corner detail, and certainly has never been taken up in any stone work. This in itself places a shadow over the preceding architectural employment of this type of domed column). The other corner solution, namely that of two timber half-brackets jointed at the corner and placed or fixed onto the column top with pegs, is also not a good structural solution. In contrast to the sense the bracket capital makes in the linear colonnade, showing a clear logic of construction process, one may easily see, due to their extreme eccentric nature, how difficult it would be to temporarily rest two perpendicularly joined half brackets on the corner column's top. Even though it is clear that such an arrangement on a slender column makes very little structural sense, it is probably the solution that was followed (but probably also leading to further design evolution due to its inefficiency) until the arrival of a more monumental scale timber architecture. The necessity for a structurally efficient bearing surface on the corner could, with the continued use of the timber bracket form, only have been solved by the use of either shorter brackets, or a bigger sectioned square or round column supplied with an echinus element, or as Gruben (1989) has speculated, by providing the top of the column with a bulge. The question of the timber bulge 'echinus' will be dealt with in more detail later, but it is interesting that the earliest stone capitals were elongated, excluding the shortening of the canalis in later Archaic capitals as resultant from corner capital design (Refer also to early speculation in this regard by Gruben (1960, p.91)). In this sense the experiment at the First Dipteral Heraion should be viewed as the earliest corner experiment required by a bigger scale architecture with round columns. The question remains whether half-timber architecture's corner bracket capital would have had a specialised corner detail. It is easy to see that a specialised, diagonal timber insert piece could not have been present, this argument relying on the small space allowed for such an intricate joint,

as well as the now even smaller space allowable for fixing the brackets to the column top. The only other way in which to have presented a more formal detail solution for the corner would have been metal appliqué work, in the manner shown for the First Dipteral Heraion.

With these arguments it is posed that the canonic Ionic corner capital, rather than being born from manipulating the standard Ionic capital form, is rather an evolutionary design which most probably evolved from timber architecture, and definitely through a phase involving both stone, timber and metal, towards its final resolution in stone. The experimentation with eccentricity in terms of weight were very early solved in the composite stage, but the formal resolution of the inner corner (full volute to segmented volute) and the bolster, cyma and abacus forms showed slow progress through the Archaic period. The process of inner volute design from completely separate (Artemision 'D'), touching (Archaic Didymeion) and then conflicting, will not be presented here, but it does direct one to think that the inner corner resolution could have been an issue in determining the length of the early capitals of buildings with peristyles. The proportions of capitals of early prostyle buildings like the Dionysos IV temple however argue to the contrary. As regards the abacus design it is important to note that, whilst in Archaic corner capitals the bolster is just as wide as the epistyle and the abacus is taken around the corner, in Late Classical examples the capital bolsters are smaller in relation to the epistyle width and the cyma's extremity is placed on the edge of the inside vertical plane of the epistyle, so that the abacus may be square and not have to be taken around the corner with the turn of the epistyle (See Bammer, 1968-71, Fig.10). Any future analysis of the evolution of the proportion of the Volute height : Bolster width [G:B] in the Archaic period should be read with this in mind.

4.1.1.12 The east Ionian achievement: A second wave of pioneer generation standard Ionic capitals

From the knowledge gained from capital evolution thus far it is possible to view the earliest east Ionian achievements in a different light. From the argument above it has been seen that the existence of columns for the marble *Hekatompedos* in front of the Artemision 'C' can not be proven. The idea has been advanced that the peristyle of the Artemision 'C' (Later the inner peristyle of the dipteral version 'D') was probably never finished before the new edition of the building was started. The author would like to propose that, just as for the postulated Ephesian achievement of the corner solution for the Artemision 'D' capital, the composite capital type with stone torus, timber bracket and metal appliqué was not necessarily a prerequisite for achieving the standard, stone Ionic capital form in architecture, but only the corner solution. The Cycladic examples provided all the answers for the achievement of the standard type, but it was enhanced by the critical eye of designers who had a certain pre-disposition for making believable tectonic form. This type was an evolution of a long process of tectonic interpretation of form in the minor arts, and which process of interpretation will still emerge more clearly in future work.

With the First Dipteral Heraion [III] at Samos we tread different ground, because here the material record

indicates the existence (at least the high probability of the existence) of a composite (Ionic) torus capital. The form was most possibly discarded in the following architecture on the site, the North Building and the South Building, in part possibly due to the fact that these buildings employed stone epistyles rather than the timber epistyle of the First Dipteral Heraion, which material would have made the existence of a timber bracket not feasible. Despite this, the Heraion capital form may have had minor echoes in the artistic realm, if the two Sixth Century BC (hitherto not closely dated) Archaic hybrid votive capitals from the Milesian sacred road to Didyma (Ion-65), which are both standard Ionic capitals but which show the use of the ribbed torus, can be linked to the Heraion III experiment. The explanation for the non-use in the First Dipteral Heraion of the available, artistic (votive column) form of the Ionic standard capital, the stone bracket form of the non-standard Ionic capitals from Delos (Preion-1) and Didyma (Preion-2) and the architectural standard Ionic capitals of the Naxian *Oikos* - preceding the First Dipteral Heraion by *ca* a decade - must be laid at the door of the tremendous experiment that was being put in motion at the First Dipteral Heraion. Even though the Heraion and the *Oikos* were both experimental Ionic buildings, as concepts they were very different. Whilst the structural innovation of the *Oikos* must not be underestimated, the scale of the project was small. The material used, and the formal nature of the inner colonnade and the prostyle of the *Oikos* asked for the design formalisation of the hitherto timber portico and inner colonnade, but also for detail consideration for the sculpturally daring, stylistic 'signature' experiment of a marble 'Order' (ie the prostyle), executed in an environment with a long tradition of marble detail-making and tectonic problem solving on a small scale (ie the Dionysos III temple at Iria and others).

The First Dipteral Heraion was to be an enormous Ionic building in which the designer had to grapple with problems of momentous nature and scale, and executed with a softer material. If one had to place oneself in Theodoros's shoes for a moment one might just experience the enormity of his design problems: Extremely bad sub-soil conditions, three-dimensional proportioning on a scale not executed in Doric examples thus far and with a different vocabulary, the tremendous roof span, the design frontiers of finding the limits of poros stone, the weight, transportation and positioning of the building elements, the conception of the workings of a dipteral peristyle, innovative design in terms of new building elements like the turned bases and capitals, the formation of a new architectural style in stone which would translate the essence of the specifics of Samian religio-cultural context of the time - the list goes on and on. If confronted with the extent of detail resolution in the following east Ionian Ionic buildings of this scale, one may appreciate the amount of innovation at work here. From this perspective, and seeing that the our recent knowledge of the executed design now shows how the design fraternity at the Heraion was still grappling, in a building that may be seen as a transitionary work, with the conversion from small scale timber to monumental stone and timber architecture, one might understand the difference in approach to capital design. The other major factor was that the formal resolution of the corner of the peristyle in terms of its capital, presented itself at the same time. This detail was, as postulated, worked out in a combination of known form (The torus) and material (Timber and appliqué).

From the above the existence of a second wave of standard Ionic pioneer generation architectural capitals may be shown for the east Ionian system, but in which only certain aspects of a later canonic Ionic standard capital appear.

4.1.1.13 The Attic achievement

Even though the design of the Ionic capital was carried to many outreaches and centres of the Ionian world, the next focus on capital design is Attica. The Athenian involvement with the Ionic architectural design sphere surfaces in many instances in the study of the capitals, but we know of Athens' claim to progenitorship of the Ionic heritage, Solon's involvement in Delos, Peisistratos's involvement there, the importation of east Ionian architects and artists to Athens for the *Enneakrounos*, the use of the Samian column base as first step to the Attic type, and so on. The important point is that Athens saw itself as heir of the achievement reached in Archaic Ionic architecture and capital design. After the Persian War she lead the Delian League and proclaimed hegemony in the political sphere, but also in many others like art and architecture, where she lead the field in both artistic innovativeness as well as accruing and spending of money on public works and religious artifacts. (This does not ignore the fact that cities in *Magna Graecia* built and sculpted on an equal footing, sometimes even surpassing Athens). It is in Attica where the most sublime architectural works of the Fifth Century BC originated, including the Ionic.

It is beyond the scope of the study to follow all the leads through to their final destination. From analysis of Ionic votive columns in Athens from *ca* 550 BC till the end of the Sixth century BC it emerges that there is a lessening of noetic control, almost a lack of *techne* (Also see Jacob-Felsch (1969) in terms of this trend in base design) and a very wide spectrum of experimentation with capital form. From the analysis in Chapter 3 however, it has become clear that the capitals of the *Enneakrounos* building - most likely an east Ionian endeavour, from bases through to capitals - in the Sixth Century BC not only brought the rigorous noetic approach inherent to the Ionic capital to the Athenians, but also revitalised the level of architectural sculptural expediency. Even though other capitals have been shown to be important, these capitals are identified as a specifically significant event regarding subsequent Attic capital design, in terms of morphology as well as syntax.

4.1.2 Dating of certain capitals from the typological analysis

Apropos the discussion around the approach to the dating of capitals in Chapter 2.3.2.5 it was stated that the reliability would be low if only qualitative or only quantitative criteria were used. The famous case is Kirchhoff's (EIV, p.30) apportioning of the *Oikos* inner capital [Ion-24] to *ca* 550 BC on grounds of

proportions only. However, whilst working through the capitals, the author has realised that most researchers are in a way forced to this method due to a lack of circumstantial evidence. It is true that good work has been done in this way, but which often relied heavily on experience from the researcher. Kirchhoff (EIV, p.18), when he qualitatively linked the capital of the Dionysos IV temple [Ion-7] to the Naxian sphinx column capital [Ion-6], came to a fair date, but he was hampered through his then lack of insight into the detail of the temple's history. In the case of the capitals of the Propylon II of Delos, [Ion-27, -32 and -48], whose linkage with each other were often suspected in the past, it was seen that they were only finally linked by Gruben through combining historical facts re the modern occupation of Delos and the subsequent history of the capitals, with a reconstruction of the gateway itself, a typological comparison of all three, together with arguments around the chronology of the existence of the corner capital on the island and in the region.

When looking at capitals that are suspected of belonging to the Archaic period, especially before 525 BC, and when they are known to have been manufactured outside of the main centres (east Ionia and the Cyclades), there is not a great sample of capitals to compare with and one often finds great difficulties in evaluating existing dates. The following capitals are examples of such cases. (Please also refer to their description in the catalogue):

Capital Ion-41 is part of a private collection, badly documented and not available for inspection. It was dated to the late Sixth Century BC by Kirchhoff (EIV, p.90), the origin identified as Gela, due to similarities with two similar contemporaneous Gelan capitals (Ion-40a-b). The similarity holds true for the round beading underneath the echinus as well as the volute windings and eye detail, but not for the canalis shape (angular in stead of cord shaped), the echinus form (not elongated in terms of height), the abacus form (Round bead on top of canalis bead in stead of vertical leaves) and the obtuse angle between volute and top surface, typical of so-called 'Samian' capitals, rather than a normal curve. The qualitative typological analysis shows the angular straight canalis line to be a Milesian/Ephesian/Naxian trait before 525 BC, although emulated elsewhere afterwards (eg Phanai, still connected to the eastern mainland). The small volute angle palmette is close to that of Ion-42 from Massilia and the inner bit of that of Ion-45 from Miletos and Ion-26 from Chios. The obtuse volute angle is similar to Ion-39 from Histria, Ion-61 from Syracuse and Ion-27/48 from Delos. The extended shaft piece is a very singular piece not echoed in this form in other Archaic capitals, but rather a much later example from Athens (Puchstein, 1887, No.7). From the qualitative viewpoint the capital is a very original compilation of elements not following that of one single regional group. From the above aspects one may say that another provenance may also be possible, most probably influence from the eastern Ionian centres or an artistic copy of these examples. The state of the dimensions makes a proportional analysis less reliable. Even though there is no quantity of regional samples to compare it with in terms of proportions (making such activity less fruitful), proportions may give clues as to its affinities (As shown for the Delian Propylon II). In this case more information in terms of exact size, material and workmanship must be collected - if possible, due to Sotheby's confidentiality clause - to advance knowledge further.

Capital Ion-57 from Cyzikos has been dated by others to after 500 BC. It exists as two small pieces, too small for any quantitative analysis. Apart from the smooth polster the only strong clues are the volute eyes in the form of a disc with raised centre-point, and the convex volute channels with single round bead. From the typological analysis it is shown that it is not like any other capital with similar eye detail, like Ion-12 from Smyrna, Ion-39 from Histria, Ion-38, -52 and 53 from Thasos and Ion-67 from Athens who have concave volute channels and edged beading, or Ion-32 from Delos which has a double round volute channel bead. The first profiled eye with centre bead occurs in Ion-12, dated by many researchers to anything from 550 BC to 520 BC. Whilst the date of Ion-12 was seemingly pinpointed to 520 BC due to the co-existence of the eye with a concave canalis, in actual fact the first known use of the bordered canalis beading is with Ion-74 of 550-25 BC, whilst it also has an eye. The possibility exists therefore that the Smyrna capital, and also the Cyzikos capital, may have been manufactured before 520 BC. Convex volutes with round beading, even if coupled with an eye, is in itself no guarantee of older age, as may clearly be seen from similar details (albeit a rosette eye) at Halicarnassus of 500-480 BC, and an Hellenistic Parian corner capital (Paros Museum without inv No) of the 2nd-1st Century BC (Interview Dr Skillardi, 1997). Whilst there is some further knowledge regarding the date parameters, in this case more circumstantial evidence is required to move forward, and more documentation work is required for the remaining echinus detail at the bottom of the capital.

Capital fragments Ion-61 from Syracuse were dated from before 530 BC to after 480 BC by others. Too little remains of the canalis and echinus fragments to say anything useful quantitatively. The echinus leaf shows parallel vertical beads, indicating round edges. Also the ovoli fragments' ends are not remaining, but they show no centre ridge, and could not be pointed. The first pointed ovoli date from the earliest 520 BC (Ion-27/48 and -35 [painted]), seemingly indicating older age for the Syracuse capital. Due to Pedersons (1983, p.111) evaluation the Heraion IV capitals are seen as model for Ion-61. The ovoli of the Heraion IV (Ion-58) are oval, which could be anything from 550 BC, but were only manufactured after 500-490 BC. One may see that the date rather needs to be sorted out by other evidence from building context, but even here there is controversy. Whilst we now know that the Heraion IV was started by 550 BC but the capitals only manufactured after 500, possibly after 490 BC, the early proposed building dates of 530 and 520 BC for Syracuse must be brought in question. Because we know, know due to identification of capitals of Propylon II at Delos (Ion-27, -32, -48) that the so-called 'Samian' capital shape was widely known from 520 BC onwards, the earliest date sounds wrong. Further contextual evidence will bring more certainty, but will have keep being mindful of the link to the Heraion IV and Propylon II.

The author has already speculated around the date of capital Ion-13 from Nasos in the text of the *corpus*, mainly based on qualitative aspects (especially the Athenian dome echinus, therefore after 520 BC). However, since the dating of Capital Ion-69 (ie 550 BC) the relationship between their dome echinus and straight canalis of Ion-69 becomes important. The capital from Nasos has a 'Samian' obtuse volute edge detail. Because the

first known capital to use this device (Ion-48) dates from the earliest 520 BC, a date of 550 BC for the Nasos capital seems too early, 520 BC therefore remaining the earliest possible. The use of a proportional analysis to get more certainty of the dating will not be possible because the dimensions (Reported by Kirchhoff (EIV, p.74)) rely on Wiegand's unscaled drawing. It seems as if this piece has 'disappeared', but a concerted effort should be made to trace it before more can be known. Also, more historical evidence of this enigmatic Ionic site is needed.

The only capital not yet dated is Ion-68 from Paros, still unpublished. This small marble piece is very slender and stretched out, just like the earliest Ionic capitals. It is monolithic with the shaft, like the first votive colonnette from Sangri. The bulging torus shaped echinus appears like the Sangri colonnette's torus, but the only 'foreign' shapes are lozenges around the column neck, a detail without parallel in the Archaic period. The capital façade has a 'Samian' obtuse volute, like the first example Ion-48 of the Propylon II Delos, itself at earliest from 520 BC. From a purely chronological perspective (See Table 3.1 and Fig.3.1, read with App.1, Table 1.1), the capital's specific proportions in terms of the relationships B:A, G:A, H:C and L:B do not allow for clear indications of age. From the relationships H:A one would place it before 550 BC, and from D:E between 570-50 BC. From a chronological and geographical perspective (See Table 3.2 and Fig.3.2 [only available for up to 525 BC though], read with App.1 Table 1.3), the proportions in terms of the relationship D:E show correspondence with Parian capital Ion-10 of 570-50 BC and Ion-17 of *ca* 550 BC, both indicating a possible date between 570-50 BC. In terms of H:A, the proportions are closest to Ion-17 but there is too much oscillation to be sure. It remains possible that this capital is a much later copy or singular piece, much like the two now famous Byzantine Parian capitals Cont-13, and -14 (See Chapter 2). As indicated, more detail re its founding area and circumstances are required for a more certain dating. The occurrence of lozenges on the column shaft must also be looked into. Additionally, the chronological ordering around geographical lines should be extended to include the capitals from 525-490 BC.

The last capital has shown that the system devised in the study may, in the case of a good regional sample, readily be employed for the dating of capitals. Previously, in Chapter 2, it was stated that capitals only dated within very broad time-spans, or only in terms of a single proportion or attribute, may be re-dated after the typological study. The author was fortunate that, during the course of this study, many such capitals provided in Kirchhoff (EIV) and Theodorescu (LCIG) were in the meantime re-evaluated from more current research and contextual evidence, and that these new dates could be incorporated in the *corpus*. Because of the recursive attitude kept alive during the course of the study, there are actually no other capitals in the present ordering, apart from the examples dealt with above, for which serious known doubts may be expressed about their current dating. Because the re-dated capitals were included in the chronological ordering, a solipsistic argument would arise if any of these were now re-tested within the system. Rather, it is recommended that more circumstantial evidence be gathered for those capitals which are only dated in relation to other capitals, in order to increase their reliability. Furthermore, the lack of chronological ordering of quantitative and

qualitative material along geographical lines for capitals from 525-490 BC, presently hampers the re-evaluation of those relationally dated. Such an exercise, together with the work done for the Classical capitals by Theodorescu, will provide a more representative and bigger sampling from which to work. If the more certain dates among them (emanating from the present study) could be indicated similar to the established dates, the interrelationships would also become more secure. These exercises are excluded from the present study, but are identified as fields of fruitful further research.

4.2 TOWARDS A PRE-HISTORY OF THE ARCHAIC IONIC STANDARD CAPITAL

In this section we are exclusively concerned with furthering the idea of the Ionic capital as a product from an evolutionary heritage, from which position commentary may also be given as regards the idea of the Ionic capital as invention, in part also as answer to the positions taken by Howe (IDO) for the Doric Order. In Chapter 2.5 the approach to this exercise was stated, as well as the guidelines from which an eventual, later formulation of a pre-history should be approached and completed. According to Wesenberg (1996, p.8) there is at present **no evidence** from which we may **factually** surmise the pre-form of Seventh Century BC Ionic columns and capital. Whilst there are bits and pieces, mostly we are working in the realm of speculation, albeit informed speculation. Nevertheless, the existing theories change unabatedly as archaeological effort continuously offers new material to work with. This section will deal critically with some of the most recent offerings regarding a heritage for the Ionic capital, and introduce new ideas forthcoming from the analysis of the Ionic capitals, which are meant to be pointers towards further, directed research. Figure 4.1 is included below to graphically assist the reader in the text to follow.

Wesenberg (1996, p.6) succinctly encapsulates the current positions regarding origins. Kirchhoff (IDO) sees the capital as a form which evolved in small terracotta votive columns. His theory will be dealt with in some detail. The capital for Kirchhoff is a petrified votive statue base, for Gruben a petrified architectural timber bracket capital - a view shared by Theodorescu (LCIG, p.95, Plate 3). Gruben (1989, p.161, 168; 1996, p.65, Fig.5) holds the opinion that pre-monumental architectural timber capitals were petrified in votive columns, then further developed for use in architecture. His theory will also be critically discussed in terms of form analysis as well as from an architectural referential view. Gruben's theory basically proposes that the separate canalis and echinus sections came together as a capital over a period of time, whilst accepting that the echinus started as torus which only later receives a leaf decoration. (As an aside: Wesenberg refers to Bammer [*ÖJh* 49, 1968-71, p.4 Note 16-20, p.12, Fig.8], who not only poses the leaf cyma as origin for the Ionic, but also the Aeolic capitals). These ideas regarding the cyma have received proper attention in the previous section, but this study will further deal with the idea of the Aeolic capital as "proto-Ionic" form, and make comment from

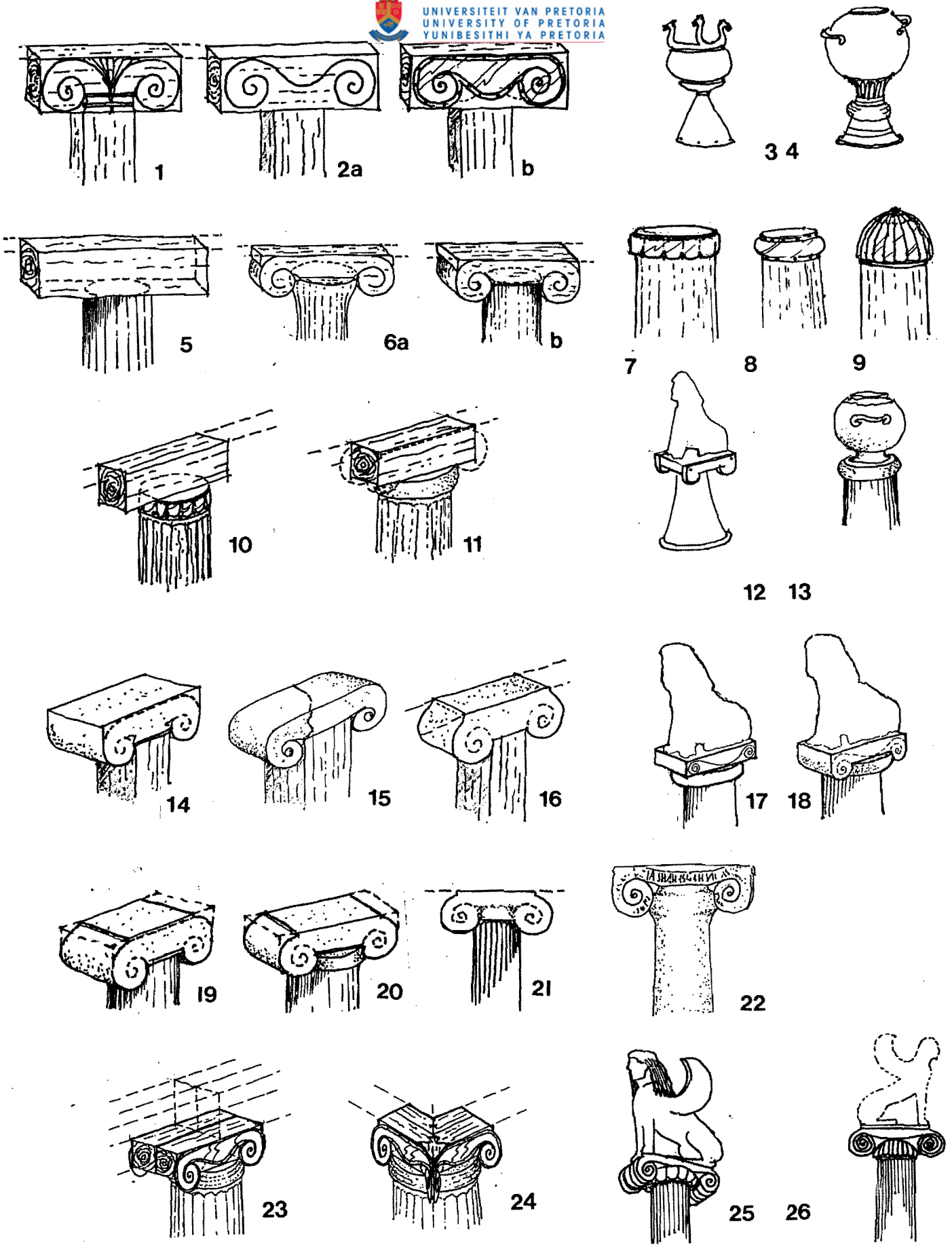

Fig.4.1 Illustrations of artifacts related to arguments around the evolution towards the standard Ionic capital.

recent research. The existence of torus capitals for the First Dipteral Heraion (tori with timber brackets), and their role in the design of the Ionic capitals, have received attention in the preceding section, hopefully providing some imperative for their existence.

Wesenberg rightly states that "Die Entstehung des ionischen Kapitells bleibt im Dunkeln, solange ungeklärt ist, in welcher Gestalt und in welchem Material Kymation und Volutenglied zueinandergefügt worden sind" (1996, p.9). This study will try to point the way towards reaching this explanation. Whilst this study does not set out to be deliver a history of the origin of the Ionic capital, it will set out to identify those theories which may be discarded or altered from insight flowing from the more representative analysis of the Ionic capital, as well as those who are more probable.

4.2.1 The use of the typological interpretation as guide for the identification of form-relatedness of preceding artifacts to that of the early Ionic capital and its elements

Taking into account the guidelines accepted in Chapter 2.5 for identifying and accepting form references for the Ionic capital, it is necessary that any identification and assessment of style correspondence be based on thorough typological understanding of the Ionic capital as type. The typological analysis of relevant Archaic capitals tries to be that understanding. For this exercise one refers particularly to the analysis of morphological trends, based on chronological ordering, in Chapter 3.2.1, the similar analysis based on chronological and geographic ordering in Chapter 3.2.2, the qualitative description of capital morphology and syntax in this Chapter, the analysis of tectonic qualities of the capital in Chapter 3.3.2.1 and Table 3.5, and the chronologising of the morphological innovations in capital design in Chapter 3.2.3, which helps in determining whether a suggested pre-form has more, or less, relevance as source, because it is chronologically isolated within the total evolutionary process. The typological analysis achieved in this study is put forward, amongst others, as tool in the formulation of the history of the origin of the Ionic capital.

4.2.2 Indications of an evolution from relevant minor arts

4.2.2.1 Kettle stands and votive columns

Analysis of the chronology and form of a relevant selection of the earliest examples of stone votive colonnettes indicate that stone statues and stone kettle, *kouros* and sphinx columns were emerging as new and preferred monumental votive offerings in sanctuaries *in lieu* of the bronze kettle wagons, conical stands and tripods, as well as monumental earthenware vessels, that there was experimentation with stone for use in votive columns in various parts of Hellas at the time (Arkades, Thebes, Samos) and that the torus moulding was emerging as a connecting shape between column shaft and statuary plinth or kettle. In focusing on the datum of the stone Ionic standard capital, namely the capital of the sphinx colonette of Sangri, Naxos (Ion-1;

Fig.4.1.22), together with its widely flaring conical, oval column (The sphinx is lost, and the existence of a lost base is only indicated from traces *in situ*), affinities with various artifacts were identified: Stone columns with torus necking carrying plinths, *terracotta* and metalwork (3- and 2-dimensional) voluted forms, as well as a memory of the timber bracket (as in Fig.4.1.5) with volutes added as discrete elements to the sides. The column shaft retains a memory of the conical kettle stand, and *terracotta* forms. The multivalent reading of this column and capital presents the researcher with quite a quandary, coupled with the fact that its size, function and execution makes it a difficult candidate to use for posing a relationship with a preceding architecture in another material.

We have no certainty that the Sangri capital is the first stone standard capital, and therefore cannot yet define it as an archetype. In tracing the history of an artefact one uses the evolution of the artefact from that form onwards, together with a backwards tracing of possible typological roots or origins. One has to look into the history of the votive column, and its historical connection with the kettle stand, in all the forms and materials in which they appeared. The most complete argument to date for an evolutionary history of the Ionic capital from the minor arts is that of Kirchhoff (EIV, p.137-90), and it is necessary to reply to his argument from realisations gained in this study. His exposition of the evolution of the Ionic votive column from *terracotta* kettle stands to non-monumental Ionic stone votive colonnettes, places the founding of the Ionic votive column and its capital in a radically new perspective than was previously accepted. Kirchhoff's (EIV, p.141) main argument evolved around two central aspects, namely the idea that the torus column with timber bracket as it appears in the First Dipteral Heraion - which he described as the first Ionic building dating from 600 BC - is a transitionary form between the early colonnettes and the canonic Ionic capital form, and secondly around the correspondence of shape between the preceding kettle stands and the column shafts of the early Ionic colonnettes.

The inconsistencies in the main concept must be pointed out first: Whilst the First Dipteral Heraion is still deemed to have had torus capitals with timber brackets, and to have been involved with the evolution of the capital form, its position - and influence - in the chronology is now much later, namely *ca* 575 BC. Secondly, of all the early colonnettes so important in his form analysis, only the Sangri colonnette remains in its chronological position as datum. (Absent now are capitals Cont-13, -14 and -18 (ie Kirchhoff, EIV, No.B, C and 26). The remaining central element in his thesis, ie the Sangri colonnette with its downward flaring shaft and its torus shaped bulge, are indeed similar to the kettle stands' shafts with their torus shaped connection, occurring between shafts and the flaring kettle holders above (Fig.4.1.4). Kirchhoff (EIV, p.141, 146) mentions that one should accept the possibility that such column forms, as interim phase in the monumentalisation process, could have been executed in timber and decorated with bronze. According to Kirchhoff the metamorphosis of bronze kettle stand to votive column must have followed an evolution through an intermediary phase of *terracotta* colonnettes with cyma capitals similar to those of later stone kettle stand columns, some of which evolved into the votive column type with leaf cyma capital and some of which were

crowned with a (flat) clay tablet for statuary to rest on. Such a tablet would have been decorated with an applied rather than engraved volute capital decoration. To him this form variation is the pre-type for the Ionic votive column. The author must mention here that a depiction of a stander from 680 BC (Schefold, 1966, Fig.4) may have been a *terracotta* column, but it may just as well have been a bronze artefact. Whilst Kirchhoff's theory cannot be disproven, it also cannot be proven from the existing archaeological record.

The most probable decoration technique for the *terracotta* colonnette's flat tablet mentioned by Kirchhoff (EIV, p.177, 189) is a plate type decoration which would have hung over the bottom edge of the tablet shape on the cyma capital of the stander, mainly in order to give a directional front to the statue (Supposedly a sphinx) on such a column. A drawing by the author of his idea is included in Fig.4.1.12. One has to be critical about the examples Kirchhoff (EIV, p.173, Note 615) gives for such decoration. Firstly he uses the existence of *terracotta* appliqué in architectural contexts as reason for the probable existence of these appliqué capitals in this *scenario*. Furthermore, the mentioned fragments from Olbia are not dated and apart from their distance from the founding area, Kirchhoff's uncertainty regarding their functional application makes them less probable as candidates. He assumes a votive function for the other examples he mentions, namely the corner *acroteria* from Larisa, because they have been described by Boehlau *et al* (1940-2, p.141) as "möglicherweise sind es Weihgeschenkreste". These examples might just as well only have been architectural *acroteria* like the others of the find. In accepting the tablet with decorated front as capital pre-form, Kirchhoff stresses the necessity for such decoration to hang past the block form, in order to have a properly proportioned capital form. For the same reasons of proportional propriety he expresses doubt regarding the existence of a horizontal tablet with a capital decoration in *intaglio* or painted capital form on its side. Kirchhoff (EIV, p.171, 219, A9) however proposes the existence of an additional form of *terracotta* capital from this context, namely one with volutes appended as sub-form to the sides of a main cubic shaped tablet form, according to him much like the Aeolicising capital from Delos (Iver-12) which we know to be of 550 BC, 100 years younger than the stands he discusses, and one of the few such examples. No examples of such *terracotta* forms are present in the archaeological record. Kirchhoff (EIV, p.173, 189-91) proposed these form variations as the ones which were eventually petrified in the form of the first small colonnettes from Naxos and Paros mentioned above (and now disregarded). The reasons he advanced for the xylolithic conversion were that the kettle stands showed a tendency towards greater slenderness over time, showing a drive towards monumental form. To achieve this, another material was needed, namely stone. Whilst this conversion of *terracotta* kettle stands to a certain type of votive column seems feasible, there are a series of further criticisms regarding Kirchhoff's theory.

Firstly, Kirchhoff's theory regarding the evolution of the Ionic capital form from *terracotta* votive column pre-form to 'first' stone example, cannot stand the test of artistic skeuomorphic conversion. A comparison of the forms of the hypothetical *terracotta* voluted plates and solid capitals with the composite form of the Sangri capital (Ion-1) - the result of this evolution - quickly removes any doubt about this. Against a tablet with

hanging solid volutes on the side, it can be said that the firing technique of *terracotta* requires working in slabs of a relatively thin nature and hollow forms. This would preclude a deep canalis element for the capital, as well as a thick volute cylinder. The resulting form would rather be a tablet form with a small volutes of more or less the same depth of the tablet. In terms of the *terracotta* volutes applied as slab to the front of a tablet, the result is quite sound as regards to the possibilities inherent to the material. However, there is very little skeuomorphic correspondence with such a pre-form in the canalis-volute ensemble of the Sangri capital (Ion-1), which is very plastic and does not give the tiniest hint of an applied façade of any thickness, as many later capitals do [then thin]. The volutes do look as if they were 'attached ' on the side, but as shown in Chapter 3 this is due to the volute channel offset, itself resultant from the position of the canalis strip in the composition.

Kirchhoff (EIV, p.148) connects the *terracotta* kettle stand's and interim *terracotta* colonnette's torus capitals to a previous timber tradition. There are excellent mid Seventh Century BC examples of *terracotta* kettle stands, some of which are mentioned by Kirchhoff (EIV, p.148) and some additional ones which were identified by the author (See Boardman (1970, p.94, Plate 4.1) and an example in Figure 4.1-4), but seeing the *terracotta* forms as flowing from a timber tradition is plainly negating the previous achievements and traditions inherent to clay artwork, and also negating the tremendous influence of the form elements of the bronze kettle stands which were the most important monumental religious artwork before the votive column and eventually the temple (One also thinks of the strong parallel tradition of leaf cyma capitals for stands as in Sixth Century BC limestone incense burner stands (eg Cyprus BC (1979, Fig.292-3; Karageorghis (1981a, Fig.115)) and torch holders from Cyprus (eg from the Heraion, Samos - Item B2532, Vathi Museum, Samos). There is knowledge of miniature timber kettle stands, like the Samian turned example (See Kyrielys (1980a, p.106, Table 27)) with base, horizontal flutes and capital topped with torus moulding (Incidentally pre-empting Ionic column-base and polster fluting details), but there is no proof for their existence in monumental timber form.

It rings true that the load-bearing, vertical form of the kettle stand, being the right shape for carrying and elevating an object, be chosen as readily available form to carry other objects like a sphinx statue as well, obviously with an intermediary horizontal object to receive the statue (the plinth). Kirchhoff's (EIV, p.148, Note 494) very apt observation (See his example, in Phillips (1970, Fig.5), but also in Boardman (1970, p.94, Fig.5)) that the torus shape of the *terracotta* stands in some cases is extremely close to the that of the later stone torus capitals from Samos (ie the kettle stand replicas), made his *terracotta* argument appear to hit the spot in terms of pinpointing the missing link between timber and stone columns. Whilst the use of potters technology in turning a soft sandstone torus capital has been demonstrated by Hendrich (1997, p.60, Fig.16), and the stone form is most probably directly reliant on that of the kettle stand's torus (of which examples were present in the Samian domain), our analysis shows that the torus was the linking element *per excellence* - from the bronze kettle with conical stand, through the *terracotta*, to the stone. However, no definite link between

timber and stone columns is constructed, only a preference for form. There is the additional fact that Hellenic monumentalised statuary (opposed to miniatures) progressed from timber to stone at *ca* the middle of the Sixth Century BC, and it is only in the Cypriot domain where there was really a *terracotta* sculpture tradition already from 750 BC (Reyes (1994, p.33, 149-50)), there focusing mainly on the human figure. For the *terracotta* sphinx column or *kouros* column to have been our transitionary object from the strong tradition of kettle stand to stone votive, it would have been a similarly strong tradition. There is just no underpinning for the idea in the archaeological remains anywhere, and the form will have to remain hypothetical in the meanwhile.

Kirchhoff (EIV, p.211) also acknowledges the role of metal in his theory, in that he identifies the bendability of metal appliqué in his statement that the solving of the corner problem for a decorated statue plinth on a column must have acted as the predecessor for the diagonal volute of the Ionic capital. Whilst the use of appliqué on architectural *terracotta* is known, a more elegant argument for this architectural problem has been proposed in Chapter 4 above. There is the additional fact that Archaic glyptic art, and especially the *kouros* and the sphinx column, was a frontal art, not *per se* requiring a formal corner treatment. (The statue base from Naxos of 600 BC, with corner treatment in the form of a face (See Boardman, 1978, Fig.56), on the other hand does make another statement).

There is additional criticism to Kirchhoff's link. The advanced nature of stonework by *ca* 600 BC, for artifacts such as the late Seventh Century columns from Arkades and Thebes and the stone kettle stand from Samos, the column portion of the Kolonna column (at best contemporaneous with the Aphaia sphinx column), the Aphaia column, the Naxian *Oikos* (now being the architectural datum rather than Kirchhoff's First Dipteral Heraion [III]), the possible use of stone capitals similar to Preion-1 and -2 before the last decade of the Seventh Century BC (these two showing providing proof of an earlier tradition of the use of the stone voluted capital in architecture, a proof lacking for their existence in *terracotta* votives), together with the very early start of an articulated formality in stonework at the beginning of the Seventh Century BC (ie the Dionysos Temple III, Iria), all indicate that there may have been much more experimentation with stone in columns during the Seventh Century than was previously accepted.

This leads us to explore other pre-forms of the votive column in material like timber, and composite forms of timber and stone, and timber and metal. A strong case has been made out for metal appliqué as pre-form of the later strain of Aeolic capital (after Old-Smyrna). The possibility of a column-capital like the Aphaia capital having existed as a stable form in wood, with the bracket slotted into the dome, and the dome pegged to the column, can be argued, only with the dome rather being part of the column shaft than as a separate piece, for reasons of stability. Such a capital would have to be sheathed in bronze to protect the end grain from water induced rot. The volute/canalis decoration may have been a bronze appliqué. The repercussions of finds of Seventh Century BC bronze cymas (Hampe, 1939, Fig.3-5; Hampe *et al*, 1981, Fig.88-9; Daux,

1966, p.746, Fig.3; Wesenberg, 1971, p.52, Fig.92, Fig.93 [Pedersen (1983, p.118) reports this work as being of Cycladic Ionic origin]; Kyrieleis, 1988, p.279, 281, Fig.1-2 [the existence of which was long suspected by Drerup (1969, p.116)]), bronze acroteria (Kyrieleis, 1988, p. p.285, Fig.3.4 [My thanks to Dr H. Kienast for the scarce document]), the use of bronze on capital Iver-10 and a Late Archaic bronze capital volute (Herrmann, 1996, p.124, Fig.1) have now been well integrated into the discussion around the Ionic corner capital above.

Where we may now accept the round timber column with bronze leaf cyma or dome (Fig.4.1.9), a round timber column with dome and bracket capital, as well as a round timber column with bracket capital (Fig.4.1.10) possibly with bronze volutes, in the discussion around the capital of the Naxian sphinx capital (Ion-22) the improbability of a totally timber column carrying a stone statue was argued. In any event, one should ask why a timber bracket would have been inserted into a timber dome capital, if nothing was to be carried. Wouldn't the imperative for sprouting leaves only, have lead to a different solution? Whilst one would also hardly expect a free-standing votive column without statue in the form of stone base, timber shaft, and then a stone capital, this form composition was used in architecture, as the capitals Preion-1 (Fig.4.1.15) and Preion-2 (Fig.4.1.16) show. Likewise, the Aeolicising capital Iver-4 of a votive column from Delos, may most probably have had a timber column. A certain amount of experimentation in composite forms may therefore be accepted for free-standing columns, most probably with the stone voluted bracket form wider than the column diameter. (Again, if the canalis-disk combination was achieved here, it would have been available as pre-form for the colonnette at Sangri).

4.2.2.2 Other Minor Arts available as source material for designing the standard capital form

The analysis above has shown that the evolution of the Ionic capital is one which occurs in the Hellenic sphere, and deals with problems of creating form within the Hellenic religious domain. The following section on possible architectural sources for the capital will show a similar scenario. There is nevertheless the possibility that the form may have existed in other cultural spheres, or in a prior guise in the Hellenic sphere. In looking for pre-forms or prototypes for the Ionic capital therefore, there are two parallel involvements: One is concerned with the idea of prototype, the other is rather a concern with ascertaining the transfer of specific detail traits, and establishing the transfer of elemental form over a long period of time and across cultural boundaries. From extensive searching for pre-forms for the Ionic capital it becomes clear that many forms for both the Ionic column and the Ionic capital, as well as for the separate elements of the capital can be put forward. These forms exist in the Aegean era, as well as in the Hellenic and non-Hellenic spheres before the founding of the standard capital form in stone. As argued in Chapter 2, these contenders have to be evaluated from both a chronological and typological viewpoint, and the certainty of historical or contemporary linkage between the capital designing system with those in which the pre-forms were found, is a prerequisite. A list of these forms, their dating, together with the type and instance of linkage, may be used to pinpoint those

examples deemed to be the most probable. Further research regarding the typological status of those forms may then proceed, in the absence of such typological interpretation. In the event of any such forms being regarded favourably, they will have to be brought into relation with the already ascertained aspects of the evolution within Hellenic architecture and in Hellenic votive columns.

4.2.3 Indications of an evolution from Hellenic architecture preceding the Ionic capital

4.2.3.1 Indications of an evolution from an Hellenic 'Ionic' timber architecture

In the beginning of this Chapter it was indicated that the extent of articulation and formalisation of the Seventh Century architectural column is fundamental for coming to a conclusion regarding the origins of the capital, and that knowledge of the type of connection between, and the materials used for the cyma and canalis, is vital. Knowledge of the event of introducing the cyma as element in a timber construction of column and bracket, is a key to the riddle. In the analysis of the torus of the earliest known Samian kettle-stand replica (Tor-3, Col-9), and later of the timber votive column, it was indicated that exploration of the possible occurrence of a stone disk torus on round timber architectural columns (Fig.4.1.20), or in timber votive columns (Fig.4.1.13) is necessity. It is necessary to start with the most pressing current theory arguing for a timber heritage for the Ionic capital form, that put by Gruben (1989, 1996). Therefore, in order to debate the theory one has to include arguments around the possibility of the existence of a timber Ionic architecture or Order, as well as arguments from the analysis of the Ionic capitals themselves.

4.2.3.2 A short critique of the timber Ionic Order

Evaluating the probability of the existence of timber Orders may shed light on the probability of the existence of a timber Ionic capital. Importantly, Vitruvius (Book I, 2, 6; Book IV, 2, 1 to 6) differentiated between the origin of the timber entablature and of the columns. To him the entablature referred to a timber tradition of architecture which evolved over a long period, and was only later apportioned to the column types which evolved in the Doric and Ionic spheres. Nevertheless the idea of fully fledged timber Orders preceding the stone Orders has remained one of the most pervasive and influential architectural canons over a very long period up to this day.

There are only very few eloquently put arguments for a timber Ionic Order. Due to previous Modernist functionalist readings of the Orders, this dearth may have been caused by the apparently more readily discernable 'tectonic' character of the Doric Order, but also due to the convenient existence of other similarly looking xylolithic skeumorphs like the Egyptian examples (eg in Badaway (1966, p.148-9,Fig.57; Plate 14), as well as the Lycian Group III rock cut tombs (For example Akurgal (1961, Plate IVb)) which, according to Akurgal (1955, p.88-93; 1961, p.127), date from from the Fifth to Fourth Century BC, postdating the

emergence of the Ionic Order in stone. The case for the timber Ionic Order reads that the timber bracket capital is seen as pre-form for the Ionic capital and gradually evolves into the Ionic form, that flat timber beams placed on top of each other (In some cases two, and in some three) are proposed as pre-form for the threebanded, rabbeted epistyle, and the projecting ends of small square rafters resting on the epistyle are seen as pre-form for the dentil moulding. Even though proponents of the timber Orders do not easily draw the timber Ionic Order, the elegant drawing of an eaves peristyle arrangement by Durm is shown in Fig.4.2 on the right.

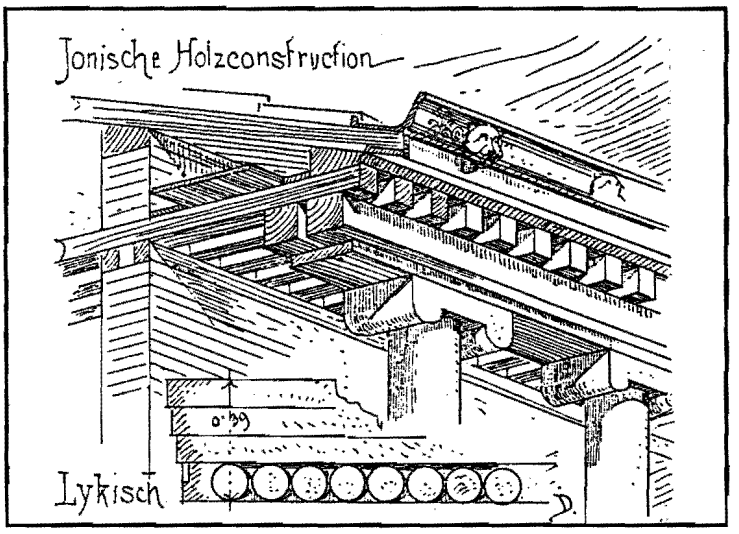

Figure 4.2 Timber Ionic Order by Durm (1910, Fig.315).

The drawing of the timber voluted capital on a column bulge by Gruben (1996, Fig.5.4) as shown in Fig.4.1.6a is a variant of this train of thought, but one which is contextually rooted.

Lambrinoudakis (1996, p.59, Fig.7) has shown for the reconstruction of the Dionysos Temple III at Iria that the timber prostasis, as composition of colonnade and entablature, is at the root of the evolution of the Cycladic Ionic form vocabulary . This form element is a strong argument in favour of the timber evolutionary Order, but one should look at the level of articulation: The use of timber does not *per se* indicate the use of articulate form. As mentioned earlier, the archaeological lack of stone capitals for this building phase, alone indicates that one should accept timber capitals. As Lambrinoudakis did for the prostasis, Gruben (1996, Fig. 6.III) argues for voluted timber capitals in the interior of the naos. The question remains to what extent of detail they were articulated? Lambrinoudakis (1996, p.59), working back from the typical Cycladic stone epistyle and frieze expression and starting with the Naxian *Oikos*, followed shortly thereafter by the Temple IV prostasis and then others, argues that the timber entablature for this building was a simple, unadorned affair, with the concept of a frieze zone extending around both front and sides of a building, resulting from the practicalities surrounding closing beam ends and sides above the simple flat epistyle of both sides of the prostasis. The important fact is that the Cycladic Ionic entablature now cannot be seen as 'invention in stone', as Howe did for the Doric. One more important aspect of the evolution of the Ionic Order is that we witness in the Iria example the composite use of articulated stone (Square stylobate stones and articulated column bases) and other timber elements (round columns, capitals and entablature).

The canonic Ionic entablature also includes the dentil moulding, which is one of the examples *per excellence* of those in favour of a timber origin for the Ionic Order. One realises the dentil does not appear in Ionic stone

architecture until the last quarter to the end of the Sixth Century (Late Archaic *Megaronbau* in Larisa (Mertens, 1979, p.134; Schefold in Boehlau *et al*, 1940-2, p.161, Item No.50, Table 24c, 42a.I; Wesenberg (1996, Fig.13)), at the *in antis* Carian temple at Labraynda between 520-500 BC (Thieme in Courtils *et al*, 1993, p.49), possibly the Hexagon Monument at Delos of the end of the Sixth Century BC (Hellmann *et al*, 1979, p.113 [He provides the date], Wesenberg, 1996, p.14, Fig.13 [who deems the origin of this element to be the Cyclades]) and between 500-490 BC at Temple 'D' at Metapontum (Mertens, 1979, p.127-8, 138-9, Fig.2). Gruben (1957) believes that the roof of the Seventh Century BC South Stoa at Samos was a flat timber-and-earth roof whose square rafters projected over the epistyle showing the 'dentil' moulding detail. One rather expects larger sized rafters in this direction, and with the smaller lattice work running perpendicular to these in the other direction. Also, Carpenter said aptly "....if Ionic dentils are to be seen as simulated beam-ends....they should (like the triglyphs) rest directly on the epistyle" (1962). In the Ionic Order there would be no excuse for introducing any other element in between the epistyle and the dentils. It is indeed uncommon for Archaic Ionic architecture to combine a dentil moulding with a frieze or 'second' epistyle. In Archaic Ionic architecture, the epistyle and dentil moulding are most often, rather non-structurally, separated by a leaf cyma. In terms of the structural sensibility of the projection of timber beam-ends in a peristyle arrangement the same formal collision as may be demonstrated for the Doric triglyph would apply in this arrangement, leading the author to surmise that any truly structural timber 'dentil' detail might initially only have existed in a *in-antis* roof formats where there is only a single rather than turning epistyle, or the lattice work of the gable. Apart from the lean-to or projecting portico, the linear stoa-like shrines shown in little Seventh Century BC *terracotta* models of Lemnos (See Pernier (1934, Plate 20a-b); Dunkley (1939, Plate 20A)) are precisely the application where the 'dentils' could have occurred. Gruben also comes to the conclusion that the initial occurrence of the dentil would have been in a frontal application (like the lean-to or projecting portico) only, and says in realising from Sixth Century BC Samian *naiskos* models - The well known ones from the Vathy Museum (See Wesenberg (1996, Fig.12) showing the dentil detail going around the corner - that in those corner dentils "wohnt kein konstruktiver Sinn mehr inne" (1957, p.61, Beil.84.1-2). Gruben therefore accepts the decorative application of the detail when occurring in peripteral form, in the sense that it merely copies the original structural intentions of the detail. Wesenberg (1996, p.14) also implies this contradiction. The dentil-like ornament on a frieze plaque from a temple from Piano del Tesoro in Tuscany of 575-55 BC also underlines the early purely decorative use of the dentil pattern. The house models specifically indicate that in the founding of the stone Ionic Order, details which earlier had a structural function may have been incorporated as a decorative scheme in the Order. In such a way a sense of structural credibility was achieved, even though the detail would not stand up to intense structural scrutiny. In terms of the Ionic stone capital, one may think that similar portions of elements which had structural functions, eg the timber bracket (Fig.4.1.2a-b, 4.1.5), were used as motif in the final execution.

The canonical Ionic epistyle, divided into three horizontal and rabbeted sections, is seen by some as a structural solution sprouting from a typically Ionic, lighter approach to timber structure, and by others as an

aesthetic solution. The reasoning behind the latter idea is that the Ionic Order, being proportionally more slender than the Doric, would look cumbersome with a deep beam. A subdivided beam is indeed more slender and 'graceful', and it remains a fictional expression skewed towards the aesthetic rather than the structural. Whilst we have witnessed the birth of the Ionic epistyle as a simple flat timber and then flat stone element before the introduction of the fascia, the origins of the later aesthetic solution for the epistyle holds no mysteries. The existence of the subdivided beam in the trilithon ensemble was common in Cyprus and the Levant - where the subdivisions may have referred to earlier traditions in timberwork before the founding of the Ionic Order - and was available as a reference form for a designer looking for a more fitting solution for the (supposedly 'cumbersome') epistyle design existing thus far. It is important that this reference to timber work was not used in the earliest Ionic stone examples (Just as the detail was not used at the early door surrounds in the Cyclades (See Gruben, 1991, p.64), underscoring the idea that the focus was not on copying a timber precursor. Just as the rabbeted fascia was a later introduction to a preliminary form, the Ionic capital design shows similar evolutionary design refinements to the preliminary achieved form..

From the elements discussed briefly one sees that the complete stone Ionic Order was no sudden invention, that it shows a definite evolution from timber, albeit a very slow one, that pre-existing timber form vocabularies were employed to express a convincing and balanced idea of construction, rather than being merely replicas of a presumed timber architecture, and that refinement and augmentation of existing form remained common in the Ionic Order ensemble. From the Iria III example (as well as many others, most notably the First Dipteral Heraion) one also sees that the Ionic architects were comfortable with mixing their construction media, as well as their decoration media.

The most important aspect to be learned from looking at the evolution from timber to stone architecture remains the specifics of the retention of a tectonic approach originated in timber. The nature of the morphology of the Ionic Order, clearly demonstrated in the abstract tectonic expression, serves as base for asserting that we are witnessing a purposeful act of expressing the *tektonike* present in timber architecture, not in the sense of a slavish replica of it but, through *techne*, as a mimetic, re-inventive act of revealment of a specific past experience. Just as articulation and the use of colour was used in Hellenic architecture to clearly indicate the morphology and syntax of the tectonic whole of the Orders, so the choice of elements and element-form played their part. It rings true when Porphyrios says "..in any encounter with building it is not the particular exigencies of construction, but rather the ontological experience of tectonics that is brought to bear." (1981, p.37). It must be quite clear that there is no superficial application of snippets of details here and there, that it is not a case of art applied to base structure, but that these details are integrated within a structural semantic that hangs together as believable structural totality, expressing a certain and specific understanding of structural behaviour and sense. (The idea of the structurally honest use of material is very much an Arts and Crafts and Modernist concept). From the prevalence of use of polychromy on timber and stone architecture, and from the use of decorative schemes, we see that the Hellenic architect was comfortable with

the idea of adding to the medium of stone aspects which go beyond the utilitarianly mechanistic and that which solely expresses the mechanical qualities of the material, and also of functionally overlaying form or structure with colour and decorative schemes (just as prevalent in Levantine architecture). This was however done in the strictest of guidelines, and added to this one may expect, with the logical, common-sense use of material, even though there was prevalence in the mixed use of materials in Geometric and Archaic architecture.

Allow a short footnote on the existence of a timber Doric Order: Whilst there are many more Modern defined subscriptions for the existence of the Doric order (starting W. Chambers in his *Treatise on Civil Architecture* of 1795, Dörpfeld's (1935) fervent testimony to the existence of a timber Doric Order at the peripteral Olympian Heraion (subscribed to by Gruben (1961)), and many others, most notably Beyers (1972) who subscribes to a timber-framed-construction-type Order), there are many points of criticism against the existence of a timber Doric Order which are listed briefly: The existence of a timber Doric entablature does not follow *mutatis mutandis* from the existence of round timber columns; There would be an irreconcilable confrontation between the transverse beams and any *pronaos/opisthodomos* beams which lie perpendicular to the transverse beams (In a prostyle or in antis situation there would similarly have had to be short beams from the front epistyle up to a transverse beam situated somewhere in the area between the two gable ends and the naos or cella walls; The structural absurdity of an early Doric plate shaped capital turned from timber; Wesenberg's (1996, p.11, Fig.10) explanation from Vitruvius (Book IV, 2, 2) of the evolution of the triglyph and metope design on the wall where the beam ends passed through. This detail is mirrored in sorts by the continuous marble beam end capping at the Naxian *Oikos* as in Ohnesorg's (1993a, Tafel 3; See Gruben (1996, Fig.9)) reconstruction drawings. It seems possible to state that, in terms of the evolution of the Doric frieze, the structurally plausible pre-forms might have been used in a bigger decorative scheme, which may be called a place- and time-related tectonic fiction (In the words of Howe (IDO)), used exactly for their suggestive effect in creating an illusion of a specific structural plausibility and tectonic presence. One may deduct there was no imperative for the existence of a pre-monumental phase Doric entablature for the coming into being of the stone Doric Order, and that the Doric Order may indeed be a composite design, but as the Ionic, one that evolved over a period rather than of necessity being a sudden invention as Howe proposed, for various reasons not mentioned here.

If one accepts that the Orders were not xylolithic conversions of a total timber system, and that the process involved a degree of poetic license, it excludes the idea of the stone Orders purely expressing the 'logic' of timber construction. One rather agrees with Howe who states that the Doric Order "looks like structure because the formal vocabulary derives from the forms of structure, that is, that forms derived from practical considerations will also appeal to vision" (IDO, p.51), but that in practice the structural delusion is very thin and does not withstand close scrutiny. The details make the building appear as if it has tectonic presence, but are not applied according to the dictates of structural design. This implies the individual details are part of an 'iconically styled' decorative scheme rather than a skeuomorphic or replicating stylism (an exact copy of

a pre-existing model of other material) It is in this novel way then that Hellenic architects used imitation: Imitation of existing convention, of tradition, however inventively transformed and integrated within a new whole.

It seems more feasible to acknowledge that it might be correct to think in terms of Hellenic design solutions that would have been possible, logical, and sustainable over time: Rather than to have a fixated idea of the pre-form of the Orders having to be from timber completely, one must accept that aspects of structural work were concluded in differing architectural solutions (already shown up by the use of stone bases and stone capitals Preion-1 and -2, similar to the *scenario* at the Kition Kathari temple in Cyprus of *ca* 1200 BC), and get away from the idea that any employed preceding timber detailing should have been exactly like the eventual stone product, completely ignoring the demands posed by material on the act of design. In terms of this way of thinking, one may also see that the idea of round timber columns and timber entablatures could be two separate design entities not bound together through logical inevitability or predestination, and that the evolution of the Ionic column with capital may have had a complex history which includes experimentation in various materials as well as infusion of original ideas from the parallel tradition of votive stands.

To relate the above to the design of the Ionic capital, whilst the existence of voluted timber brackets on timber columns with bulging top are possible, one should not exclude the architectural role that was played by metal, ie as appliqué volutes (Fig.4.1.2b) that could have protruded past the bracket bottom (Fig.4.1.23), and as protection (*cum* decoration) of the column top (Fig.4.1.8, 4.1.10), as well as by stone, ie as possible loose disk element between bracket and column (Fig.4.1.11 and 4.1.13), the last mentioned as possible vehicle for rudimentary attainment of the integrated, but still separated, stone canalis-on-disk form (Fig.4.1.20) somewhat earlier than the votive colonnette from Sangri (Fig.4.1.22). This last aspect is addressed in the following section.

4.2.3.3 Architectural forebears of the oldest stone Ionic capitals?

If the idea of a fully formed timber Ionic Order is not so probable, and the idea of a fully formed Ionic capital with it, one must think of alternative architectural form which could have inspired the earliest stone standard Ionic capital from Sangri. The development, contemporaneous to the Sangri capital, of two different types of stone capitals for rectangular timber columns with volutes hanging past the bottom bearing plane, namely Preion-1 (Fig.4.1.16) from Delos and Preion-2 from Didyma (Fig.4.1.15), presupposes the hypothetical existence of similar architectural capitals for round timber columns (Fig.4.1.19). Such a capital form is present, only in slightly different clothing, in the Aeolicising capital Iver-3 from Delos. This capital could have existed similarly but with an 'Ionic' (ie horizontal) decoration, exactly like the decoration on the bracket part of the Aeginetan sphinx column capital (Ion-22; Fig.4.1.26). Such a stone capital would have been wider than the timber column, obviating the need for a stone echinus. Whilst one would argue that the specific shape

of such a capital shows that it most probably evolved as stone shape, one also realises that stone form of this era closely resembled that of timber form, and also that this shape could have existed as timber form with hanging volutes extending below the bearing surface of the bracket form similar to Gruben's timber model. Whilst such a timber capital would have been a very shortlived (with its U-shaped bottom sections falling splitting of) and unstructural (the volutes being unnecessary in practical timber construction) specimen, one should not force a Modernist, Brutalist or Functionalist approach on the event, and allow for the fact that it could have been made for its aesthetic appeal, a position also borne out in later capital design.

From the earlier analyses of capital form it is shown that in early capitals their width closely follow that of the column diameter. Because of this we may permit the addition of a more practical concern: The forming of a bulging top for a column would be wasting a great deal of a trunk's wood and be a very vulnerable part of the column (breakage and rot), and together argue against the capital being narrower than the column top, but rather of similar size or slightly larger, protecting the column top in a similar way as the stone capitals Preion-1 and -2 on rectangular columns. From the above analysis we may state that the idea of Gruben's (1996, Fig.5.4) voluted timber bracket capital remains, but more probably in slightly wider format which takes away the imperative for the big column bulge (See Fig.4.1.6b). Also from the early examples of stone capitals on rectangular timber columns (Preion-1 and -2) it is clear that this voluted, timber bracket capital's decoration and form would have been very rudimentary and searching, rather than being a very plastic timber pre-form.

If one argues that the Sangri capital (Ion-1) referred to an earlier timber architecture (namely Gruben's (1996) argument for the Dionysos III temple), such reference would imply a strong tradition of doing which would definitely have been applied in the soon following Naxian *Oikos*. This 'tradition' of course refers to the echinus being a physical part of the column. We earlier (Chapter 4.1.1.6-7) saw that in all the capitals following Ion-1, the echinus is actually part of the capital and is expressed strongly as a seperate disk form, therefore not following such a 'tradition'. This alone must lead one to think that the Sangri colonnette may have had another type-model. One could argue that, if the single, monolithically combined shape of canalis and disk in standard form had been reached by now, it would surely have been utilised at Sangri. The only way such a monolithically combined capital form could have existed before the Sangri colonnette, would be if last did not refer to such a form, but to another. The shape of the Sangri colonnette's column shaft may be seen as referring to a column with torus capital. This column form was a well-known emerging form of the time, but one which may just as soon have referred to a separate stone torus element rather than a timber column bulge (Fig.4.1.11; Fig.4.1.20). The shape of the Sangri colonnette's capital, read as statue plinth with volute decoration on a column with torus, could just as well have referred to the type of architectural stone capitals for rectangular columns which were in existence at that time (Preion-1 and -2 [Fig.4.1.16; 4.1.15]), which through widening was transformed into the voluted statue plinth form-type and placed on the torus column form. This stone plinth/capital-column ensemble (Fig.4.1.18), a slight variation from the Kirchhoff *scenario* which focussed on the clay pre-forms, is a seperate form proposal not necessarily dependant on the by now

a century old Dionysos III's timber architectural capital and column argued above, or on a previously existing, but improbable, monolithically combined stone canalis-disk shape. Its existence is also not precluded by the non-use in the Sangri colonnette of its separated form.

The hypothetical capital form argued here, namely the loose stone bracket capital with 'Ionic' decoration, placed on a seperate cylindrical stone disk on top of a round timber column (Fig.4.1.20) does not exist in the archaeological record before the coming into being of the Sangri capital. The closest analogy we have to the loose disk of this hypothetical type are the torus shaped resting places on top of the round beading of the Samian kettle stand replicas (eg Col-9) which were carefully articulated as being seperate, the stone canalis of the capital (Ion-22) of the Naxian sphinx column (Fig.4.1.26), placed (in effect visually slotted but physically monolithically fixed) as seperate element on top of a domed echinus, as well as the timber bracket loosely placed on the stone torus 'capital' [cyma] of the First Dipteral Heraion (Fig.4.1.23). Whilst one must accede that the canalis-disk ensemble's first physical combination may have been with capitals Ion-4, -24 and -9, it is proposed that the interim bi-partite capital type (Fig.4.1.20) and the composite decorated canalis-disk type (Fig.4.1.23) be considered in the realm of possibilities, and that further research be directed to this possibility.

There are a few anomalies to be dealt with regarding the various arguments related to the history of the capital's evolution.

The first is that one cannot help but wonder what the imperative could have been to introduce a seperate disk form as formal connection between the timber column and a stone canalis capital of the same width than the column (Fig.4.1.19)? We must remember that the metal cyma decorations (Fig.4.1.7) and torus shaped column necking bands (Fig.4.1.8) were available as form reference at an early stage, and when used together with the stone capital would have stuck past the capital sides, providing a visual clue as to a new form possibility. Whilst a design imperative is a possibility, one should keep in mind that, even though the very first stone Ionic capitals were not narrower than their column diameters, there is a degree of possibility that such narrow stone canalis forms existed,which would have required some protection for the column top, either in metal or stone.

A second anomaly that is still not resolved, is the relatively late evolution of the Ionic capital decoration which would refer to 3-dimensional metalwork applique. All the earliest capitals (Preion-1 and -2, Ion-1, Ion-4, Ion-24, Iver-3 and -4) are flat and have inscribed decorations only, where the ability to create more 3-dimensional decoration did exist. In geometric and Early Archaic architecture the metal applique canalis and volute would be fixed to the side of the timber canalis. In the abscence of real examples, one refers to the Archaic (Apparently before 500-475 BC) example from Olympia by Herrmann (1996, p.124, and his Note 7) where he also refers to Kienast's theory for the First Dipteral Heraion), the later Classical examples, Kienasts's

(1999, p.145, Note 24) three examples and, obliquely, to the metalwork on column neckings, echini and acroteria. One of the examples stressed in this study would be the corner volute situation for the timber corner brackets mentioned before. However, if this tradition was so prevalent, wouldn't it have dominated detailing of the first stone capital types?

The third anomaly is the existence of plastic, 3-dimensional volute detailing on Levantine-Aeolic capitals before the earliest stone Ionic examples. Whilst we expect that the *intaglio* decoration on timber capitals was also the form initiator there, further research will have to show why this type dominated as form reference for the earliest stone Ionic and Aeolicising capitals in the face of other, more sophisticated solutions?

The fourth anomaly to be resolved is the late use of the leaf cyma decoration for the stone echinus, in the light of its existence as bronze applique in Early Archaic timber votive columns at Samos and Olympia mentioned before, as well as in the Cypriot lamp holders found in the *temenos* at Samos Gruben's (1993, p.102; 1996, p.65) argument, that the Seventh Century BC movement towards finding the Ionic capital shape was driven by decorative need rather than tectonic necessity, a movement in which there was still no linear direction, cannot explain the lack of leaf cyma decoration of the echinus up till *ca* 575-70 BC, roughly 30 years after the first standard Ionic stone capital (even though Gruben uses this lack of linearity to explain the many variations in design solutions in the Sixth Cent BC). If the Seventh Century BC bronze leaf decoration cyma was an archaistic re-employment of Mycenaean motif (Similar to Wesenberg's (1996, p.6-7) argument for Doric capital being re-employment of Mycenaen-Minoan standard capital form in the Doric pre-monumental types, before their monumentalisation and formalisation in stone), surely the first stone Ionic capitals would have followed this trend. More research on the stated anomaly is required.

In the following section we account for the 'Aeolic' timber tradition, which poses the possibility of the existence of an 'Aeolic' prototype for the Ionic standard capital.

4.2.3.4 The Hellenic-Aeolic form-type as pre-form for elements of the Ionic capital?

The idea that the Aeolic capital is a proto-Ionic capital (and therefore also named as such) has been held by many, for example Braun-Vogelstein (1920), Dinsmoor (1973[1927]), Fletcher (1975[1896]), Lehmann-Haupt (1913), Puchstein (1887), Von Luschan (1912), Boardman *et al* (In The art and architecture of Ancient Greece. 1967 [1966], p.16), Scully (1979, p.52) Theodorescu (LCIG, Plate 3) and Akurgal (1985 [1969], p.17), amongst others. Wesenberg (1996, p.9) rejects the idea. Even though the non-Hellenic Aeolic capital - this term is used *in lieu* of "proto-Aeolic" - has a long history before the existence of the Ionic, it has been stated by Betancourt (TES) that neither the pre-Ionic, Levantine-Aeolic capital type (the *Timorah*), nor its Hellenic-Aeolic derivative [His identification] can be seen as a prototype of the Ionic standard capital in its total form. In terms of the stone Hellenic-Aeolic capital, this last assertion is borne out by the author's

chronological ordering of the Ionic and Hellenic-Aeolic capitals in Chapter 2, but does not necessarily hold true for any timber or metal pre-forms of the Hellenic-Aeolic capital, and does not say anything of any transference of ideas in consecutive evolutionary stages of the Aeolic and Ionic capital, especially in terms of the evolution of the Aeolicising-Ionic capitals. In terms of volute design, there were certain similarities between the types as regards line/beading detail and volute section type. In the early Parian Aeolicising experiments the bolster palmette and abacus is included into the Ionic repertoire, and in some Delian examples the Ionic volute form is slowly Aeolicised. This influencing occurs sooner than that described by Betancourt (TES, p.131, 213). Also, the now closer dating of the Aeolicising capitals have facilitated pinpointing those capitals that have in the past often been seen as pre-forms for the Ionic capital due to their 'timber-like' appearance and a presumed earlier date of manufacture (See discussion in Chapter 4.1.1.9 above).

Nevertheless, to Betancourt (TES, p.130) it was a cut and dried case that the Ionic and Aeolic styles developed concurrently and in close relationship, and with the similarities occurring in the Hellenic era, rather than them having a similar, preceding foreign prototype. He (TES, p.126, 130) sees the design link between the two as the leaf crown, acting as connector between volutes and column. Bammer (1968-71, Fig.8) even showed how both types can be seen as two leaf crowns placed on top of each other. Both these stated relationships, which would make it appear as if the designers of both spheres were initially working with the same theme in coming to a form solution but had to go in diverging directions in terms of these solutions due to the differing formal content of the design problems inherent to the two systems, are now under threat.

Analysis of the earliest Hellenic-Aeolic capitals, and as may be deducted from the latest interpretations of by Kuhn (1986) and Wiegartz (1994) - both confirming earlier ideas put by Wesenberg (1971) - show that the leaf crown does not feature at all as connector between capital and column, but rather as column base. There is one example of the use of the leaf crown cyma (alone) as interior capital, and a still unresolved case of a possible - and late - leaf echinus at Aegae. There is still the bronze plaque with Aeolic leaf cyma capital from Samos (Akurgal, 1962, Plate102.27) to connect with these, but on the whole the connection evolved from a rectangular connection to a cylindrical piece, and then finally into a torus band, with the initial volute binding element - as Old Smyrna - shifting downwards towards the capital bottom. Kuhn (1986, p.51) also lucidly shows how the double-volute (also named double-cup) motif, bound back to back, explains the underlying structure of the vertically ascending Aeolic volute motif, as against the single, horisontal double-volute motif of the Ionic capital. This origin for the Aeolic volute form may be clearly seen in the bottom separation of the volute channels of the Old Smyrna capital, a type which was made redundant by the next which became the *marquee* of the type, namely that with purely vertically rising volute stems, but which type that was reclaimed in later Athenian Aeolicising capitals (like Iver-9).

Apart from these important realisations, it is now also clear that the Aeolic capital has a relationship with timber architecture, specifically regarding rectangular columns or pilasters, as the connection of the earliest

and later round capitals show (already earlier realised by Wesenberg (1971, p.83)). Although it is easily thought that the (stone) Levantine-Aeolic capital must be the predecessor, Kuhn (1986, p.56) argues rightly that the splaying bottom volute stems of the Old Smyrna capital (coupled with the use of the anthemion between the diverging volutes), and the lack of the typical triangle which is the hallmark of the foreign capitals, show that there was definitely a seperate type development in Hellas. In earlier timber architecture the capital shape would have have been a 2-dimensional metalwork adorment, fixed to the column, a shape copied by the later Aeolic stone type with torus moulding. Whilst Clarke (1886, Fig.4) at a very early stage showed a drawing of Geometric architecture with a bracket capital with vertically splayed volutes and anthemion palmette carved into the timber (Fig.4.1.1), a form which is very conceivable, Kuhn (1986, p.58) realises that the Old Smyrna capital alone must have had a different source, namely a more fully formed timber predecessor in Seventh Century Hellenic architecture. Whilst such an assertion has far-reaching implications for our parallel search for the antecedents of the Ionic capital, one must mention that from the chronology it appears as if the so-called Aeolicising capital Iver-4 from Delos, as votive column capital, points to the possibility of an Aeolic stone and timber hybrid architecture before the monumentalisation process in stone at Old Smyrna. It may be stated that, from the present evidence, the Hellenic-Aeolic stone capital was not a prototype for the Ionic capital (Likewise all the "proto-Aeolic" or rather Levantine-Aeolic examples as total capital forms), that some form components of the Levantine-Aeolic capital may be traced to both Aeolic and Ionic capitals, that the use of the leaf cyma in Ionic design was not dependant on the Aeolic development, and that only a limited amount of cross-lending took place during both the Aeolic and Ionic capital's parallel process of development.

From these conclusions there is less of a case to look for antecedents for the Ionic capital in preceding non-Hellenic architecture, but any search for the sources and/or stimulation and of transference of singular details should of necessity follow the same approach as stipulated earlier.

4.3 CHAPTER CONCLUSION

From the first portion of this chapter there has emerged a rich description of the process of form design during the founding process of the Ionic capital, and in particular its early stage. Analysis of the earliest stone non-standard Ionic capitals on rectangular columns shows the emergence of two capital types and also introduces the possibility of an interim capital form between the earlier supposed voluted timber bracket type and the earliest stone standard Ionic capitals. A new reading of the datum for the Ionic standard capital, the Sangri colonnette, provides new insight into its tectonic make-up which, apart from its possible architectural heritage, indicates a design influence deriving from the dictates of votive column design. The Naxian achievement of coming to the clearly articulated standard capital form is explored, and greater clarity is brought to the early relationship between Ionic and Aeolic capital design from current knowledge. The regional design traits of the Cycladic and east Ionian capitals are traced over time, and the

analysis of the design problem of the corner capital brings us closer to an answer regarding the evolution of the type, including the design of the capitals of the First Dipteral Heraion of Samos, as well as the possible evolution towards the corner solution in stone in east Ionia and Delos. The achieved typological analysis is employed in the dating of capitals, from which there is an indication of a date for the previously undated Ion-68 from Paros. The second portion of the chapter provides a clear framework within which a founding history of the Ionic capital can be constructed, and in which certain previous ideas are eliminated and others put forward for further exploration and verification. The possibility of the occurrence of interim experiments, executed in combinations of timber, stone and metal, in an evolution from the timber capital of the Dionysos temple III at Iria towards the Ionic standard capital form at Sangri, Naxos, is suggested for further corraboration . The idea of the Aeolic stone capital as prototype for the Ionic standard form is refuted by the chronology and the analysis of form, but there is greater insight in those instances of cross-pollination that did exist.

The representativeness of the data ensures that the description adds to our current understanding and that a solid foundation is laid for further interpretation, whilst the explicit exposure of the problematic areas and deficiencies, in either data or method, works congruently within the stated goal to provide a *corpus* which is open ended rather than finite, and which is meant to be a tool for exploration. In isolating those remaining aspects necessary for the construction of a probable founding narrative for the early Ionic capital, there is more clarity to add to and take from the seminal works before.