

Building in stone in Ancient Egypt, part 1: Columns and pillars

Introduction

One of the reasons that we are blessed with so many remains of the AE civilization is, that the AE's so extensively built in stone. For this they had both the means (lots of stone all around - unlike e.g. the Mesopotamians) and the inclination (their explicit desire to build for eternity). They mastered the technical difficulties of their material to an admirable degree, but more important, they put together a set of architectural elements that formed the first coherent "order of architecture" in history, comparable with the later Doric and Ionic orders of Greek architecture¹.

Therefore, a study of AE cultural history can hardly ignore the origins and further development of this magnificent craft. We will do so in several Selected Topics, of which this is the first one.

Apart from "conventional" building in stone, the AE's also cut tombs, sanctuaries and even complete temples out of the rock. Rockcut architecture does not seem to have independent roots, so we will treat it as part of stone architecture.

I have included references to pictures in a few books, as follows:

Aldred = Cyril Aldred: Egyptian art in the days of the Pharaohs (1980)

L&H = Kurt Lange & Max Hirmer: Ägypten (1967)

Stierlin = Henry Stierlin: De bouwkunst van de farao's (1992)

StS = W. Stevenson Smith: The art and architecture of ancient Egypt, 1958

Table of contents

1. Classifications	3
1.1. On outward appearances only.....	3
1.2. On structural grounds	3
1.3. On stylistic grounds.....	4
1.4. Conclusion	4
2. Pillars	5
3. Columns	6
3.1. The upper parts	6
3.1.1. The architrave	6
3.1.2. The abacus	7
3.1.3. The capital	7
3.2. The shaft	8
3.3. The base.....	9
3.4. Some special column types	10
3.4.1. MK 1: the lotus column.....	10
3.4.2. MK 2: the octagonal column, and its derivative: the polygonal	10
3.4.3. The tent pole column.....	10
3.4.4. The Hathor column.....	11
4. Pilasters and half-columns.....	11
5. The origin and meaning of vegetable column shapes.....	12
6. Afterthoughts.....	14
7. Tables of examples	16
7.1. Pillars	16
7.2. Columns	17
7.2.1. Columns, papyrus	17
7.2.2. Columns, other vegetable types	19
7.2.3. Columns, non-vegetable figurative types	20
7.2.4. Columns, geometric types	20
7.3. Bases	21
References.....	22
Notes.....	22

1. Classifications

The variety of columns and pillars that was used in AE is tremendous. A natural desire comes over us to arrange them in some sort of classification. To devise a system for this that is both unambiguous and sensible is not easy though. But in trying, we will learn a lot....

1.1. On outward appearances only

In his book "Die Tempel Ägyptens" (1992) Dieter Arnold makes the following distinction between columns and pillars: pillars are perpendicular supports, in cross-section square, rectangular or octagonal. All other types of supports are columns².

An advantage of this approach is, that it is completely unambiguous, and easy to apply. A disadvantage is, that it just focuses on outward appearances.

1.2. On structural grounds

An alternative distinction can be made, when we look at the way in which the element is integrated into the overall structure of the building. We will then see, that some have bases and abaci³, whereas others have not. We might call the ones that do possess these elements "columns", and the ones that do not "pillars".

An interesting element in this is, that it points to a difference in historic background: supports with bases and abaci stem from building in wood, whereas pillars are an original feature of stone architecture.

If one wants to use a wooden column on a sandy or clay floor, one will find out soon enough that a base (preferably of stone) to secure its footing is indispensable. But also at the top of the column, where it supports the architrave, structural tensions will occur. This will particularly be the case where two architraves meet right above a column. One may want to use a separate bloc of somewhat harder material (perhaps crosscut wood) to protect the column against this friction – especially if one has adorned the upper part of the column with an elaborate capital. This separate bloc between the column and the architrave is the abacus.

However, when one builds in stone, the stone floor will make the base superfluous. Further, the harder material of the support itself, and the availability of it in larger dimensions (which will reduce the effect of friction), will do the same with the abacus. One may therefore henceforth use stone pillars without either element. Nevertheless the AE's decided to retain them, whether for esthetical or conservative reasons. The same has happened in Greece and Mesopotamia, but also in China and India. It is generally referred to as mimetic ornamentation⁴.

The drawback of a distinction based on historic roots is, that in time its true background tends to be forgotten. That is why we encounter a lot of intermediate forms that would be hard to catalogue, such as square pillars with bases. Especially during the Ptolemaic period, some very complex supports were made.

The lower half might have a square cross-section, with a cylindrical upper half. On top of this can be a composite capital, that itself is topped by a Hathor capital (for an example from Philae, see L&H 269).

1.3. On stylistic grounds

If we look at AE architecture in general, we can see an all pervasive duality, right at the core of its very character. On the one hand we have the monolithic, the colossal and the heavy, and on the other hand the articulated, the elegant and the playful.

The massive pylon is enlivened by sloping sides, torus moldings⁵ and a concave cornice. Colossal statues may have a subtle smile and elegantly manicured toe nails. And heavy stone building blocs can be adorned by wonderfully gay reliefs⁶. We might try to classify the supports in AE architecture based on this distinction. We could call the monolithic supports “pillars”, and the articulate ones “columns”. But then we would be sure to face some tough problems, especially from the reign of Ramesses II onwards. Should we identify the heavy columns of the great hypostyle hall in Karnak as part of the colossal, or of the elegant tendency?

1.4. Conclusion

In the end, no type of distinction will be both completely unambiguous and thoroughly meaningful. Using a mix of all three examined methods (and preferring unambiguousness over meaning) I propose the following classification.

Pillars: all supports with square or rectangular cross-section.

- This category consists of forms that find their origin in stone architecture.
- They will lack both capitals and abaci, and mostly bases too.
- Their forms are primarily designed to impress.

Columns: all supports with other types of cross-section. Their highly differentiated forms can be derived from nature, but also from non-vegetable figurative shapes, and from purely geometric forms.

- This category will chiefly consist of forms that originate in older ways of building, especially in wood⁷.
- They will have both bases and abaci, and mostly capitals too.
- They are primarily designed to embellish.

This definition comes very close to the one of Arnold, cited above. The main difference is, that I group the octagonals among the columns, instead of the pillars. There seem to be two good reasons for this re-classifying:

- As we will see, wooden octagonal columns have been found, suggesting that the stone octagonal column has its roots in wooden architecture (see section 3.4.2).
- Octagonal columns tend to have both a base and an abacus, which is also consistent with such an ancestry.

We will now look at some details of both columns and pillars. In doing so, we will regularly make comparisons with ancient Greek (AG) architecture. The reasons for this are the following:

- Both AE and AG stone architecture in part still hold on to pre-stone (wooden) roots. Although this is very interesting to see, one should be cautious not to assume a completely identical evolution. A careful comparison of the two may help prevent this.
- There may have been some influences between AE and AG architecture. No conclusions can be drawn however, without a thorough analysis.
- There is much more literature available on AG than on AE architecture. AG architectural elements may therefore be more familiar to some, which makes an explicit comparison more helpful to understand the AE forms, while it may at the same time help prevent unwarranted generalizations.

2. Pillars

It is often thought that in AE simple, straightforward pillars have only been used rarely in buildings. Two examples are usually given as exceptions to the rule: the Valley Temple of Chefred, Gizeh, and the Osireion, at Abydos.

The Tables of Examples at the end of this article list a few more though, the most beautiful of which are undoubtedly the pillars in the White Chapel of Sesostri I. But the use of pillars as the *sole* type of support in a building was indeed rather uncommon. More often, they were used in combination with columns.

Fairly often, pillars with square or rectangular cross-section are used in tombs, either built in stone, or carved out of the rock. As all surfaces in tombs they were used for functional decoration. Their aptitude to carry texts and illustrations may well have contributed to their relative popularity in tombs.

Pillars, as original stone supports, lack both capitals and abaci. There is one instance though, where pillars are crowned by an element in the form of a concave cornice. This is in the festival temple of Amenhotep II, now located between the 9th and 10th pylon of the Amun temple of Karnak.

The concave cornice is a prominent feature of AE stone architecture⁸. It seems therefore completely fitting that precisely this element is used to adorn pillars, that are also stone originals. But although the effect is quite pleasing, it has never been used again. Maybe, because the result is so unobtrusive: if it weren't for Arnold's remark⁹, I may never have noticed it. And unobtrusiveness never was a cherished goal for AE kings.

Because the concave cornice is a stone original, it would be pointless to assign the label of either "capital" or "abacus" to it. Those elements after all originate in *wooden* architecture.

Pillars in rock-cut tombs fairly often are fitted with a low base. Since both this base and the pillar itself are carved from the rock, the base can not contribute significantly to the pillar's stability – which is the original purpose of a base. This is then a pure case of mimetic ornamentation.

On the façades of buildings, pillars have been used relatively often in combination with statues of the god Osiris. These co-called Osirian pillars are a feature of

chiefly NK¹⁰ royal mortuary architecture (in particular the mortuary temples on the west bank at Thebes).

The Osirian pillars are unlike the classical Caryatids or Atlantes. Those are pillars in the form of a person: the person is carrying the roof (or balcony) on its head. The Osirian statues just stand in front of the pillars, and do not carry anything except their own – considerable – weight.

A variant of the Osirian pillar is first used by Achnaton (18th dynasty), in a temple at Karnak. Here, the statue is unambiguously that of the king himself: there is no sign of the Osirian dress. (Not really surprising, since Achnaton later banned Osiris together with all other gods in favor of the Aton.) In concord with this is the assumption that this temple in Karnak – that was later completely dismantled by Horemheb, who used it as infilling in his 9th pylon at Karnak – was not a mortuary temple, but a temple for the Aton.

Later, we encounter the same type of pillar in the great pillared hall of the Abu Simbel temple of Ramesses II (19th dynasty) – and this was not a mortuary temple either.

In the Hathor sanctuary in the complex of queen Hatsjepsut's mortuary temple at Deir el Bahri (18th dynasty), some of the pillars are adorned with a pilaster in the form of a Hathor cult symbol. In the smaller temple at Abu Simbel – the temple for queen Nefertari – a similar type of pillar is present. Here, the Hathor pilaster takes the place of the statue of the king on the pillars of the greater temple. (See also section 3.4.4 "The Hathor column").

3. Columns

3.1. The upper parts

In AE, the three uppermost elements of a columned support structure are the architrave, the abacus and the capital (going down).

3.1.1. The architrave

Originally, the architraves were parallel wooden beams, spanning the open spaces between the columns in one direction. On top of these came, at right angles with the architraves, the beams or planks that formed the ceiling of the hall. On the outside of the building, the architraves were topped by a concave cornice, that thereby acted as a frame for the roof-timbers.

The AG's inserted a frieze between the architrave and the cornice. Especially in the Doric order, the cornice rather abruptly protrudes out of the structure, but in some more refined works it approaches the AE's concave cornice – although the Greeks used a series of recessed moldings instead of the single curve of the AE's.

The replacement of wood by stone did not change this lay-out. For flat ceilings, whether they are supported by columns or pillars, architraves – either of wood or stone – remained a necessity until the advent of reinforced concrete¹¹.

In rock-cut graves and temples, part of the rock ceiling was often left uncut as “pseudo-architraves”. This may be another example of mimetic ornamentation, but it would also seem conceivable that the AE’s thought that this would actually strengthen the stability of the construction.

3.1.2. The abacus

As we have already seen (in section 1.2), the AE’s used a simple square abacus as the constructional element between architrave and column.

By using a relatively small abacus on top of a wide capital, the impression is sometimes created that the architraves float above the columns. It is however not at all certain that this was the objective for this arrangement. In the case of very wide capitals, it also has structural advantages to use a smaller abacus¹².

In the mortuary temple of Seti I in Abydos, in the columned hall in the back, the plain cylindrical columns are crowned by a “pseudo abacus”. The upper half of the top drum of the columns is left square, so as to resemble an abacus (Stierlin 144-145).

In the Ptolemaic and Roman periods, the abaci can be very pronounced, to the point where they are taller than the capital, e.g. on the kiosk of Trajan at Philae. Sometimes, this elongated abacus can take the shape of a so called Hathor capital on top of an “ordinary” capital – in this period a composite capital. Examples of this can be found at the mammisi of the Isis temple at Philae (Stierlin 209). On the Roman mammisi of the Hathor temple at Dendera, a further “derivative” of this can be found. Above the composite capitals, the tall abacus is decorated with a figure of the god Bes¹³ (Stierlin 215). Although this form is probably inspired by the use of the Hathor capital above a composite capital, there is no reason to call this a “Bes capital”. The Hathor capital has an independent history of its own (see section 3.4.4 “The Hathor column”), unlike this late offshoot with the Bes figure. If we need a name for it, “Bes abacus” would be more appropriate.

In AG architecture, the abacus is considered part of the capital. In the Doric order it has an almost oppressive dominance¹⁴, whereas in the Ionic order it is reduced to an almost invisible thin upper ridge on the top of the capital. In the Corinthian, the balance between abacus and capital is more harmonious.

3.1.3. The capital

In architecture that does not use the arch or vault, the structural element between a column and the upper structure may be as simple of form as the abacus¹⁵. Since AE architecture invariably uses the abacus for this purpose, there is no structural role left for the capital. This is evident in the forms of AE capitals: they are not designed in any way to transfer the load from the architrave to the column. They are either too narrow (bud-shaped capitals) or too wide (capitals in the shape of an open chalice). In some instances the capital is even completely absent, whereas an abacus is always there: see the Tables of Examples at the end of this article. The capital then is just a decorative device. Functionally speaking, it is the uppermost part of the shaft. That is why capitals are only

used insofar as they fit in with the design of the rest of the shaft. Shafts in vegetable form will carry capitals in the form of leaves, buds or flowers. Tent pole columns and Hathor columns also have a capital that is part of the overall design of the column. On the other hand, plain geometric shafts (cylindrical, octagonal or polygonal) will just carry an abacus, not a capital¹⁶.

The capital forms that do occur in stone are the following.

Vegetable forms:

- Papyrus flowers:
 - open flower,
 - multiple buds,
 - single bud.
- Lotus flowers:
 - multiple buds.
- Palm tree:
 - outspread palm leaves.
- Composite:
 - all of the above, combined in endless variation

Non-vegetable forms:

- Tent pole knobs (see 3.4.3)
- and Hathor capitals (see 3.4.4).

3.2. The shaft

The shafts of AE columns come in even more shapes than the capitals. They may have a form derived from nature (lotus, papyrus, reed or palm tree), a figurative form (tent pole or Hathor cult symbol) or an abstract form (cylindrical, octagonal or polygonal). The natural forms may be single (e.g. one papyrus stalk) or multiple (e.g. a bundle of lotus stems). The vertical shape is always straight (either perpendicular, or tapering) but it may have a curved (constricted) lower part.

On the shafts of vegetable columns, the part just below the capital is often adorned with stripes or bands that bring the idea to mind of a piece of rope or cloth used to tie the different stalks together. Occasionally, this feature is extended to the lower part of the capital itself. On the reed bundle columns in the Step Pyramid complex at Saqqara (that do not have a capital), the top part of the shaft is rounded, suggesting a wide band of cloth, or maybe clay being smeared over the upper part of the bundle, to keep the individual reeds together. (As we will see later (section 5), this feature can not be taken as proof that the stone columns are replicas of actual vegetable precursors.)

Remarkably enough, it is also used on palm tree columns. Since the "original" of this type would have consisted of a single tree trunk (whether of an actual palm tree or not: see below), the use of bands like this seems pointless. Unless it means, that the leaves that appear to form the capital were once real leaves, joined to the shaft with rope, concealing the upper part of the shaft. This would have necessitated a regular renewal with fresh leaves, but it would not have been unfeasible.

Natural papyrus stalks have a cross-section of a blunt (rounded) triangular form. This form can regularly be found on papyrus columns. The first time that this feature was used, was in pilasters at the Step Pyramid complex of Zoser (3rd dynasty) at Saqqara (see L&H 12).

Papyrus columns usually have a constriction at the lower end of the shaft. Above this, the shaft bulges out a little, and then slightly tapers going up. The bulging lower part is decorated with pointed leaves – either engraved, or painted.

In time, most of these defining elements of the papyrus shaft faded out. Both the triangular cross-section and the tapering became ever fainter. The major change in papyrus columns occurred in the 19th dynasty. Until then, bundle forms with multiple buds were mostly used – such as in the Luxor temple, in the court and hypostyle of Amenhotep III. In concord with a general loss of refinement in favor of simpler and bulkier lines, a new design was now developed. Both the shaft and the capital consisted of just one cylindrical element. Arnold refers to this type as “abgedreht”¹⁷ (turned off). And indeed, one could compare this with the product of a lathe. The constriction around the base, with the pointed leaves pattern, was retained however.

In the Ptolemaic period, as a result of further simplification, the shaft would sometimes become completely perpendicular. But even then, the pointed leaves remained, beautifully carved in intricate patterns - reminiscent of the mummy bandages from the same period.

3.3. The base

Until the Ptolemaic period, the bases were of the simplest design: they were strictly functional. For columns, bases were always cylindrical. (As we have seen, pillars could have a rectangular or square base). The sides were either perpendicular – sometimes with a conical upper part – or curved (in a single convex curve, semicircular or less¹⁸). For some examples, see the following figures:

- with perpendicular sides,
- with curved sides,
- with conical upper part.

Since many column shafts have later been reused in other buildings, we are now often left with just the bases. On these we can sometimes see a butterfly shaped clamp of wood or metal, formerly concealed by the shaft, joining two parts of the base.

On the site of the mortuary temple of Mentuhotep II (11th dynasty) at Deir el Bahri, we find a curious “double base”. It is a rather flat, tile-like stone. The lower part is square, and on top of this comes a cylindrical upper part. I would assume though, that a building such as this once had a complete stone floor. The lower part of the “double bases” probably was level with the other floor tiles, so that the cylindrical upper part served as a (simple) base.

The first “true” double base appears during the Ptolemaic period. In the Horus temple of Edfu, the “under base” (in AG architecture referred to as the plinth) is square, and rather low. On top of it comes a more substantial cylindrical base. Later on, at Philae, a more balanced double base is used, in which the two ele-

ments are roughly the same height. This looks very modern, which is not surprising since it is still fairly common, e.g. in churches.

Whatever influence AE may have had on AG architecture, the use of a plinth seems to be an influence the other way around. The AE's however never used the complex moldings that the Greeks added to their bases.

3.4. Some special column types

3.4.1. MK 1: the lotus column

At first, to distinguish between lotus and papyrus columns - with multiple bud capitals - is not that easy. In lotus capitals, the buds are more separated than in papyrus capitals. Between the large buds, smaller ones are inserted. The stalks of these smaller buds only run a short distance down the shaft of the column. The shafts of the lotus columns are straight and tapering (going up), without the constriction at the bottom end of the papyrus ones.

In stone they are rather rare: their use is confined to some private tombs of the MK.

3.4.2. MK 2: the octagonal column, and its derivative: the polygonal

During the MK, slender octagonal columns were very much in fashion. They are derived from chamfered (faceted) wooden beams¹⁹.

At the site of the 12th dynasty town of Kahun, "the columns [of private houses] were generally of wood on round stone bases. The lower part of an octagonal wooden column was actually found"²⁰.

At the site of the mortuary temple of Mentuhotep II (11th dynasty) at Deir el Bahri, now next to queen Hatshepsut's temple, pieces of quite a few stone octagonals can still be found, together with their bases. They were used in combination with abaci²¹.

In the Luxor museum, part of another octagonal stone column is on display from Karnak. This one is even older: it carries the name of Intef II (also 11th dynasty)²².

The polygonal columns of the NK (with 16, 20 or 24 sides) are further developments on the same root: a further elaboration by increasing the number of facets. They are often referred to as "proto-Doric", but this is without grounds. The Doric columns of AG have a well documented development of their own. Besides, the Doric columns are fluted, not faceted.

3.4.3. The tent pole column

Another special column type is the so called tent pole column. As far as we know, this was used only once in stone: in the festival temple of Tutmosis III (18th dynasty), at the back of the Amun temple at Karnak. The shafts of these are straight, but they are tapering fractionally, going *down*²³. The capitals are in the form of tent pole knobs.

This column is well-known from many depictions of light pavilions and booths, made of wood and matting. Tutmosis III, the general-king who conducted dozens of military campaigns abroad, must have spent a considerable portion of his life in this kind of structures. It may therefore have been for sentimental reasons, that he chose to use this particular form in his festival temple.

3.4.4. The Hathor column

The so called Hathor capital consists of two parts. The lower part is a head, with two (more rarely four) opposing faces of the goddess Hathor. The upper part resembles the upper part of the so-called "naos-sistrum"²⁴. In fact, the Hathor capital as such bears a close resemblance to the naos-sistrum. Like the other, "common" sistrum, it was sacred to Hathor.

According to Bonnet, the Hathor column is derived from the "Kultsymbol" of Hathor. This cult symbol was a cylindrical column, topped by a two-faced head of the goddess Hathor²⁵. Pyr. 1096 says: "I am Bat with her two faces". According to Bonnet, "Bat" means "female Ba", and is the name of this cult symbol, that would then be the Ba ("soul") of Hathor.

Ingenious as this may be, I strongly doubt its validity. There are no further indications for a female word for Ba anywhere. The now commonly accepted existence of a separate goddess named Bat seems quite plausible to me.

Hathor capitals were only used on plain, cylindrical columns. This is even true for the already mentioned use of the Hathor capital as a sort of oversized abacus (see 3.1.2). This consistency reinforces the suggestion that Hathor columns are indeed stone replica's of the Hathor cult symbol.

As already mentioned in the chapter about pillars, in the rock-cut temple for queen Nefertari at Abu Simbel the pillars in the pillared hall have on their front side a pilaster in the form of a Hathor cult symbol. The shafts of these are not really round, though: they are flat, with rounded edges.

In the Hathor sanctuary of Hatsjepsut's mortuary temple at Deir el Bahri, some pillars also carry a Hathor pilaster. On these, the "pole" beneath the Hathor face is correctly semicircular in cross-section.

In the course of time, the awareness of the roots of the Hathor column slowly fades away. In the British Museum is a limestone lattice window from the Ptolemaic period²⁶ in the form of a series of Hathor columns. The columns are octagonal (out of misplaced archaism?) instead of cylindrical.

4. Pilasters and half-columns

The Step Pyramid complex of Zoser (3rd dynasty) at Saqqara is of the utmost importance for the study of the development of AE stone architecture. It is in this complex, that we find the earliest examples of stone columns. (The earliest pillars seem to be those in the Valley temple of Chefren, 4th dynasty). Interestingly enough though, the Step Pyramid complex does not have one single free-standing column. Apparently, one did not yet feel confident enough with respect

to the strength and stability of the new building material. Instead, we see only half-columns and pilasters.

Pilasters are ornaments in the shape of a column, roughly semicircular in cross-section, added to the surface of a wall to relieve it. They may have a "mixed ancestry": on the one hand derived from wooden columns, on the other from paneled brick architecture (cf. with the surrounding wall of the same complex).

Half-columns are columns that are supported on one side with a short adjoining wall. Pilasters only share the shape with columns, half-columns share at least partially also their function as supports. Since both are equally important for the history of the AE column, I have included them both in the Tables of Examples at the end of this article.

That the 3rd dynasty was still a period of experimentation is also apparent in the unique wealth of different forms that is employed. We can find here many that later do not recur. In the group of the half-columns, we see shafts in the form of a bundle of reeds. And in the pilasters, we see a capital in the form of drooping leaves, more reminiscent of AG than of AE (see Fig 21).

Further, all pilasters are shown without either a base²⁷ or an abacus. In real stone columns this lay-out will never be used again.

5. The origin and meaning of vegetable column shapes

When we see columns with a base and an abacus, we should realize that the origin of this array lies in non-stone building - more precisely: in building in wood. This brings us however on the verge of a common fallacy. Stone columns in the form of e.g. a bundle of papyrus stalks are - in all likelihood - reproductions of earlier examples in wood. So when we look further back in time, maybe, if we strain our eyes hard enough, we can even see the *grandfather* of the stone column: an actual bundle of papyrus stalks.

Now this would surely be a mirage: papyrus stalks just do not make descent columns. You can build a raft or a small boat from them (if you really want to even a fairly large boat, as Thor Heyerdahl has demonstrated), but one of the features of papyrus that make this possible is its pliability. Pliable columns are not very useful.

The problem with reeds is just the opposite. When dried, reeds are no longer pliable, but they get increasingly brittle: not really a good choice for a column either.

Then there is the lotus stem. Whereas papyrus at least is strong enough to carry itself, a lotus stem needs the water to keep itself upright. Only mermaids can have use for columns of actual lotus stems.

A last type of vegetable column is the palm shaped column. Palm trunks would meet all the requirements of a good column: strong enough, and tall enough. So palm tree columns in stone *might* be faithful reproductions of wooden precursors. Just the form of the capital, with its out-spreading leaves, must be imaginary: if one would use an actual palm tree as column, one would surely cut off its leaves.

My guess would be though, that one would *not* use palm trunks as columns. These trees, that grow so slowly, and yield so precious fruits, were always held

in the highest regard. The many depictions in tombs of the deceased drinking water from a pond in the shade of a palm tree, aptly illustrate this. I just don't see the AE's cutting them down as building material - at least not in numbers. A more plausible interpretation of the use of palm shaped columns therefore seems to be, the evocation (first in wood, later also in stone) of a form that one admired so much in nature. And as I mentioned before, it may even have been so that actual palm leaves were lashed to the wooden columns, to further enhance the likeness.

Now that we are convinced that stone columns with a vegetable shape were not stone replica's of actual vegetable columns from a distant past, the question that still remains is, *why* were these shapes used?

Let us start with lotus and papyrus columns. A first option would be, that these were used because they are the heraldic plants of Upper and Lower Egypt²⁸. In Karnak, two granite pillars of Tutmosis III stand in front of the bark shrine. On the northern one, papyrus flowers are shown, and on the southern one lotus flowers. But apart from this isolated instance, columns in the shape of papyrus and lotus were never employed for orientational purposes: neither in temples, nor elsewhere²⁹.

If we now further restrict ourselves to the papyrus columns, we can observe - as already mentioned - that it often shows a characteristic sheathing of pointed leaves near the base, around the swelling of the stem. They were sometimes engraved in the column, sometimes only painted³⁰. (See also L&H 238: the court of Ramesses II at Luxor). These details considerably enhance the vegetable suggestion of the columns. When they all still had their original painting intact, a gloomy hall with its crowded columns would seem like a giant papyrus swamp.

One of the myths of the AE's describes the creation of the earth as the emergence of a first hillock out of the primeval waters. This was the Primeval Hill. Right on this spot, the creator-God found for the first time room to stand. Therefore, this was also the site for the first shrine to be built: in a papyrus swamp, still surrounded by water.

Later, when the water slowly withdrew and more and more ground surfaced, the temple was gradually extended. Since these later appearing grounds were lying just a little below the level of the first emerging land, the rest of the temple floors was lying slightly lower. So, when moving from the entrance of the temple towards the shrine, one would slowly rise.

This is exactly the case in every AE temple. Each next part of the temple is a little higher. Going from the first court to the second, and from the second court to the hypostyle, we will always rise one or two steps. In AE texts, going towards the god is always described as "going up to the god".

An alternative explanation would however be entirely possible. For the AE's, as for most peoples, the sky was the real domain of the gods. This means that high grounds in general are closer to the gods than lower grounds, so high grounds are holier. And therefore more suitable for building a temple³¹.

However, in the way of thinking of the AE's, alternatives like these did not rule each other out. They were more often seen as complementary.

The surrounding walls of temple complexes, built of mud bricks, display a remarkable common characteristic: the bricks are laid in "wavy layers". Around the

first hill, the primeval waters slowly subsided. The wavy brick layers of the outer temenos wall may be an evocation of this.

Still, there is no hard proof that these wavy layers were actually meant to represent a water surface: it *may* have been just a decorative devise.

If we put all these elements together - the wavy brick layers, the myth, the steps in the temple, and the columns resembling a papyrus forest – we end up with a meaningful picture. We should however remember that it is nothing more than this: a meaningful picture. The evidence, no matter how evocative, is circumstantial.

And even if we *would* have discovered the true *meaning* of the papyrus column in temple architecture, then we still can't be entirely sure about its *purpose*. It might be to enhance the effectiveness of the temple as a magical building, by tapping into the energy of the Primeval Hill. But maybe it was just meant to commemorate the sacred moment of Creation.

For lotus, reeds and palm tree columns, no such hypothesis is forthcoming. This means that the use of those forms most likely should be attributed to an admiration for nature - an admiration that is more than evident in AE.

6. Afterthoughts

In the course of our little survey of columns and pillars, we have come across several unique or particularly renewing features in specifically *royal* architecture. This is the full list:

- The tent pole columns in the festival temple of Tutmosis III: unique (in stone).
- The pillars with concave cornice in the festival temple of Amenhotep II: unique.
- The Osirian pillars in royal mortuary temples: a new element, confined to royal architecture.
- The royal pillars of Achnaton and Ramesses II: also a new element, also confined to royal architecture.

These examples seem to reveal a consistent pattern: that of NK kings who, in temples that were closely linked to their *person*³², gave a *personal* creative input.

Another matter is that of possible influencing – in either direction – between AE and AG architectural forms.

The double base (or base with plinth) is a clear-cut case of influencing from AG towards AE. The double base only emerges³³ in AE during the Ptolemaic period, when the presence of Greeks is well documented. The plinth has at that time been in use in AG for centuries.

Not so clear is the case for assumed influences the other way around. The polygonal columns of AE are often referred to as “proto-Doric”. In AE however the direct ancestor of this column seems to be the stone octagonal column of the MK, whereas in AG the simple cylindrical wooden column seems to be the immediate forebear. Although fluted, the AG column retains an essentially cylindrical shape.

The AE polygonals seem to be designed with the explicit idea to produce “more facets than eight”, whereas the AG fluted columns appear a conscious attempt to add a play of light and shade to the column.

A tentative diagram of the respective development stages can then be drawn as follows:

AE	elaborating the form			→	transition to stone (and further elaborating of the form)	
	tree trunk	→	octagonal wooden column	→	octagonal stone column	→ polygonal stone column
AG	tree trunk	→	cylindrical wooden column	→	cylindrical stone column	→ fluted stone column
	transition to stone					→

In this case, as in others (the cornice, the abacus), it seems to be much more a question of parallel development than of influencing.

7. Tables of examples

Not taken into account are:

- columns or pillars depicted in two dimensional representations,
- and columns in wood (with one exception: see the Lotus columns).

7.1. Pillars

Added (construc-tional) elements	Examples
None	<ul style="list-style-type: none"> ▪ Valley temple of Chefren (4th dyn.), Gizeh: Aldred 62, L&H 32-33, StS 102 (*) ▪ White Chapel of Sesostris I (12th dyn.): Aldred 119, StS 168 (*) ▪ Mortuary temple of Hatsjepsut (18th dyn.), Deir el Bahri, 1st and 2nd level halls: L&H 127, StS 232 ▪ Festival temple of Tutmosis III (18th dyn), Karnak: L&H 136 ▪ Osireion, Abydos (19th dyn.): (*) ▪ Tombs: <ul style="list-style-type: none"> ▪ Meresanch III (4th dyn.), Gizeh: StS 105 ▪ Mereruka (6th dyn.), Saqqara: L&H 75 ▪ Seti I (19th dyn.), Valley of the Kings: L&H XLVI
Concave cornice	<ul style="list-style-type: none"> ▪ Festival temple of Amenhotep II (18th dyn.), between the 9th and 10th pylon, Karnak: (*)
Square or rectan-gular base	<ul style="list-style-type: none"> ▪ Tomb of Sirenpowet II (12th dyn.), Assuan: L&H 101 ▪ Mortuary temple of Seti I (19th dyn.), Abydos, gallery at the back of the 2nd open court: L&H 222 ▪ Temple for queen Nefertari (19th dyn.), Abu Simbel: Stierlin 163
Osirian statue	<ul style="list-style-type: none"> ▪ Mortuary temple of Hatsjepsut (18th dyn.), Deir el Bahri, 3rd level: (*) ▪ Mortuary temple of Ramesses II (Ramesseum, 19th dyn.): Aldred 145, L&H 246, StS 361 ▪ Mortuary temple of Ramesses III (20th dyn.), Medinet Habu: StS 364 ▪ Mortuary temple of Ramesses III (20th dyn.), Karnak: (*)

Pillars (continued)

Added (construc-tional) elements	Examples
Royal statue	<ul style="list-style-type: none"> ▪ Aton temple of Achnaton (18th dyn.), Karnak: L&H 180-182 ▪ Rock temple of Ramesses II (19th dyn.), Abu Simbel, pillared hall: L&H 250
Hathor pilaster	<ul style="list-style-type: none"> ▪ Hathor sanctuary in the mortuary temple of Hatshepsut (18th dyn.), Deir el Bahri: (*) ▪ Temple for queen Nefertari (19th dyn.), Abu Simbel: Stierlin 163 (Note the rectangular cross-section of the pillars: almost twice as deep as wide)

7.2. Columns

General:

- All (true and semi-) columns have a base and an abacus.
- Pilasters have neither.

7.2.1. Columns, papyrus

A. With open flower capital

Shaft type	Shaft silhouette	Examples
Single stalk, triangular cross-section	Tapers going up, with constriction at the bottom	<ul style="list-style-type: none"> ▪ Step Pyramid complex of Zoser (3rd dyn.) at Saqqara, North Palace (pilasters): L&H 12
Single stalk, cylindrical cross-section	Perpendicular, with just a slight constriction at the bottom	<ul style="list-style-type: none"> ▪ Luxor: the Colonnade of Tutankhamun / Horemheb(18th dyn): (*) ▪ Karnak: the middle nave of the great hypostyle, Seti I / Ramesses II (19th dyn.): (*) ▪ Mortuary temple of Ramesses II (19th dyn.) at Western Thebes (Ramesseum), middle nave of the hypostyle: L&H 245
Single stalk, cylindrical cross-section	Tapers going up, with constriction at the bottom	<ul style="list-style-type: none"> ▪ Karnak: kiosk of Taharqa (25th dyn): (*)

B. With multiple buds capital

Shaft type	Shaft silhouette	Examples
Bundle of stalks, triangular cross-sections	Tapers going up, with constriction at the bottom	<ul style="list-style-type: none"> ▪ Mortuary temple of Niuserre (5th dynasty), Abusir: L&H 44 ▪ Karnak, hypostyle of Tutmosis III (18th dyn.): L&H 138
Bundle of stalks, cylindrical cross-sections	Tapers going up, with constriction at the bottom	<ul style="list-style-type: none"> ▪ Luxor: the chapel of Hatsjepsut (18th dyn.): (*) ▪ Luxor: the open court and the hypostyle of Amenhotep III (18th dyn.): Aldred 168, L&H 164 + 165, StS 272, (*)

C. With single bud capital

Shaft type	Shaft silhouette	Examples
Single stalk, cylindrical cross-section	Tapers going up, with constriction at the bottom. Both the tapering and the constriction in varying degrees, but mostly very mild.	<ul style="list-style-type: none"> ▪ Mortuary temple of Seti I (19th dyn.), Abydos: L&H 223 ▪ Karnak: the great hypostyle, Seti I / Ramesses II: L&H 231, StS 365, (*) ▪ Luxor: the court of Ramesses II (19th dyn.) L&H 236 + 238, (*) ▪ Mortuary temple of Ramesses II (19th dyn.), (Ramesseum), the hypostyle hall: L&H 244 ▪ Mortuary temple of Ramesses III (20th dyn.), Medinet Habu: (*) ▪ Temple of Chonsu, Karnak (20th dyn.): (*)

7.2.2. Columns, other vegetable types

Lotus

Shaft type	Shaft silhouette	Capital	Examples
Bundle of stalks	Tapers going up	Multiple buds	<ul style="list-style-type: none"> ▪ Tomb Beni Hassan 17 (Cheti, 11th dyn.): L&H 84 ▪ Tomb Beni Hassan 18 (11th dyn.) StS 173 ▪ Wooden model of a house, from the tomb of Meket-Re (11th dyn.)³⁴: StS 166

Reeds

Shaft type	Shaft silhouette	Capital	Examples
Bundle of reeds	Tapers going up	None	<ul style="list-style-type: none"> ▪ Step Pyramid complex of Zoser (3rd dyn.) at Saqqara, entrance hall (half-columns): L&H 10-11, StS 60

Palm tree

Shaft silhouette	Capital	Examples
Tapers going up	Palm leaves	<ul style="list-style-type: none"> ▪ Mortuary temple of Sahure (5th dyn.), Abusir: L&H 44
Perpendicular	Palm leaves	<ul style="list-style-type: none"> ▪ Horus temple of Edfu (Ptolemaic): L&H 265, (*)

Composite

Shaft silhouette	Capital	Examples
Perpendicular, with just a slight constriction at the bottom	Composite	<ul style="list-style-type: none"> ▪ Horus temple of Edfu (Ptolemaic): L&H 266
Perpendicular	Composite	<ul style="list-style-type: none"> ▪ Horus temple of Edfu (Ptolemaic): L&H 263-264 ▪ Isis temple of Philae (Ptolemaic), western colonnade: StS 411 ▪ Isis temple of Philae (Ptolemaic): (*) ▪ Kiosk of Trajan, Philae (Roman): (*)

7.2.3. Columns, non-vegetable figurative types

Tent pole columns

Shaft silhouette	Capital	Examples
Tapers going down (slightly)	Tent pole knobs	<ul style="list-style-type: none"> ▪ Festival temple of Tutmosis III (18th dyn), Karnak: L&H 137, (*)

Hathor columns

Type	Shaft	Capital	Examples
True Hathor column	Cylindrical	Hathor capital, 2 faces	<ul style="list-style-type: none"> ▪ Hathor shrine, mortuary temple of Hatsjepsut (18th dyn): (*)
True Hathor column	Cylindrical	Hathor capital, 4 faces	<ul style="list-style-type: none"> ▪ Hathor temple of Dendera (Ptolemaic): Stierlin 194-195
Hathor pilaster	Cylindrical	Hathor capital, 1 face	<ul style="list-style-type: none"> ▪ Hathor shrine, mortuary temple of Hatsjepsut (18th dyn): (*)
Hathor pilaster	Flat, with rounded edges	Hathor capital, 1 face	<ul style="list-style-type: none"> ▪ Temple for Nefertari (19th dyn.), Abu Simbel: Stierlin 163
False Hathor column	Cylindrical	Hathor abacus with 4 faces (on composite capital)	<ul style="list-style-type: none"> ▪ Isis temple of Philae (Ptolemaic), mammisi: L&H 268-269, Stierlin 205 + 209

7.2.4. Columns, geometric types

Fluted

Shaft silhouette	Capital	Examples
Tapers going up	None	<ul style="list-style-type: none"> ▪ Step Pyramid complex (3rd dyn.), "south building" (pilasters): StS 57 ▪ Step Pyramid complex, "small temple" (half-columns): L&H 13 ▪ Step Pyramid complex, mortuary temple (half-columns): (*)
Tapers going up	Drooping leaves	<ul style="list-style-type: none"> ▪ Step Pyramid complex, western shrines (pilasters): (*)

Octagonal

Shaft silhouette	Capital	Examples
Perpendicular	None	<ul style="list-style-type: none"> ▪ Fragment of a column of Intef II (11th dyn.) in the Luxor Museum ▪ Mortuary temple of Mentuhotep II (11th dyn.) (*)

Polygonal

Shaft silhouette	Capital	Examples
Perpendicular	None	<ul style="list-style-type: none"> ▪ Beni Hassan, tomb of Amenemhat (12th dyn.) StS 172 ▪ Mortuary temple of Hatsjepsut (18th dyn.), Deir el Bahri, the portico of the Anubis sanctuary: StS 238, Aldred 150, L&H 127 (*) ▪ Mortuary temple of Hatsjepsut (18th dyn.), 3rd level (*)

Plain cylindrical

Shaft silhouette	Capital	Examples
Perpendicular	None (with "pseudo-abacus")	<ul style="list-style-type: none"> ▪ Mortuary temple of Seti I (19th dyn.), Abydos: Stierlin 144-145

7.3. Bases

Type	Sides	Examples
Single	Perpendicular	<ul style="list-style-type: none"> ▪ Karnak, the great hypostyle: (*)
Single	With convex curving	<ul style="list-style-type: none"> ▪ Luxor, court of Amenhotep III (18th dyn.): (*) ▪ Mortuary temple of Seti I (19th dyn.) at Abydos: L&H 223 ▪ Mortuary temple of Ramesses III (20th dyn.), Medinet Habu: (*) ▪ Karnak, temple of Chons (20th dyn.): (*)

Bases (Continued)

Type	Sides	Examples
Single	With conical upper part	▪ Karnak, kiosk of Taharqa (25th dyn.): (*)
Double, with low plinth	Perpendicular	▪ Hathor temple of Dendera (Ptolemaic), Hathor columns in the 1st hypostyle: Stierlin 194
Double, with low plinth	With conical upper part	▪ Horus temple of Edfu (Ptolemaic): Stierlin 186-187, Stierlin 192-193
Double, with high plinth	With conical upper part	▪ Isis temple of Philae (Ptolemaic): Stierlin 209

References

- Aldred = Cyril Aldred: Egyptian art in the days of the Pharaohs (1980)
 Arnold = Dieter Arnold: Die Tempel Ägyptens, 1992
 Bonnet = Hans Bonnet: Reallexikon der ägyptische Religionsgeschichte, 1952
 L&H = Kurt Lange & Max Hirmer: Ägypten (1967)
 Stierlin = Henry Stierlin: De bouwkunst van de farao's (1992)
 StS = W. Stevenson Smith: The art and architecture of ancient Egypt, 1958

Notes

¹ In AG (Ancient Greek) architecture, the term "order" has a distinctly positive meaning. In AE art and architecture, one usually speaks of "canon". At best, this has a neutral connotation. There seems to be little difference between the two, though.

² Arnold 62-63.

³ The abacus is a flat, square bloc that can be placed between a column and the architrave that it supports.

⁴ Something similar can be observed in the first "automobiles" (with a steam engine): these looked very much like carriages without horses.

⁵ In Egyptology, it is customary to speak of torus molding, although this is not really accurate. A torus molding is a molding with a semicircular cross-section, but the molding in question in AE usually has a profile of three-quarters of a circle. This type should be called a roll or bowtell molding.

⁶ The colossal tendency in AE is older than building in stone. The giant mud brick mastaba's of the ED prove this. This is unlike the megalithic architecture of Europe, that seems to be purely an exponent of building in stone.

⁷ This does however not mean, that wooden columns were entirely supplanted by ones of stone. On the contrary: wooden columns remained in use during the whole of the pharaonic period, especially in private houses.

⁸ It has often been suggested that this form has its origin in building techniques involving lighter materials, such as reeds and wattle-and-daub, but physical evidence is not forthcoming.

⁹ Arnold 62.

¹⁰ According to Arnold, the first examples are from the period of Sesostri I (Arnold 62).

¹¹ There is ample proof that the AE's knew how to construct true vaults. A well known illustration of this are the storehouses of the Ramesseum, but this is but one example. See e.g. the first (lowest) level of Hatsjepsut's mortuary temple at Deir el Bahri, where also a barrel vault (with semicircular arch) is used. Shrines were fairly often executed with a barrel vault, also several shrines in Hatsjepsut's mortuary temple, the seven shrines of the mortuary temple of Seti I at Abydos, and the shrine of Amenirdis I at Medinet Habu. But for whatever reason, the use of vaults always remained limited.

¹² To prevent uneven load on the capital, its upper plane would have to follow the line of the abacus and the architrave extremely closely. On a large number of wide capitals, this would be almost impossible to achieve. Furthermore, the rather thin extremities of open flower capitals or composite capitals could not carry much weight. Small, compact abaci solve all of this in a very convenient way.

¹³ A point to note is, that both the Hathor face and the Bes face are exceptions in the AE art canon in the sense of being depicted frontally. This makes these faces more suitable for this kind of use than others.

¹⁴ The combination of the architrave and the very wide, heavy abaci sometimes resembles a series of corbel vaults.

¹⁵ The transition of arch or vault to a column is a transition of curved lines at right angles to perpendicular lines along a cylindrical shape. This produces wedge-like capitals with flat or concave planes that are clearly visible from below: an excellent setting for intricate sculpture. Romanesque architecture has used its potential to the fullest.

¹⁶ Reed bundle columns (used in the Step Pyramid complex at Saqqara) have no capitals either – presumably because one did not know how to effectively stylize reed plumes. Also in the Step Pyramid complex, fluted pilasters can be found that *do* carry a capital: a type that consists of drooping leaves, later not to be used again. But maybe these pilasters are representing a plant-form after all: some vegetable stems have an appearance like this. In that case, they would not be an exception to the rule just mentioned, about capitals only being used as functional part of the total design of a column.

¹⁷ Arnold 64.

¹⁸ Somewhat like a big Dutch cheese, but less tasty.

¹⁹ Arnold 63.

²⁰ W.St. Smith, 173.

²¹ Arnold 62.

²² The main importance of this interesting piece is, that it carries the name of Amun-Re. It is the oldest known artifact linking this god to Karnak.

²³ Arnold 64.

²⁴ Bonnet 717, with drawing.

²⁵ Bonnet 278, with drawing.

²⁶ Photograph in the German edition of Breasted's History of Egypt (1936, Fig. 324).

²⁷ On some photographs it may seem as if they do have a socle, but on closer inspection this is just part of a sort of "pavement" that the complete building, including the pilasters, is standing on.

²⁸ The most frequent use of lotus and papyrus for this purpose is in the Sma Tawy ("Uniting the Two Lands") representation.

²⁹ A further indication that papyrus and lotus were not (*could* not be) used for their heraldic symbolism lies in the simple fact, that lotus columns were (in stone) quite scarce.

³⁰ In the Ptolemaic period, the same pattern of engraved petals is used on straight perpendicular columns with composite capitals.

³¹ Two cultures for which this principle evidently meant a lot were those of Mesopotamia and of Central America. Both build artificial hills to carry their temples up to the sky. In

this sense, the Central American “pyramids” are much closer related to the Babylonian “ziggurats” than to the AE pyramids.

³² The temples with the royal pillars of Achnaton and Ramesses II may seem at first sight to be more closely related to the worship of gods, than to the persons of the respective kings themselves. It seems to me though that both Achnaton and Ramesses II belonged to the minority of AE kings with rather extreme views on the divine nature of kingship.

³³ As we have seen (3.4.2), for the seeming double base of Mentuhotep II at Deir el Bahri, there is another explanation.

³⁴ I have included this example for two reasons: the number of available examples of lotus columns in stone is very limited, and this model nicely shows lotus and papyrus columns side by side.