

Restoring the restoration: The Palaestra of the West Gymnasium of Kos

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ABSTRACT

The contribution derives from a recent investigation held at the DICAR Department of the Polytechnic of Bari, under the scientific supervision of professor Giorgio Rocco, regarding the Palaestra and the Western Gymnasium of Kos. According to the research, the above mentioned Palaestra, one of the largest in the ancient world, is to be dated to the II century B.C. It was partially dug out in 1936 by L. Morricone during the Italian dominance over the Southern Sporades (1912-1948). At that time many restoration works were undertaken in the Italian Dodecanese and also the Palaestra was subjected to an anastylosis which had partially rised its oriental porch. The new search relies on new detailed drawings, complemented with a catalogue of architectural fragments and the analysis of the structures finalized to the reconstructive study. Afterwards the analysis has focused on the critical status of the same Italian restoration, carried on with integration of concrete cement, elaborating a derestoration project and a proposal for an anastylosis of a further section of the porch with the aim to enhancing the archaeological area.

Starting from the results of this research, the purpose of our paper is to provide for a contribution to the controversial and highly-discussed topic of the architectural restoration in archaeological sites with a specific focus on the following points of interest:

- The Italian restoration in Dodecanese: a synthesis (Antonello Fino);
- The Italian restoration of the *Palaestra* of the West Gymnasium of Kos: an unfinished yard? (Rossella Martino);
- Restoring the restoration. A new project for de-restoration and preservation (Daniele Mallardi);
- A proposal for the accomplishment of the *anastylosis* and guide lines for the enhancement of the archaeological site (Claudia Lamanna).

KEYWORDS: Kos, Hellenistic architecture, restoration of stone monuments, anastylosis, enhancement of archaeological site.

1 THE ITALIAN RESTORATION IN DODECANESE: A SYNTHESIS

The theme of the Italian restorations in the Dodecanese islands, Rhodes and Kos, in the period between the late Thirties and the early Forties, is part of a well-defined historical context. In the aftermath of Athens Conference in 1931 (Giovannoni 1931; Infranca 1999, p. 14-39) and of the resulting draft of the Charter (ICOMOS 2004, p. 31-33), which had great approval in Italy, the operations on the ancient monuments of these islands were explained not so much by the principles of conservation, as by the political events happened during the Governorship (L. Ciacci, in Livadiotti, Rocco 1996, pp. 273 -284; Karanassos 2011). Interventions on Greek and Roman architectures, however, are only part of an ample restoration plan that favoured the medieval structures spending in them most of the resources, in the ideological perspective to carry on the Knights Hospitaller action (R. Santoro, in Livadiotti, Rocco 1996, pp. 211-250).

Between 1936 and 1940, the Department of Antiquities of the islands, directed by Luciano Laurenzi and later by Luigi Morricone, was involved in the execution of several anastylosis of the major monuments in Rhodes and Kos. A central figure in all the operations was undoubtedly the architect Mario Paolini, who was responsible for surveys and reconstruction drawings, preparatory for restoration projects, in the Archive of the Italian Archaeological School in Athens.

The restoration on the island of Rhodes

As for Rhodes, the main interventions were realized in the Acropolis, along the eastern slopes of Mount St.Stephen. The excavation in the site, started in 1916 by Amedeo Maiuri, carried out by Giulio Iacopi and concluded by Laurenzi at the end of the Thirties, brought to light a complex of monumental terraces (Livadiotti, Rocco 1996, pp. 12-26). The subjects of restorations were: the Stadium, with the reconstruction of the *sphendone* and an almost total integration of the seats along the straight section; the Temple of Pythian Apollo, which underwent anastylosis in the north-eastern corner; the *Odeion*, totally rebuilt together with the adjacent retaining walls of the upper terrace.

In the acropolis of Lindos (E. Lippolis, in Livadiotti, Rocco 1996, p. 52-58) Cesare Maria 'de Vecchi, Governor of the islands from 1936 to 1940, according to the imperialist ambitions of the fascist regime, ordered the Italian archaeologists to deal with the study and with the restoration of the site. Therefore, the structures of the Hellenistic stoa and the Temple of Athana were rebuilt. However, reinforced concrete was widely used in the anastylosis and so, in recent years, de-restoration operations became essential in the aim to preserve ancient materials, unfortunately so compromised to be replaced by new quarry blocks, increasing very much the amount of the integration in the complex (Eleftheriou, Markou 2012).

The Italian works in Kameiros started after 1912, year of the Dodecanese annexation to the Kingdom of Italy. The archaeologists, led by Iacopi, recognized the precise location of the acropolis and recovered, in addition to the remains of a stoa, a temple and an archaic tank, and also an inscription where the city of Camiros were expressly named (L.M. Calò, in Livadiotti, Rocco 1996, pp. 60-65). Based on Paolini design, at the end of the Thirties, a section of the east wall of the stoa was rebuilt, including the *stylobate*, the Doric order. The technique used, already experimented in Lindos, provided for an inner perforation of the columns to insert a strengthening in reinforced concrete. The lifted up section collapsed completely in 1962, because of a wind storm. The causes of this disaster are certainly traceable in the restoration that altering the static system of the structure, led to a collapse of the whole structure and all its interdependent elements. The blocks fractured because of the fall and no longer reassembled were further damaged by the rapid oxidation of iron exposed to environmental agents and they are still lying battered at the feet of the *podium*, where the porch was set (Rocco Forthcoming). The area below the acropolis was involved in further restoration and arrangement at the hands of Paolini. These interventions concerned a Doric amphidistylous *in antis* temple, probably dedicated to Pythian Apollo, where a column, an anta with a part of the perimeter wall lifted up, like, in the center of public area, the porch of a monumental fountain.

At Ialysos, the Doric fountain was restored again on the base of a Paolini plan. The excavation site was started by Maiuri in 1923 and was continued by Iacopi after 1926 (A. Di Vita, in Livadiotti, Rocco 1996, p. 50). The operations consisted in freeing the structure from the unnecessary integrations overstocked in its lifetime and in restoring two intercolumniations that supported the upper entablature and the covering plates of the inner coffer of the porch.

The city of Kos: organization of the archaeological area and anastylosis

The city of Kos, as already pointed out, was completely destroyed by a violent earthquake in 1933, that, however, allowed Luciano Laurenzi and then Luigi Morricone to start more systematic archaeological studies of the entire city. Restoration and Italian accomplishment of the Greek and Roman architectures in Kos immediately showed the vocation to be an archaeological city, characterized by an uninterrupted dialogue between the ancient and the modern town (Livadiotti, Rocco 1996, pp. 86-163; Livadiotti, Rocco 2012).

In the so-called *Città Murata*, the medieval walled town the earthquake eliminated all traces of the preexisting medieval unit, allowing the transformation of the site in Archaeological Park, as provided for the new Master Plan. The excavations were continued by Laurenzi and then by Morricone, who carried out in 1936 the anastylosis of the eastern porch of the agora, a project now traceable in Paolini reconstructive drawings. In the area of *Amygdalona*, in the context of post-earthquake explorations, between 1933 and 1936, Laurenzi found the ruins of a Roman *domus* in the South of Decumanus Maximus, the so-called *Casa Romana* (Albertocchi 2010), completely rebuilt between 1938 and 1940. The operation, today known for its strong visual impact, was meant to preserve the rich decoration of the wall paintings present in the rooms.

In the area of *Porta Nuova*, since 1928, Laurenzi carried on the excavations of the *Odeion* (M. Livadiotti, in Livadiotti, Rocco 1996, pp. 130-133; Chlepa 1999). According to the information present in the correspondence between Laurenzi and the then SAIA Director, Alessandro Della Seta, the first restoration date back to 1930. A new restoration took place in 1936 at the hands of engineer Terenzi, Director of Technical Office in Kos. The project included the completion of the auditorium, already in a good state of preservation, the lower area, in fact it was integrated with new incrustations, and the partial reconstruction of the scenic edifice.

A remarkable reconstructive intervention interested also the *Nimphaeum-Latrina* (A. Merletto in Livadiotti, Rocco 1996, pp. 148-152; Merletto 2004), found during the enlargement of the excavation of the West Baths between 1937 and 1938. The total anastylosis, unjustified by the small number of original elements found after the examination, was completed by the following year and it is characterized by a high percentage of integration with reinforced concrete used to realize *ex novo* the peristyle and the vaulted roofing of the ambulatory and of the upper level of the building.

At the *Asklepieion* (G. Rocco, in Livadiotti, Rocco 1996, pp. 163-171), since 1938, year in which, once freed up the three terraces that compose the monument, big works of restoration and of organization of the area could start, on the base of a detailed project by Paolini. Many of the planned operations were never completed, because of the outbreak of the Second World War.

Morricone, even if aware of the political guidelines related to the reconstruction of the monuments in the archipelago, tried to simplify the stretching in the restorations, promoting conservation through relocation, once proven the original positions of all those scattered fragments that could otherwise be lost. On this occasion the retaining walls of the terraces, which had suffered repeated collapses and subsidence, were assembled and completed, choosing for the integration a local rose-colored tufa, easily distinguishable from the original material. The second terrace was restored according to the Roman *facies*, using large blind semicircular arches to support the higher level. In the third terrace, enclosed along three sides by *stoai*, some partial reconstructions of the eastern porch were predisposed, never completed. In particular, according to the project, three columns of the southern end of the eastern porch should have been lifted up, and they had to support, in a second moment, the architraves of the entablature identified by Schazmann (Herzog, Schazmann 1932). The fragments of Doric columns, of which we have drums in different materials, such as white marble, tufa and *amygdalopetra*, a sort of local travertine (Poupaki 2004) related to the various phases of the complex, were no longer assembled and still rest on site with traces of the unfinished restoration.

Other interventions never completed had been planned by Paolini on the *stoai* of the first terrace where the entire Doric order would have been recomposed in a four columns section; the operation would have been quite easy thanks to the large number of fragments, mostly intact, found in the area.

In 1938 the staircase that connected the terraces was covered with blocks of new quarry; in addition, two Ionic columns were integrated with Kallithea stone blocks in the second terrace for the temple of Asklepius, where the *crepidoma* should have been integrated with a travertine similar to the *amygdalopetra*, present in quarries not far from the sanctuary. The stylobate and a section of the colonnade of the Corinthian Temple of the Imperial age were restored (De Mattia 2012), in the attempt to reassembly the available fragments of the entablature and the of west pediment, but there was an abrupt stop in the works. In order to

better bracing structures, the project proposed to construct, next to the four columns, a portion of the wall of the *cella*, that inside a wall in ashlar masonry, would have concealed four reinforced concrete pillars, in the upper part of which, tie-beams were inserted immediately below the ancient cornices.

As already mentioned, the war interrupted both the restoration and the enhancement of the *Asklepieion* and also the great urban project that Morricone was carrying out for Kos, with the identification of new archaeological areas to be investigated. Many original elements were out of place waiting for being reinstalled, and the garden design of the surrounding areas remained unfinished; in particular, the western part was occupied by waste material produced by the construction in progress, unlike the eastern part that had already been decorated with laurel, pine and cypress trees.

Finally, the finding of some survey, after the excavations of Laurenzi and Morricone and signed by Brighten, related to the southern part and to the thermal building, in addition to some Paolini drawings related to the same area, would suggest that, while the island was preparing to the Second World War, a new restoration project for the arrangement of the fourth terrace was already in progress.

The last Italian intervention on the complex and in general on the town of Kos, was the planting of five hundred and forty pines in a ceremony that took place on 22nd March 1947 in the presence of all the pupils of the island (F. Sirano, in Livadiotti, Rocco 1996, pp. 184- 188). (*Antonello Fino*)

2 THE ITALIAN RESTORATION OF THE PALAESTRA OF THE WEST GYMNASIUM OF KOS: AN UNFINISHED YARD?

The *Palaestra* of the West Gymnasium, in Kos, was restored by specialists of the period of Italian occupation in the Aegean Islands and this restoration came up as a partial anastylosis of four sections of the eastern porch, starting from the re-use of original fragments of the monument, some of them found in collapse along the edges of the stylobate that was partially surfacing without in its original arrangement (G. Rocco, in Livadiotti, Rocco 1996, pp. 144-148). Photos taken at the time of the excavation, preserved in the SAIA Archives in Athens, are today a valuable document that has allowed the recall of some salient points of this restoration; the photos cover a time span from April 1940 to June 1943, but the examined documents show that the overall excavation in the area already started in the 1935-1936 and went on until 1939. The archaeologist Luigi Morricone and his collaborators, among which Gelindo Ragher, Traiano Finamore, Hermes Balducci and Virgilio Brighenti, went head contemporary to a photographic documentation campaign that concerned works carried out in the whole western area, previously detected; there were also a cataloguing and a analysis of architectural fragments, which were numbered, photographed, measured in their significant sizes, and often sketched in the form of dimensioned notes; moreover, there was the preparation for the reassembly of architectural fragments that were reinforced concrete integrated.

Anastylosis interventions proceeded in stages north-southern directed (SAIA, Archive Morricone, M 552-557) in order to rise the column shafts and the corresponding capitals (SAIA, Archive Morricone, M 570); only when a group of columns had been completed, it was carried on with the following section, starting from the bottom and taking into account the "*lower fragmented column drum found in situ*", respectively, "*three in the south and one in the north*" (Morricone 1950) and, in other situations, large portions of fragments were placed at the base of the "blue - black marble slabs having traces of columns" (*Ibidem*), in formworks with wooden slats, fastened at the base with more or less regular intervals and gradually built bottom up as a function of the necessary steps for concrete drying and hardening. During the restoration many blocks of the stylobate were replaced according to the alignment of the original ones and others were completely rebuilt in reinforced concrete (SAIA, Archive Morricone, M 512, M 515, M 579) (Fig. 1).

The columns were intentionally clustered in four consecutive sections spaced several meters, in order to suggest the volumetric development along the eastern branch of the only surviving peristyle, occupying in length the entire excavation area, meanwhile limited and accomplished (Fig. 2). Of course the vast working plan was interrupted, perhaps because of Second World War exacerbation, to the detriment of the fourth section of the higher colonnade that was subjected to a hurried restoration, inaccurate in the blocks replacing, in the joints treatment and in the exterior finishes, from then on intended to premature deterioration. Moreover, the numerous architectural recovered fragments, some prepared to hold metal armor and others already pivoted on (Fig. 3), show that the anastylosis site in the *Palaestra* of West Gymnasium was unfinished.

From the studies and analyzes carried out that southern portion of the western excavation appears today in a form radically different from the meant one, which would have provided the filling of the excavation carried out to unearth the foundation of the porch and the raising of at least one further column, already prepared for the purpose. (*Rossella Martino*)

3 RESTORING THE RESTORATION

There is no doubt that all the techniques and knowledge acquired up to the last century have proved to be essential to the leading of the restoring and to the anastilosis process. However, it is with the introduction of a new technique of construction, namely the reinforced concrete, that a number of difficulties has been overcome. The quick setting of this material has allowed the consolidation of ancient buildings while the easy modeling of the conglomerate has given the possibility to integrate architectural blocks. Moreover, the availability of the material has increased its diffusion. This practice must not surprise if we consider that in that precise historical context of use it was considered as the most common and therefore, normal procedure.

Only in the last decade the above mentioned praxis has been put under question for its limits. Among these, the alteration of the static system which transforms the block structure into a mixed structure, where indeed, we find concrete, iron and marble. The main difference lies on the resistance to the solicitations: in the mixed structure all the forces rest on the ancient material or on the concrete causing excessive efforts for the sections in which they are transmitted. The different reaction of each material to the atmospheric agents must not be undervalued: it is always more frequent that because of the deterioration of the modern material the concrete does not cooperate to the total or partial outflow of the forces. The expulsion of material and the reduction of the resistant sections may cause troubles together with the ceasing of the structure which can seriously prejudice the ancient fragments.

In this crucial frame we have to collocate all those operations which are part of the process we call de-restoration and which are linked to the dismantling of a previously restored artifact. The purpose of this operation is to provide back the structure with its static system throughout integrations made with the same material of the

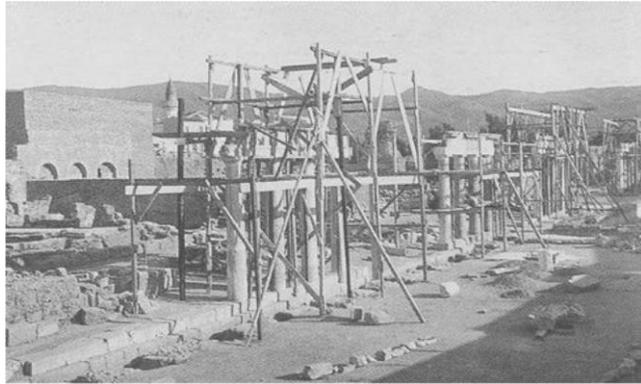


Figure 1: Kos, West Gymnasium. View from the North. Anastylis operation (G. Rocco, in Livadiotti, Rocco 1996, p. 148, fig. 342).



Figure 2: Kos, West Gymnasium. View from the North. The Monument after the restoration (G. Rocco, in Livadiotti, Rocco 1996, p. 148, fig. 343).

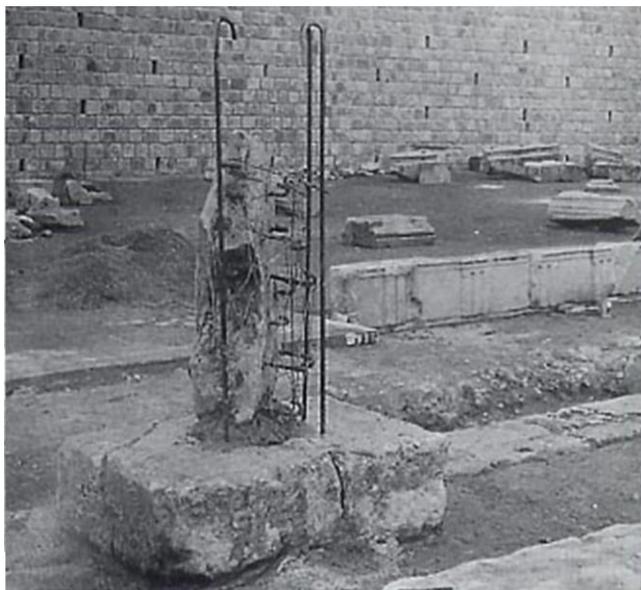


Figure 3: Kos, West Gymnasium. Detail of column restoration (G. Rocco, in Livadiotti, Rocco 1996, p. 147, fig. 341).

ancient one, restoring the original fixing systems too. The de-restoring develops throughout a sequence of phases: the first one entails the identification of the ancient blocks (Fig. 4). Then it follows the second phase, namely the measurement, meant not only to observe what is visible but also relevant to the formulation of hypothesis about what we assume to find during the dismantling. It is possible to make assumptions about the preserved dimensions and to recreate the breach lines.

The relevant quantity of photographic material (G. Rocco in Livadiotti, Rocco 1996, pp. 144-148) and the presence of fragments in the site which are assumed to have been object of several anastylosis lead us to the following step: the interpretation of the restoration undertaken in 1938-43. We are dealing with pillars made with concrete artificially reproducing columns and girders simulating Doric beams. The columns reveal a core circular section made with concrete anchored to the stylobate. The iron reinforced bars vertically positioned are settled into two levels and in some pillars they are replaced by marble fragments. Moreover, the marble fragments contain cavities in which we find iron hooks, drowned in the concrete, functional to the stability of the fragment within the pillar (cfr. fig. 3).

A long girder runs over all the columns linking them in a single frame. The marble beams reveal a cutting with a trapezoidal shape to hold the horizontal iron bars (Fig. 5). This horizontal iron structure is composed of vertical brackets which contain iron bars of different sections (the inferior ones with a bigger diameter) and instead of double -T section bars placed side by side, they used simple railway lines.

For a correct process to be implemented in our intervention, we can refer to the methods already well tested in the restoration of the Acropolis of Athens led by the YSMA (Eleftheriou 2014; Karanassos 2014). After having ascertained the preserved dimensions of the blocks it is possible to proceed with making the breach lines come to light by means of hammers and chisels. The use of pneumatics is discouraged as it can seriously prejudice the status of the craps within the entire structure. Immediately after having clearly distinguished the exact margins of the block it is important to verify if the same can be moved and removed. If we find clamps it is possible to proceed with the removal as well as of the lead seal. The removal will be done by firmly binding the block to the mechanical arm by means of high-resistance lashings or by using ancient lifting systems such as the *olivella*. The dismantling of the beam must be carried out with extreme caution, being this block the main site of structural knots. The starting point will be the centerline of the beam and then by means of uncovered the breach lines of the block thanks to hammers and chisels, the ancient fragment will be removed from the conglomerate. If the block is on the capital, once set the breach lines free from the concrete, it will be necessary to try to lift the underlying block to check if the interested block can be removed with caution after a number of trials. Afterwards, a chase will be created in the concrete in order to help the removal of the two

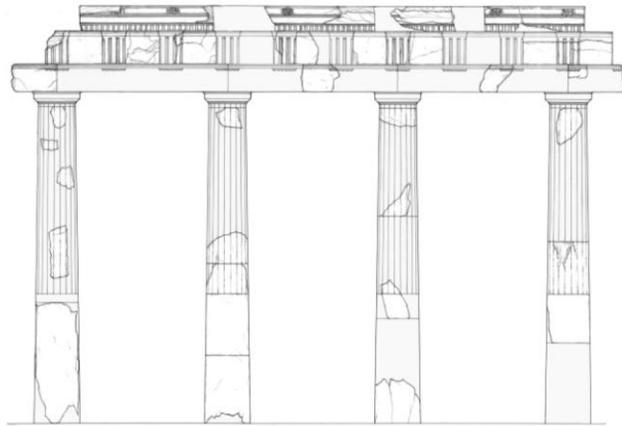


Figure 4: Kos, West Gymnasium. Identification of ancient fragments in the first section of the East Porch of the Palaestra (Drawing A. Fino).

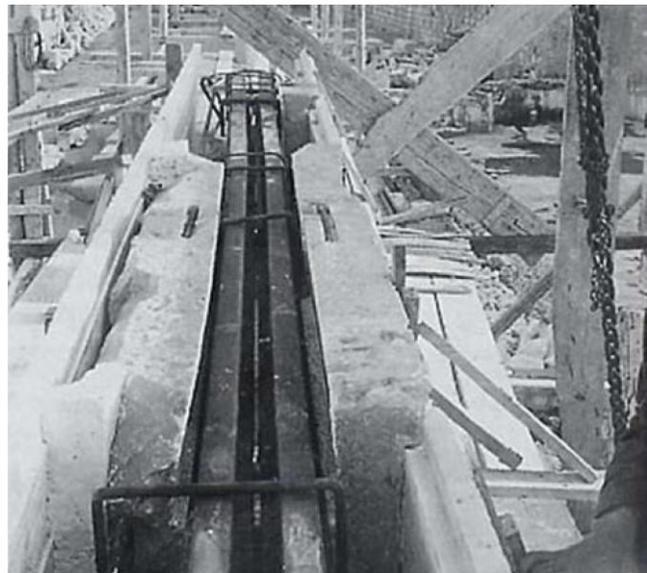


Figure 5: Kos, West Gymnasium. Detail of architrave restoration (G. Rocco, in Livadiotti, Rocco 1996, p. 147, fig. 340).

section bars and the definitive disposal of what remains of the girder. What follows then is the take-down of the columns. Starting from the capitals, the breach lines of the ancient drum of the columns will come on the surface thanks to the use of hammer and chisel relevant to the removal of the block from the conglomerate. The operation will go in progress from the top up to the bottom gradually tracking down the ancient blocks. Also in this case, once the breach lines are clearly visible, it will be necessary to lever the underlying block to verify whether the block in which we are interested can be removed. On the ground we will move our attention on all those fragments of columns with coring made to slot iron hooks and filled up with concrete: we will cut, indeed, the part of the iron hook on the surface and we will remove the conglomerate by means of the water-jet coring. As Acropolis work demonstrate, one of the advantages of the de-restoring lies in the possibility to undertake direct investigations on the dismantled blocks, in order to observe their breach lines, their preserved dimensions and ancient fixing systems: all relevant measurements for the concrete execution of the integrations an important data for the very knowledge of the monument. (Daniele Mallardi)

4 A PROPOSAL FOR THE ACCOMPLISHMENT OF THE ANASTYLOSIS AND GUIDE LINES FOR THE ENHANCEMENT OF THE ARCHAEOLOGICAL SITE

The need of preserving archaeological remains by reconstruction and enhancement has the unintended but often obtained effect of creating urban spaces unrelated to the rest of the city. Therefore, the difficult aim to be pursued is to give back meaning to the visible ruins and to contextualize them in the contemporary historian landscape. For this reason, the intervention must arise from an integrated set of knowledge and skills in the archeological, architectural, structural and communicative fields: in this case, we need to write planning guidelines intended to organize and to upgrade one of the biggest archaeological area in Kos (Δυτική ζώνη).

Between the ancient and the modern: spatial and formal continuity

We cannot think of limiting the intervention only to the accessibility or to the crossing paths, we have also to pay attention to the fringe by placing new activities and stabilizing the existing ones without neglecting the private residence, in order to avoid the alienation of the area. The re-reading of archival documents, graphics and writings, reveals the ideas and planning intents of the Italian architects who have dealt with the reconstruction of the city after the earthquake of 1933 (Giannella, 2013), ideas similar to the ones pursued in the area of the West Gymnasium, in a continuation of a building tradition that is now expression of a very specific context, and that cannot be forgotten. Therefore, the accomplishment of the area will be developed on the basis of careful observation of the area conditions and of a rigorous process of archaeological data identification (Fig. 6): planning and construction of temporary structures for the implementation of interventions; demolition of some sections of the modern road lay-out and realization of basic paths for the connection between the area of the Stadium and the two separate sections of the eastern porch; enlargement of

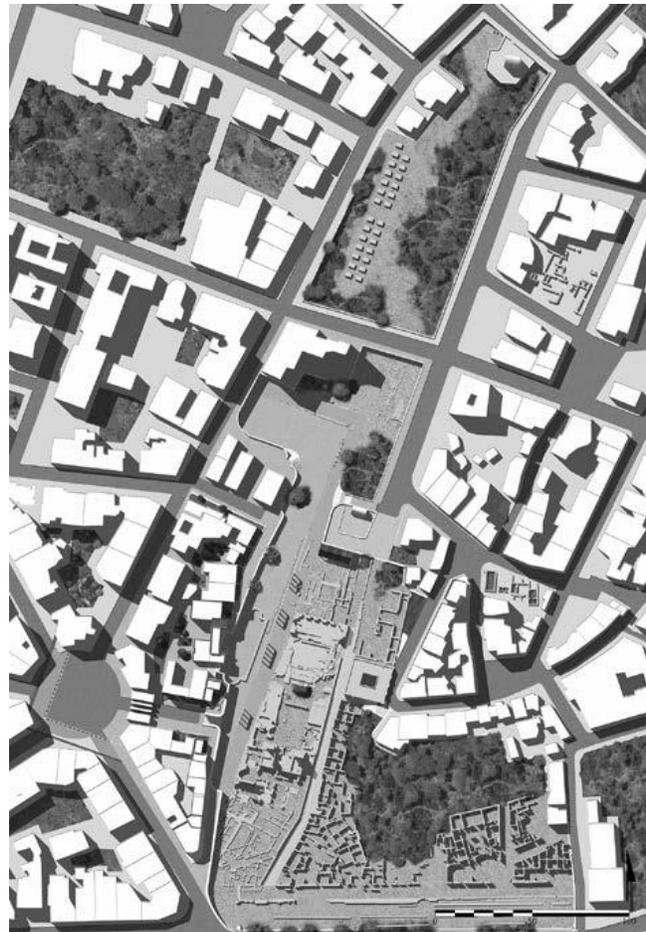


Figure 6: Kos, West Gymnasium. Plan for the accomplishment of the area (A. Fino).

the northern area of the excavation; reintroduction of the green parts (originally already existing and planned by the Italian projects in the '30s), using greenery as a rehabilitation of the image; DE restoration and restoration of the brought to light structures; protection and museographic solution in a small antiquarian; realization of all the arrangement works in the area immediately behind the park, not directly including the presence of archaeological finds, such as the ticket office on the west side; revival of the greatness and unity of the monument in its original *facies*, thanks to the reassembly and reconstruction of the porch, using environmentally friendly and possibly reversible technologies. All this in order to give back the role of absolute centrality that this area boasted during his long history.

The new anastylosis

The anastylosis plan follows a well-defined methodology, which aims to be the most appropriate and the least invasive possible, based on the update most recognized principles of restoration, such as the reversibility of the intervention, the conservation of the static function of architectural elements. Is meant to replace the north-east corner of the porch, in the attempt of giving back visual unity to the eastern side of the great *Palaestra* (Fig. 7, 8). Porch foundations have been discovered *in situ* and they are in good preservation. As a result of the consolidation obtained by using natural stone similar to the original one, that they are able to carry the weight of a column in the North and the prosecution of two columns in the east side, in order to support the entire Doric order. The use of the same materials, or very similar to the original ones, in addition to a merely museography reconstructive reason, coincides also with a static constructive purpose: in fact, using blocks with the same physical characteristics, we are able to restore the static equilibrium of the whole trilitic system. The completing elements and the original blocks of the entire order will be joined with titanium planks, in order to protect the stone from a possible iron oxidation, according to the practice currently adopted in the integration works in action on the Acropolis (Ioannidou, Lebidaki 2011). The additions will be also processed *in situ*, with the pantograph, to ensure a reconstruction of the original forms and to reproduce precisely the surfaces of break, marked with the engraving of the date. Although the Greek building techniques were characterized by the absence of mortar and they provided the pouring of molten lead to fix dowels and clamps, in the new plan threaded planks are meant to be fixed with white inorganic mortar in order to increase its adhesion. Location and size of the planks will be calculated as a function of the role and of the loads they will be subjected during the reconstruction, with known formulas based on the technical literature (Vrouva 2014). (Claudia Lamanna)



Figure 8: Kos, West Gymnasium. Perspective view of the accomplishment with the new anastylosis (A. Fino).

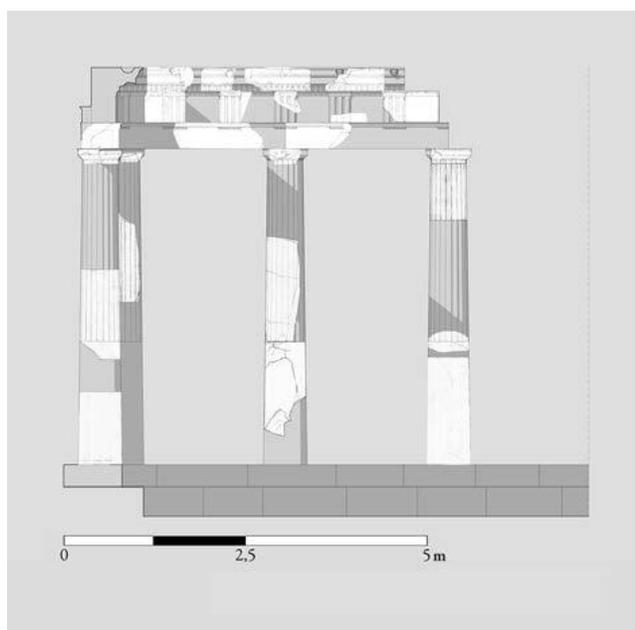


Figure 9: Kos, West Gymnasium. Anastylosis project, east elevation (F. Gotta).

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