



Granaries, Treasuries, and the Doric Temple

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Abstract. One of the twentieth century theories about the Doric temple of ancient Greece with colonnades all around claims that it represents the image of a communal granary in memory of the agricultural origins of Greek society. This theory was refuted by the specialists dealing with ancient Greek architecture, but this paper discusses partly new material and presents an argument that can support it. First it is shown that the core structure of Doric temples (without the outer colonnades) was so similar to Doric treasure houses that it could have been developed from them by providing more space for storing and exhibiting votive offerings and treasures. Then a case from the Iberian Peninsula is discussed where elements resembling Doric triglyphs are provided with ventilation slits and used with granaries that belong to an old tradition that may go back to prehistoric origins in central or northern Europe. This unique ethnographic parallel and its historical circumstances strongly suggest that the usually neglected alternative ancient theory mentioned by Vitruvius, which said that the triglyphs are ‘images of windows’, was intended to refer to ventilation slits that were provided in the studs of half-timbered walls of granaries. This ancient theory therefore supports the interpretation that the Doric frieze represents the wall of a granary, while the outer form of the temple can be seen as the monumental image of a granary of a large community.

Keywords: Greek Temple, Doric Frieze, Vitruvius, Triglyph, Granaries.

1 Granaries, Treasuries, and the Doric Temple

Ancient Greek temple architecture is usually thought to derive from dwelling or palace architecture, but according to a theory of Carl Boetticher, a nineteenth century German architect and scholar, there were two kinds of Greek temples, cult temples and treasury temples, and the famous Parthenon of Athens would have belonged to the treasury temples (Boetticher 1863) [1]. This theory was discussed for a while and eventually abandoned, but more than a hundred years later it was revived by scholars who also stressed that the central act of the cult in ancient Greece was actually the offering celebrated at an altar under the open sky (Roux 1984, Hollinshead 1999) [2][3].

The use of temples as treasure houses, together with the fact that also separate and normally smaller treasure houses were built at larger cult places of ancient Greece, suggests that simple treasure houses might have been used as temples and then been further developed into temples of the larger kind. Such a development seems likely if we compare, for example, the treasure house of the Athenians in Delphi (Figure 1) with the

reconstructed first temple of Aphaia on Aegina, which is dated to about 570 B.C., one of the oldest stone temples of Greece (Schwandner 1985) [4]. The temple is almost twice as large than the treasure house, mainly because it had a closed back room added (15% broader and 60% longer: 7.75 x 15.50 m and 6.60 x 9.70 m.), and it had four columns in the porch, whereas the treasure house had a porch with only two columns between two protruding walls. Both also had a Doric frieze with metopes and triglyphs, so that from the outside they probably looked almost the same. As the temple was also broader, there was space in its interior for two two-tiered colonnades, each consisting of two lower columns that carried a lengthwise beam and two upper columns that continued the lower ones to support the roof.

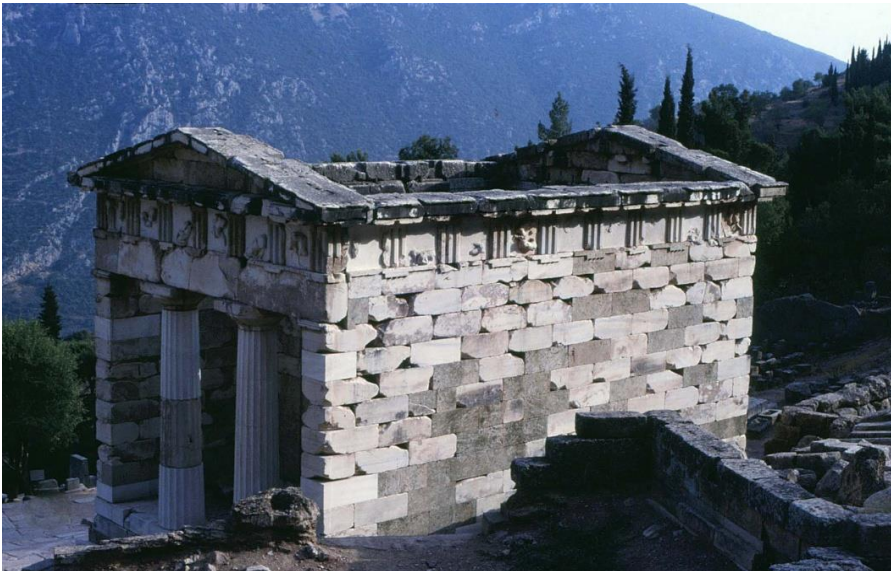


Fig. 1. Treasure house of the Athenians at Delphi. Note the triglyphs as vertical elements of the frieze under eaves. *Photo G. Domenig, 1986.*

It seems therefore that the differences between treasure houses and small treasury temples without columns all around can be understood as being caused by the need of more storage space and the wish to subdivide the interior space to distinguish between different areas for different kinds of offerings and treasures. This could explain the larger dimensions, the separation of a back room as a place that must not be entered (*adyton*), and also the two-tiered colonnades, if we think that they were originally used to form galleries as additional storage space. It seems that later there were usually no galleries in temples, but sometimes galleries do have left traces, as for instance in the temple of Zeus in Olympia and in the younger temple of Aphaia on Aegina, which is seen in **Figures 2 and 3.**

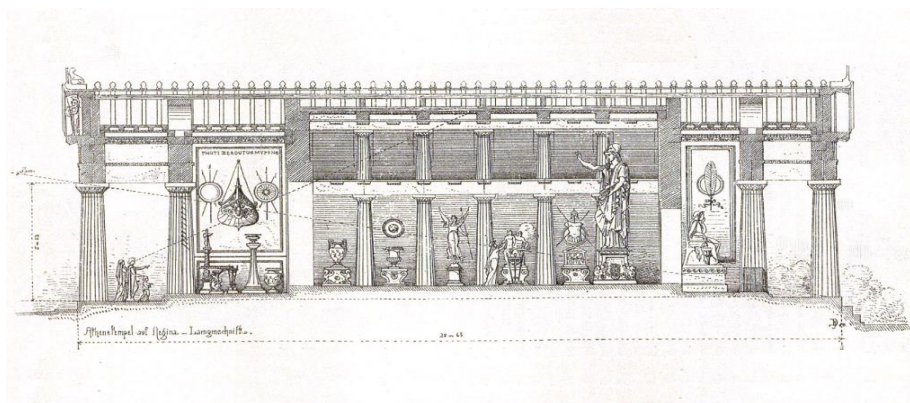


Fig. 2. Longitudinal section of the second temple of Aphaia on Aegina with an image of the deity and votive offerings. Drawing by Josef Durm (Durm 1881, p. 145) [5].



Fig. 3. Ruin of the second temple of Aphaia on Aegina. Photo G. Domenig, 1986.

As far as the walled inner part of Greek temples, the naos or cella, is concerned, we can therefore think that it has been developed from a treasure house in the sense of a store-house for votive offerings and other treasures, and that the specific function of temples was that they could be opened to visitors who wished to see the votive offerings and the image of the worshipped deity that was exposed in there (Figure 2). The problem is that we do not know why such temples were then usually built with outer colonnades on all four sides.

One possible answer to this question has already been given by two architects who at different times, in 1964 and in 1990, suggested that the Greek temple with columns all around represents the image of a large granary raised on piles.

Seen from a European perspective, this idea seems far-fetched and therefore did not find much response from the side of the specialists dealing with ancient Greek architecture. But from a more general viewpoint we must consider that granaries were versatile structures. In Europe, granaries were often also used for sleeping and storing valuables and adapted to such new functions (Schier 1966: 343-366) [6] and, in Indonesia, they could be further developed to complex dwelling houses in which offerings were presented as well as to religious meeting houses, such as the Toba Batak village *sopo* (Domenig 2014: index) [7]. In Japan, the style of the famous Ise shrines has clearly been developed from granary architecture and has also been used for treasure houses in the two main precincts at Ise (**Figure 4**).



Fig. 4. The main hall of the Inner Shrine (Naikū) at Ise, Japan. To the left the roof of one of two treasure houses is seen. *Photo G. Domenig, 2004.*

I propose therefore to reconsider here the possibility that the Doric temple of ancient Greece could indeed have been developed from the prototype of a granary and therefore partly display features of granary architecture.

But why think of granaries as prototypes of temples? Hans Soeder, the first of the two architects who suggested that Greek temples represent the image of a large granary raised on piles, noticed that in Georgia of eastern Europe, the provisions for the community's life until the next harvest was kept in granaries built on high posts and that also the corn for the coming sowing season was kept there. He thought that it is likely that fertility rites were once connected with such granaries and that this tradition could have led to the later temple cults. Soeder was an architect with much experience in the study of rural architecture, mainly of Italy and Georgia. In his book about primal forms of Western architecture (*Urformen der abendländischen Baukunst*), which appeared in 1964, he dedicates about two pages of text and five illustrations to the subject. He thinks

that the upper part of Greek temples carried by columns must originally have been an upper storey that was used as a granary, and the half-timbered wall of granaries would have been a prototype of the Doric frieze (Soeder 1964: 121-125, fig. 257-260a) [8]. He may also have thought of a development from small granaries to temples with columns all around; but he did not elaborate how such a transformation could have taken place in history.

Soeder's hypothesis may have inspired the archaeologist Immo Beyer to later try a reconstruction of a wooden Doric temple with an upper storey as a possible antecedent of Temple C of Thermos (Beyer 1972) [9]. However, a specialist of ancient Greek architecture dismissed Beyer's reconstruction and Soeder's granary idea as untenable, because, in his view, it required a too developed woodworking technique (Kalpaxis 1974) [10].

Sixteen years later, another German architect, Goerd Peschken, published a small monograph, in which he interpreted the outer form of the Doric temple with columns all around as the architectural image of a communal granary formulated in monumental size as a symbol of the society in the young Greek democracy (Peschken 1990: 16-18) [11]. As far as architecture is concerned, the important contribution of Peschken was that he drew attention to the existence of a highly interesting old tradition of using granaries, which in the north-western part of the Iberian Peninsula is still alive in an area including northern Portugal and Spanish Galicia further north.

Peschken had visited the area in 1984 and after having read a paper about his interpretation at the Berlin Archaeological Society in 1985, the manuscript appeared as a separate publication in 1990. It included beside text and photographs a few sketches and measured drawings of granaries built in stone and two drawings of a wooden part of a wall. Since these granaries were used for storing maize in the ears, a good ventilation was needed, which was provided by walls consisting either of vertical wooden slats placed so as to leave narrow open gaps between them or of a number of broad stone elements with vertical slits carved out in broad grooves. In the latter case, these stone elements, particularly those with two grooves, resembled Doric triglyphs, the vertical elements that structure the frieze of Doric temples. However, only one of Peschken's photographs shows a stone element with two vertical slits (p. 34) and it was apparently used as part of a wall that was formed of such elements placed side by side. A change somewhat like that between triglyphs and metopes is not seen on Peschken's illustrations; he only notes that he saw something similar where very long granaries of this kind were provided with wooden doors in their long walls, meaning apparently cases such as shown here in **Figure 5**.



Fig. 5. A granary in Lindoso, North Portugal. *Photo G. Domenig, 1989.*

Whereas the triglyphs of Doric temples (**Figure 6**) had grooves without openings and formed the supporting studs between tight wall sections called metopes, the cases reported by Peschken looked similar but differed by having ventilation slits in their grooves and by being also used to form walls with many slits. Perhaps this difference was one of the reasons why the specialists of classical archaeology did not pay more attention to this intriguing ethnographic parallel. Peschken's study was sometimes mentioned in literature lists, but I know of no study that discusses it. It seems that it was ignored like many other interesting contributions that would have needed more research to be able to convince.



Fig. 6. Close-up of a part of the second temple of Aphaia on Aegina. The triglyphs are the four vertical elements in the decorative band under the eaves. *Photo G. Domenig, 1986.*

In Spring 1989, one year before Peschken's study appeared, I happened to be in Turkey studying the possible relation between ancient Lycian stone tombs and wooden granaries that were still used in rural areas there. In an article about Lycian tombs, written by an architect and an archaeologist, I read that granaries of northern Portugal and Spanish Galizia offer a unique possibility to study what happens when wooden structures are turned into stone ones (Kielsen and Zahle 1975:350) [12]. Since this was the problem that occupied me at the time, I decided to visit this other area too, which I did already five months later, in October 1989.

I did not know yet of Peschken's research at that time, but it was clear to me immediately that what I saw was more than but a case of superficial similarities with Doric triglyphs. In Lindoso, the most famous place with such granaries, I saw many that were built in stone and some of these had stone elements with one or two slits as supporting elements between wooden wall sections (**Figures 7, left** and **Figure 8**). In Galizia further north-east of Lindoso I also saw similar granaries that were entirely built of wood, except for the posts and rat guards which were made in stone.



Fig. 7. Granaries in Lindoso. The one to the left shows two stone studs with one slit each. *Photo G. Domenig, 1989*



Fig. 8. Detail of the wall of a granary from Lindoso showing two supporting stone studs with slits. The one with two slits is most similar to a triglyph as seen in Figure 6. *Photo G. Domenig, 1989*

As we learn from the excellent publication by three Portuguese authors (Dias et al. 1961), the history of these granaries is much older than their use for storing maize and the elements with slits are usually made of stone, but in some areas also of wood. As supporting elements they are called *colunas* ('columns', studs), as parts of walls *balustres* or *aduelas* (Dias et al. 1961: 62-70) [13]. Maize was introduced to the area in the fifteenth and sixteenth centuries and before that time these granaries were probably used for storing millet, which needed only little ventilation. Partly based on the distribution of several other cultural traits over the same area, the authors show convincingly that the tradition goes back even further to the fifth and sixth centuries when the Suebi or Suebians, coming from central Europe, conquered Galicia and the Northwest of Portugal and founded their kingdom there.¹ They conclude, therefore, that these granaries were introduced from central Europe by the Suebi and that the type then needed little ventilation. When later maize was stored in them, they were modified and adapted by reducing the width of the grain chamber and increasing the number of slits for better ventilation (Dias et al. 1961: 257, French summary) [13].

Considering this history, the fact that the elements with slits are sometimes also used as *colunas* is important because it could mean that *colunas* of this kind (with one or two slits) originally belonged to granaries with tight walls that needed little ventilation. The

¹ For a map of the Suebi migration, see [https:// en.wikipedia.org/wiki/Suebi#/media/File:Suebic_migrations.jpg](https://en.wikipedia.org/wiki/Suebi#/media/File:Suebic_migrations.jpg)

same conclusion follows from the fact that elements with one or two slits are not really necessary as *colunas* with the present maize granaries that have many ventilation slits in their walled sections. We can therefore conclude that some of the present *colunas* with slits may formerly have belonged to granaries for millet and that others have been later made as wall elements of granaries for maize. The granaries which the Suebi introduced from central Europe probably served for storing millet or some other cereals that needed little ventilation; they would therefore have had tight walls combined with roof-supporting *colunas* with one or two slits that could provide the little ventilation that was needed then.

Seen in this historical perspective, the case of this old tradition of using granaries with ventilation slits becomes truly relevant in the context of the old and still open question of how to understand the triglyphs of the Doric frieze and the architecture of ancient Doric temples.

The problem of the Doric frieze has still recently been called “the perhaps most debated question of Greek architectural history” (Junker and Stähli 2008: 11) [14]. This question goes back to Vitruvius, the Roman architect and writer on architecture who lived in the first century B.C. and it mainly regards the meaning of the triglyphs. Vitruvius, interpreted the triglyphs as wooden tablets that were fixed to the ends of the roof beams after their projecting ends had been cut off. But he also mentioned another ancient theory, which he rejected as mistaken. This was the *fenestra*-theory, according to which the triglyphs would be images of *fenestras*, ‘windows’ or ‘openings’ (Granger 1962: 213-217) [15].

It is obvious that the conclusion reached regarding the Suebian granaries perfectly fits with this other and possibly older Greek ancient theory when it said that the triglyphs were “images of windows” (*fenstrarum imagines*). They were only images because the stone triglyphs on the temples had no longer slits in their grooves, but as images they could invoke the idea of former wooden triglyphs with slits, because the Latin word *fenestras* meant not only windows in the common sense, but was also used for ventilation slits. Varro, an earlier Roman author, used the word in this sense when he wrote that in Spain and in Apulia there were people who built granaries raised above the ground, which the wind could cool not only from the sides through *fenestras*, but also from the ground below (De Res Rustica I.57.2).

Vitruvius rejected the *fenestra*-theory, thinking that it must be wrong because openings in supporting elements are architecturally a strange thing. But with granaries that only required little ventilation, this was an ingenious way to provide the necessary draught, while keeping the walls tightly closed to prevent the entry of mice and other rodents. The ethnographic parallel from the Iberian Peninsula is therefore a strong piece of evidence meaning that the triglyphs of the Doric frieze could indeed have been intended to represent an element of ancient granary architecture.

The wooden prototypes of the granaries imported to the Iberian Peninsula could have had a long earlier history in central Europe and it is therefore not unthinkable that the ancestors of the Greeks who created the Doric stone temples might have also used such granaries. If so, then their descendants may have still remembered that and— in memory of their agricultural past — may have represented the half-timbered wall of such a granary on the frieze of Doric temples.

Most of the modern scholars specialised in the study of ancient Greek architecture today seem to reject both ancient theories about the Doric triglyphs which we know thanks to Vitruvius. As far as Vitruvius's own theory is concerned this is understandable, because it has too long dominated the discussions without leading to a consensus. The ancient *fenestra*-theory, however, received relatively little attention and was rarely taken literally as referring to slits in wooden triglyphs that were no longer needed with stone triglyphs. It was most often simply ignored as too fantastic or assumed to refer to openings which in some cases might have been left *between* two triglyphs.

The failure of all attempts to understand the form of the triglyphs and the Doric frieze in a reasonable way has over that last forty years more and more led to attempts at explaining the Doric temple architecture as the result of foreign influence. The presently dominating idea seems to be that the Doric temple was created in stone from the beginning towards the end of the seventh century B.C. and under the influence of a middle eastern culture such as for instance Egypt (Wilson Jones 2022; Zuchtriegel 2023) [16][17].

Thinking that this modern trend goes in a wrong direction, I have re-visited in this paper, and tried to further support, a former theory that can explain the alternative ancient theory mentioned by Vitruvius. The conclusion is that the ancient *fenestra*-theory was meant to refer to triglyphs as images of studs with ventilation slits (*fenestrae*) and thus as elements of granary architecture. The Doric frieze would therefore be a band ornament whose triglyphs and metopes represent the half-timbered wall of a granary, while the Doric temple with columns all around could be understood as the monumental image of a communal granary reminding of the agricultural origins of Greek society (Figure 9).



Fig. 9. The temple of Poseidon at Paestum near Naples, Italy. Photo ca. 1890-1900, by Wilhelm von Plüschow (1852-1930). *Wikipedia Commons*.

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