NEOCLASSICAL RESIDENCES IN ATHENS

Why a burden for the owners?

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Glossary of Terms

Façadism: The term associates with the retention of one or more external walls or ‘skin’ of a historical building while demolishing or rebuilding its inwards. It is also referred to the case of total demolition and recreation of facsimile facades in front of new buildings. The aim of such a practice is to make the building fit to our contemporary way of living.

FEK: Greek abbreviation meaning a page of the Official Gazette.

Hayat: (in Turkish) or hayati (in Greek) is a porch or portico. In Greek vernacular architecture hayat, at the first floor level, used to take the form of an exterior appendage of the building looking at the internal courtyard; like a long covered balcony based on wooden pillars. At the ground floor level it had the form of a semi-open area where families used to spend their time cooking, working, relaxing etc.

NTUA: National Technical University of Athens.

YPEXODE: Greek abbreviation for the Ministry of the Environment, Regional Planning and Public Works.

YPPO: Greek abbreviation for the Ministry of Culture.

EPAE: Greek abbreviation for the Committee on Urban and Architectural Control.
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Abstract

Athens is among the cities with paramount history in neoclassical architecture. During the 19th century, after the establishment of the Greek State and the declaration of the new capital, Athens was equipped promptly with a vast number of small and medium scale neoclassical dwellings, accommodating the new residents. The image of the city changed radically and neoclassicism predominated till the beginning of the 20th century.

Today neoclassicism is an old memory. The introduction of concrete and the arrival of modernist movement in Greece, along with socio-economic needs, imposed the replacement of the small neoclassical dwellings by multi-storey concrete structures. The neoclassical heritage however was not protected. Even though structures from Classicist and Roman era and even from the Byzantine times were legally regarded as monuments and were safeguarded, Neoclassicism, being a period of time not old enough for the Greek history, was not appreciated as needed. The first neoclassical public buildings were declared as listed only in 1950 while the smaller residences started to be considered of some architectural and historical importance after 1977. Of course, the non-listed neoclassical structures were used to be erased day by day from the Athenian map as no one could see the reason of restoring them. It is indicative that the Greek State change the law for the ‘Protection of Ancient Antiquities’ to ‘Protection of Ancient and Cultural Heritage’ in order to include the neoclassical structures only in 2002!

Various were the reasons for the non-proper protection of this Neoclassical Heritage the most important of which will be analyzed further down. The main issue though that has to be pointed out is that this disastrous delay in the recognition of the significance of Neoclassicism resulted in the demolition and dilapidation of thousands of small and middle scale typical Athenian residences. In present days, the remaining neoclassical dwellings in Athens represent samples
of an almost lost architectural heritage and a huge controversy is now raised for their protection and proper restoration.

From one hand, the urge to gain the lost ground and preserve the architectural, aesthetic and historical values of listed neoclassical properties concluded in the enactment of strict Laws and the enforcement of unnecessary long bureaucratic processes whereas on the other hand the non-listed neoclassical structures continue to be demolished or uncontrollable ‘modernized’ by investors. Bad personal choices and probably the lack of a more organized state control system continue to threaten today the future of this building heritage.

Undeniable, there are some positive efforts which have to be noted. Efforts from people able and willing to fight in order not to leave this significant part of our history to fade out. And this is exactly what this paper aims to prove. Analyzing the problems and complexities of a dysfunctional protection system will be proved that solutions exist as long as we are willing to detect them and put them into practice.
1.0 INTRODUCTION

1.1 Aims and Objectives

In recent years in Athens, an increasing number of restored neoclassical residences have made their appearance, opening the discussion on historical buildings, their importance and the new range of uses they can afford. These new trends show residences of the 19th century being transformed into commercial buildings or multi-cultural centres where developers can recoup the high costs required for their repairs, but others remain redundant and abandoned till they collapse, offering to their owners the great opportunity of a lucrative empty site in the centre of Athens.

This paper aims to understand whether such an important piece of Greek cultural heritage has today become a burden for individual owners and which are the main obstacles emerging. Insight into the significance of neoclassicism in Greece is presented, through a historic, architectural and cultural point of view while the difficulties confronted in any effort to preserve this heritage are discussed. To most architects and conservationists who have been involved in restoration projects in Athens, it seems common ground that most of these obstacles are born from worn-out legal constraints and long administrative processes which delay significantly the projects and add extra complexities to the plethora of technical problems met in the tiny sites of Athens. The legal and administrative framework, the current theoretical debate and the main technical challenges met in most conservation projects -regarding neoclassical residences- are therefore stated and through specific case studies the main trends are evaluated. The choices and uncertainties on uses, materials, legal constraints, conservation principles, cultural attitudes etc. demonstrate the difficulties of every restoration scheme and pay tribute to some innovative approaches to safeguard the modern cultural heritage.
The process of this research will show the current problematic, the distinct viewpoints, as well as the modern and old techniques in the field, which provide a wider understanding of the approaches and contribute to the preservation of this architectural legacy. By presenting individual case studies, the close examination of personal choices that can be made in the field in the framework of the legislation will reveal the weak and strong aspects of a rather rigid system and how alternatives emerge. Inevitably, successful as well as unsuccessful restoration efforts are included but they provide useful information that must be analyzed for the sustainable future of conservation in Greece.

Finally, this dissertation once finished, should have detected the main dysfunctions of the protective policy of neoclassical residences in Greece, as well as the most common technical problems met and should have new proposals and pleadings to present with the aim of solidifying conservation legislative framework.

1.2 Research Approach

The First Chapter contains an introductory overview of the context of the problem (admin, technical, architectural) in modern Greek cities (particularly Athens) in view of the restoration and update of neoclassical houses and threats.

The Second Chapter is a historical review from the creation of Neoclassicism in the 19th century. Even though this new trend was initially introduced through major public buildings, its further development and growth, under the certain socio-economic background, evolved specific architectural values which are fully summarised in the features of the representative Athenian type of residence.
The following chapters -Chapter three and four- examine the main problems and complexities emerged upon the effort to protect this significant heritage. The problems, as mentioned before, are mainly detected to the regulatory framework and their direct impact on the technical field.

More specific, the legislative framework, upon which the protection of the Athenian neoclassical residences is based along with the philosophical premises -Chapter Three- will have to address the fact that neoclassic houses, being continuously occupied, are ingrained with different civic values that have to be safeguarded. This is discussed within the contrasting views between developers and conservationists on conservation approaches.

On the other hand, chapter four examines the principal technical problems and solutions in the restoration of small and medium scale neoclassical residences and discusses the effectiveness of these techniques in presenting the values of the buildings with respect to modern uses.

Chapter five introduces four case studies of redevelopment schemes on neoclassical residences in Athens, discussed along the previous lines. The cases are a representative variety of different attitudes and conservation practices. In each case its contemporary legislation, the building’s original condition, the philosophy of the scheme and the decisions taken to resolve the technical difficulties during the construction process are described. Ultimately the case studies indicate the necessity of a mutual co-operation between individuals, organizations and State as discussed in the last Chapter. In addition, some recommendations for future legislative and policy amendments are made that promote very necessary new approaches and increased general awareness and sensitivity upon conservation matters.
2.0 NEOCLASSICISM IN GREECE

The history of modern Greece started after the Greek War of Independence (1821-1829) when England, France and Russia forced the Ottoman Empire to grant Greece its independence under a European monarch, the Prince Friedrich Otto, son of King Ludwig.

The sovereignty of Greece, confirmed in a London Protocol on February 3, 1830, came at a time when the neoclassical movement was flourishing all over Europe. In particular, in the field of architecture, neoclassicism was an international style that was born not only as a reaction against the tiring but still surviving movements of Baroque and Rococo but also as a desire of the rising social middle class to be expressed through new ethical and aesthetical models. These new models were found in the simple lines and clear forms of Classical Greece which exceeded those of Ancient Rome that were popular in the Renaissance. The perception of “purity”, that the ancient world represented, expressed precisely the expurgation that the middle class desired at the time and the principles of neoclassicism expanded quickly in all forms of art and literature as part of the Age of Enlightenment.

Ironically enough, in Greece, the principles of Classicism had to be re-introduced via Germany. Bavaria at that period was among the most important centres of Neoclassicism and King Ludwig one of its greater supporters. It was not a coincidence that in 1834 Athens was declared capital of the new state of Greece. Despite the fact that other cities like Nafplion, Corinth, Ermoupolis were also fighting for the title, the love of the Bavarian court for Greek antiquity

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1 A great example of Classical Greece’s influence was Georgian architecture which was an architectural style found in most English-speaking countries between the 1720 and 1840. Especially from the mid-1760s its main characteristics were its classicist proportions and balance as well as its decorative vocabulary derived directly from ancient Greece rather than Roman versions.
and the desire of Ludwig himself to revive the glorious past of Classical Greece made the choice leaning towards Athens (Mpiris, 2003; Filippidis, 1984).

Nonetheless, the neoclassic style in Greece acquired its own dynamic and particularities. For the first time the Greek monuments and temples can be easily studied and the principles detected can be applied directly to the new structures. Rigorous compositions based on balance, simple geometric forms, homogeneity of materials and an antique style with a tri-partite ordering of facades are some of the characteristics that gave the Greek Revival a strong national content.

Even though Neoclassicism was a trend coming from Europe, its close connection with Greek antiquity contributed to its wide acceptance and therefore its long persistence in the Greek world. Having in mind that the newly formed state of Greece was looking for a cultural and urban identity, after 400 years of Turkish occupation, it is not strange that Greek Neoclassicism went beyond the monumental structures and the well-heeled classes to reach the wide mass of population. In many cases classical morphology was combined with traditional architecture adopting the use of yards, patios, prostyle, open spaces surrounded by colonnades etc (figures 1, 2).

Figures 1,2 Residence at Adrianou 96 Str. The typical L-shape plan, hayat and internal yard of traditional architecture combined with neoclassical prostyle and other neoclassical features. (Mpiris, 2003, p.42)
However the poor socio-economical conditions in Greece resulted in small-scale projects compared with the massive neoclassical complexes that were already built in Europe at that time. Exception of course, was the construction of the Royal Palace of King Otto, a structure built in the heart of Athens and which houses today the Greek Parliament (plate 1).

Architecture historians can mainly detect two phases of neoclassicism in Greece. A first period, between 1830 and 1880, which displays geometrically arranged masses and plain facades, and a late neoclassical period, 1880-1920, where traditional architecture is combined with eclectic elements and a completely new form of neoclassicism, is introduced.

This architectural division though, has often been disputed, and according to the observation of Elias Mekoniatis “chronological boundaries, when talking about architectural orders are often fluid and when accuracy is a patent intention, often have little value from a historical standpoint” (Mekoniatis, n.d., p.45). Nevertheless, in order to understand better the development of neoclassicism in Greece and be able to examine the socio-economic background along with Athens’s urban development it is preferable to follow this pattern in terms of simplicity (figure 3).
Figure 3 Timeline of Greek Neoclassicism (Author’s Collection)
2.1 First Period of Greek Revival (1830-1880)

After the declaration of Athens as the capital of the new state in 1834 an enormous effort begun in the city to enable Athens to meet the needs of an administrative and commercial center whilst new prospects opened for its urbanization. Foreign engineers were invited by King Otto in Greece to design and reconstruct the new capital. Athens should regain its old glory but at the same time should represent the modern spirit and progress of the 19th century. In 1833, the architects Stamatis Kleanthis and Edward Schaubert of Bavaria were appointed to draft the New Plan for the city of Athens. A plan which was revised later, in 1834, by Leo von Klenze.

The geometric design that characterized both Kleanthis-Schaubert and Klenze plans, constituted of a neoclassical-romantic city planning as it had taken place at the end of the 18th century. The design was intended for a population of 40,000 citizens and foresaw the remodeling of urban environment with plenty of open spaces and gardens, wide streets and boulevards (figures 4, 5). These plans were never implemented in their totality (figure 6). Plots eventually became small and streets narrowed down due to the sudden inflow of residents that did not gave to the state the time to prepare the ground and fight off speculation and informal settlements.
It is a fact in the historiography of Greece that Athens in 1834 was a regional town of 10,000 – 12,000 inhabitants (Kallivretakis, n.d., Appendix A). Its establishment as a capital understandably instigated a large influx of new residents and over the next decade the number of its residents doubled. People from cities near Athens, educated Greeks outside the country that were repatriated as well as a significant number of important personages from all over the country rushed in Athens to purchase plots. The start of demolitions therefore, around 1835, met the opposition of the new residents, whose private interests where affected, and in combination with the economic weakness of the State to provide new land as promised, the implementation of the New Urban Plans were brought to a halt.

The city was growing without any organized plan to all directions. Furthermore, the delay of the government to set a legal framework or to impose control mechanisms resulted in the emergence of informal settlements inside the city and uncontrolled land occupation outside the city zones (plate 2, figure 7).
During the same period the first administrative buildings of Athens made their appearance. Suffice is to say that only few of them were built were the city plans had anticipated. Instead, most of the state buildings were re-designed and constructed on whatever public land was available. Nevertheless, this intensive building activity changed the image of the city radically and Greek revival predominated not only on public buildings but on the construction of private houses as well (figure 8). Some of the most distinctive structures built in this first period of neoclassicism are mentioned below (see also Appendix B).

### Expansion of Residences

- **1840**
- **1840-1860**
- **1860-1880**

### Major Public Buildings

- First Period of Neoclassicism

#### Important structures of first period of neoclassicism:

1. The Royal Palace (1836-1840) –today Greek Parliament-, Friedrich Gaertner
2. Grande Bretagne Hotel (1842), Hansen
3. Arsakeion Megaron (1845-1852), Kaftanzoglou
4. Greek University of Othon (1839-1864), today University of Athens, Hansen
5. Zappeion Magaron (1874), Theophilus von Hansen.
6. Polytechnic School (1861-1876), Kaftanzoglou
7. Iliou Melathron (Mansion) (1879), Ernst Ziller
8. Archaeological Museum (1866)

-For images see Appendix B-

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**Figure 8 Expansion of Athens 1840-1880** (Author’s Collection based on maps from National Archives)
In total, even though Greeks embraced quickly the new rising ideological trends from Europe the type of neoclassicism finally adopted did not match with the romanticism of European thinkers. Greece had the need to discover its lost identity through a re-birth of its ancient past but at the same time wanted to dismiss every remembrance of Turkish occupation including its Byzantine heritage. Unfortunately, until 1860, many Byzantine and Mid-Byzantine monuments had already been destroyed whilst the eagerness to uncover classical antiquities led to extensive excavations which resulted in the destruction of other historical layers of the city (Filippidis, 1984, p.78).

2.2 Late Neoclassicism (1880-1920)

While in Europe the movement of Neoclassicism, chiefly in architecture and by implication in fine and decorative arts, begun to fail into Eclecticism, in Greece Neoclassicism persisted till the beginning of 20th century. This second period of Greek Revival started around 1880 finding Greece and especially Athens on its peak of creativity. It was mainly characterized by the introduction of eclectic elements as well as by a general search for “artful” decorativeness, a tendency which quickly became stereotypical and widespread.

The rapid growth of Athens was neither inexplicable nor surprising. It was a direct result of political decisions and events – the re-birth of Olympic Games, territorial expansions of Greece, vigorous modernization programs - which set the construction industry as the basic economic activity of the country (Sarigiannis, 2000). Loans from the Great Powers in combination with private investments of rich merchants and offers from Great Donors helped at the reformation of the State cultivating a feeling of optimism and confidence to people.

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2 One of the most representative architects of this period in Athens was Ernst Ziller whose buildings became the models for others to imitate and whose legacy continuous to inspire till today.
However the years of prosperity were followed by political instability and the conflicts between opposite parties led to the country’s bankruptcy in 1893\(^3\).

Greeks disappointed, humiliated and financially exhausted started for the first time to reject most of European influences in all aspects of their everyday life. Many architects and people of arts, seeking for new sources of inspiration, turned to the forgotten Greek tradition -see for instance the open type of Athenian residence which is analyzed further down, paragraph 2.3-. The use of open spaces, simple lines, functionality instead of symmetry and the importance of light are some of the principles re-discovered and which progressively gained ground.

The following years, in spite of the difficulties, Balkan Wars (1912-1913) and World War I (1914-1918), Greece managed to add new territories in the Hellenic dominion (figure 9) and enormous efforts were made to re-organize its state structures. The problems, nevertheless, were multiplied when large waves of refugee compatriots flooded the country and inevitably the capital after the Asia Minor Disaster\(^4\).

\(^3\) Additionally, in 1897, a humiliating defeat by Turks, not only compelled Greece to pay an indemnity to Ottoman Empire but the country was also imposed by the Great Powers on International Financial Control accompanied by hard political terms and strict economic conditions. By 1909 the austerity measures had exhausted the citizens and taxes had become unbearable.

\(^4\) The Asia Minor Disaster had also a major cultural impact as implied the end of any hope for Greece to regain its lost capital, Constantinople, as well as its important urban centres outside the borders.
It is characteristic how from 1880 to 1900 the population of Athens doubled to 123,000 inhabitants and till 1920 the population increased another 76%, reaching 293,000 inhabitants, according to the statistics given by Filippidis (1984, p.115). In an effort to control the city’s rapid growth, by 1900, new urban reformation proposals were submitted by Hoffman, Leloudas, Vakkas and many others urban planners, based on the initial Kleanthis-Schaubert plan, but again none of them was implemented. The expansion of Athens for both private and public buildings continued to be random and without any legal framework (Figure 10).
The impressive growth of Athens during the second half of 19th century, and the need for housing, made the sector of construction one of the most profitable investments of the time and investors from all over the Hellenic dominion came in Athens in order to purchase a plot.

Indicatively it is mentioned that the prices at the beginning of 1840 had already doubled and till 1850 the central areas around the Palace were inapproachable for the middle class. Informal
settlements began to appear more and more frequent and taking advantage of the delays in the implementation of the new urban plans the city expanded rapidly, outside the legal zone, to the north-west and around Lycabettus Hill. The land was fragmented into rather small plots, typically 8 to 10 meters wide whilst in more crowded quarters a usual size was 6 meters wide to 12-15 meters long (Mpiris, 2003, p.35). Cheap sites became therefore available for everyone and the typical Athenian house began to take its first shape.

The residence - built in these plots - were of one or two storey with basement and they usually housed 2-3 families. In most cases, the interiors maintained the typology of earlier, traditional Greek architecture with the use of internal courtyards, transitional areas, semi-open spaces, covered corridors etc. Their plan was L-shape or cubical depending on the plot and the construction technologies used at the time still employed traditional methods. The facades on the other hand, appear to be more sophisticated. For the first time an effort to create a more formal façade to the road was made and the external elements were built in accordance with the principles of neoclassicism (plate 3). In contrast to the low cost of the plots, more money and effort was spent in the construction of aesthetically pleasing and symmetrical classicist elevations, mostly for prestigious reasons. Greek masons, imitating public neoclassical buildings, decorated the facades with cornices, frizes, string courses, antefixes, moulded window frames and pediments while in the interior, roof paintings, cornices, moulds and niches with vases, decorative schemes with birds and flowerpots were used, raising the costs. Of course, the fine quality marble, found in the public buildings, was replaced by gypsum and the decorations were standardized and readily-made but nevertheless the money spent for these small scale residences in combination with the limited time of construction and careful work, was really remarkable (plates 3, 4).
Morphologically, a typical two storey residence, consisted of a 3 bay tripartite façade with a slightly projecting basement, a piano nobile and a first floor with a small balcony in the middle, supported on brackets. Usually a string-course ran the structure, dividing the piano nobile from the first floor, emphasizing the building’s horizontality (plate 5). On top, a neoclassical cornice crowned the residence, under a typical terrace or slate roof. The internal and external surfaces of the walls were decorated with running moulds and coloured with lime colours, a technique which will be analyzed further down.
According to the professor M. Mpiris in “Athenian residence 1875-1925” two were the types of houses developed during the 19th century. The open type and the closed type:

2.3.1 The open type

The open type of residence was the first type that was developed and was perfectly harmonized to the Greek climate and way of living. It reflected the principles of Greek traditional architecture while its origins traced in the early years of 19th century. Its main characteristic was the L shape of its plan.

The main part of the building was placed at the back of the narrow plot, while the house expanded linearly, with rooms one behind the other, parallel to the courtyard, till the road (figure 11).

The rooms of the ground floor communicated through the courtyard while the rooms of the first floor through the ‘hayat’ covered corridor (plate 6).
This type of residence, which is also the most common one, intended to house the wider mass of population. Taking into account that more than one family used to live in the same house, the residences had several entrances. Apart from a main door, found in the middle of the classicist frontage, a second entrance adjacent to the side of the façade, led the residents to the internal open space. The access to the first floor was via an external staircase placed in the yard. During the years, additional structures were built inside the plot and the houses were expanding narrowing the courtyard. In most of the cases the initial L shape of the plan became U shape and the façade lost its symmetry as eventually covered the whole length of the frontage (plate 7, figure 12). The courtyard, even though smaller, remained the core of the house and the open type of residence, with all its later alterations, continued to be the main type of residence built till the beginning of the 20th century.
2.3.2 The closed type

The second type of residence developed in Athens was the closed or cubical type. Its plan was square shaped and it usually had a basement. The access to the building was directly from the road to the piano nobile, by a flight of steps from the ground level. This type of cubical structure was placed in the front of the plot, leaving an open area at the back. The square plan helped the creation of a symmetrical façade as well as to a symmetrical interior according to the principles of neoclassicism (figures 13, 14). A central corridor divided the structure into two parts. In each side there were big rectangular rooms while an internal staircase leading to the first floor was found in the central zone. The corridor was extended till the back of the house, where there was a door leading to the rear yard.
This type, used to house one or two families –one in each floor- and contrary to the open type it had limited possibilities for further development and expansion. In some cases, an adjoining entrance was constructed which led directly to the staircase and from there to the first floor, separating the accesses (figure 15). In later years, the need of the owners to acquire a transitional lobby or a more formal entrance, resulted in the formation of an entrance hall by unifying the front chambers showing that the house intended to serve not only the practical needs of its owners but also contributed to their social status.

2.3.3 Construction

In a typical 2-3 storey residence the masonry rubble walls had a thickness of 60-70 cm at ground level, which reduced by 5cm per floor e.i. 55-65 cm at the first floor and 50-60 cm at
the second floor. The foundations were 80 to 100 cm deep strips whereas basements and semi-basements were commonly constructed\(^5\) (figure 16).

![Figure 16 Typical structures of Athenian residences with and without basement (Author)](image)

As it has been mentioned before, the largest expense on these small and medium scale residences foresaw mainly to the elaboration of the facades and not in the integrity of construction or the quality of materials. Cheap and second quality materials were therefore hiding behind all these pleasing to the eye frontages.

**Structural fabric**

The structures were a mixture of locally available materials like limestone, timber, brick, lath and plaster, metal beams and gypsum (figure 17). In particular, the load bearing rubble wall masonry consisted of rubble limestones, brought from nearby quarries and bonded loosely together with clay mortars. Stones more thoroughly dressed and of a better quality were only used as corner-stones or as jambs around the openings. In many cases, timber boards or bricks were used inside the walls as reinforcement in order to add strength.

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\(^5\) *The upper structure created a flexible diaphragm allowing seismic movements to occur while the basement, where constructed, isolated the soil moisture from the overlying floors.*
The floors, mainly during the first period of neoclassicism 1830-1880 before metal beams were introduced, were entirely in timber constructions with joists running across the shortest length of the room and floorboards fixed on them. The ceiling was from lath and plaster, made of timber strips nailed to the underside of timber joists at about 10-15 mm spacing (see floor detail, figure 17). Traditionally, a mixture of lime and goat hair was forced through the gaps to help it bind together whereas a second layer of lime putty was skimmed to achieve a smoother surface. The final and thinner coat, 3-4mm, was either marble putty or a 1:3 lime putty to fine grained sand mixture applied very carefully, as decorations with water colours or lime colours, ceiling medallions, cornices and running moulds would typically follow (Mpiris, 2003; Orphanoudakis, 1992).
Apart from ceilings, internal partitions were also formed from lath and plaster in which case, strips of wood or twigs were nailed on studs and then covered with plaster. The use of bricks, for internal partitions, was generally limited, at least till the mid of 19th century.

After 1875-1880 metal beams, L or I shape made their appearance in the construction industry. They were usually found over openings and entranceways used as lintels. Especially in basements, I shape metal beams were found on ceilings, every 60-80 cm, spanning the spaces (see basement ceiling detail, figure 15). These beams were positioned to support the edges of segmental arches, whereas the gaps between arches and beams were filled with strong mortar and small pieces of bricks or limestone (figure 18).

The basement walls were often coated with hydraulic lime, a mixture of lime, volcanic ash and sand in proportion 1:1:6, providing insulation to the basement and in consequence to the upper structure.

At this point, it must be mentioned, that a great part of decorative elements were prefabricated, brought to the site and just placed in the right position (plates 8, 9, 10). This common practice, explains the limited time of construction needed to erect such a residence as well as the almost identical dimensions, met in building elements, like window and door openings, the width and length of balconies, the general dimensions of staircases and others.
However, despite the standardization of many elements during the construction process, there must not be ignored some other works executed with distinctive diligence. Among them, the most toiling and time-consuming ones were the crafts techniques for the elaboration of facades, the most common of which are described below (figure 19).
Flat Plaster

The flat plaster technique was used to create the flat surfaces of the walls and had to be made in three coatings. The first step, before applying the plaster on the masonry, was to wet the rubble wall with a mixture of coarse mortar so that the binding of the plaster to the back would take place slowly avoiding cracks on the surface. Then a layer of typical lime mortar, 2-3 cm, followed to make the surface smooth and vertical, using a long float -wooden board-, (figure 20).
The third and final layer was thinner, 4-5 mm, and rich in fine grained sand. In wealthier residences, the third coat, instead of fine grained sand consisted of marble putty and slaked lime of fine quality in a proportion 1:2,5. Using a traditional trowel, the final layer was applied slowly and carefully to prepare the surface for the next phase of colouring. Sometimes, in order to achieve a perfectly glazed surface, they would even “iron” the mortar with appropriate heated tools.

**Architectural Elements (Sunken Butten Decorations)**

The sunken butten decorations were an imitation of natural stonework and were usually used for the decoration of the lower zone of the façade (figure 21).
First, two coats of rough mortar were applied on watered masonry, smoothened and let hardened. After 2-3 days, a wooden framework was set up on the surface in the wished pattern and a layer of hydraulic lime was applied. Finally, after a week’s time, a finishing layer of fine grained hydraulic mortar was thrown on and glazed very carefully. When the mortar had hardened enough, the wooden frame was removed and local repairs would take place where needed.

Architectural Elements (Running moulds for cornices and friezes)

The most impressive results though, from the technical point of view, were achieved with the formation of running moulds.

The first job, for this type of decorations, was to prepare the appropriate profiles, which were designed in natural size, 1:1 scale, and cut in a zinc sheet.
This was one of the hardest parts having in mind that the base, upon which the plaster was formatted into cornices and friezes, was actually a number of bricks placed in projection (figure 22).

After pre-watering the masonry and applying two coats of coarse-mortar, following the same technique used for sunken butten decorations, wooden guides were mounted on the working area, among which the zinc sheet was placed. After the first layers had hardened, hydraulic mortar was applied and slowly, with the help of the wooden guides, they ran the profile across the length of the cornice (figure 23). The shape was completed by repeating the same procedure one more time with a final coat of fine grained mortar and therefore a hard, smooth and waterproof surface was created. Dentils and other decorations seen at cornices, could easily be shaped after that, by subtracting, with appropriate chisels, rectangular pieces of wet mortar at equal distances.
Similar techniques were used to form window casings, window sills, cordons etc. Often, depending on the mason, the artificial ashlar was also made by the use of wooden guides instead of the sunken butten decoration technique.

Many ornaments of the facades like medallions, festoons, palmets, antefixes, balustrades and others were cast decorations (figure 24). They were made in plaster, gypsum or other specially mixed materials, transpotted to the building site and then fixed to the masonry using pins, glue, or simple wet gypsum mass (Mpiris, 2003; Vadstrup, 2008).

![Figure 24 Typical cast ornaments on plaster façades (Vadstrup, 2008, p.38)](image)

**Colour**

Concluding the description of Athenian residences it is important to mention the colours used for the decorations of façades, as well as for internal surfaces of the walls. Our knowledge today on the colours and techniques used, are drawn from live testimonies, contemporary paintings, informal coloured drawings found in old archives as well as from traces of original colour detected underneath cornices where they have not been washed away by rain.

According to professor of NTUA, M.Mpiris, the colours used in neoclassical houses were oxide-red, yellow-ochre, raw or burnt Terra di Siena, lampblack, raw or burnt umbra, earth
green or azurite-blue and other pigments derived from the mixture of natural elements -like different oxides of cobalt, chromium, cadmium etc.- (figure 25).

The lime resistant pigments were either applied at the end of the plaster process or they were mixed with the final coat of fine grained lime mortar in order to achieve a more vivid and waterproof result. Watercolours, come under the first case and were applied after the perfectly glazed surface was concluded. To accomplish a tone of freshness and luminosity, it was common ground to “whiten” the surface, before the application of watercolours, something not necessary at all when the finishing coat was marble putty.

The ideal though technique, found mainly in well-off residences and public buildings, was the mixing of pigments in the thinner coat of mortar before implemented on the walls, known as lime-colours. Lime-colours, even though fainted, managed to survive in a very good condition.
through the years and till today lend a feeling of grandeur and richness to the structures (plates 11, 12).

Of course, like everything else in Neoclassicism, the application of colours was not a matter of personal taste but had its own specific rules. In the first colour group were included the architectural members of the façade – window and door casings, string courses, sills, lintels, pillars, etc. – and all the decorative elements of cornices – antefixes, dentils, architraves, floated cornices etc - which should be coloured white as they were supposed to be imitations of white marble (plate 11). The second group included the flat surfaces of the building for which was chosen a lighter colour tone. In particular, for the flat area of the frieze that ran beneath the cornice, a gray or azurite-blue colour was what suited more to the neoclassical rule (plate 13) whereas the middle zone of the building – the first floor area – was usually painted in shades of ochre or in a soft oxide-red, in order to give a sense of depth (plate 14). Finally more neutral colours were used for the lower zone – base – of the structure.
Colours in the internal surfaces of the walls were not rare but not as usual as the coloured neoclassical facades. In some cases, they used to paint the lower zones of communal areas like entrance halls, sitting rooms, corridors, etc - a zone around 1m. height from the floor - with shades of dark red, green or burnt Terra di Siena imitating marble decorations. On the other hand niches of the walls and ceilings were more commonly coloured with impressive motives and representations of flowers and birds (plates 15, 16).

Plate 15 Limecolours on the ceiling of residence at Menandrou Street, Athens (Mpiris, 2003, p.154)  
Plate 16 Coloured ceiling at 25 Palaiologou Street, Athens (Mpiris, 2003, p.155)

To sum up, the Athenian Residence has particular merits and characteristics, which have been thoroughly analyzed in previous pages. Like all neoclassical buildings in Greece, Athenian Residence is considered to be an important part of Greek National Heritage and therefore specific rules and conditions have been enacted during the years for its protection. Unfortunately, today, despite the recent general awareness for its salvation, this significant building heritage, still remains under threat.
3.0 THEORETICAL AND REGULATORY COMPLEXITIES

3.1 Legislation

Anyone who has dealt with listed buildings in Greece is well aware that it is a matter which requires long and tiring procedures.

The first law for the protection of monuments in Greece was voted in 1834 and was based on relevant laws of the State of Rome. At that time, the first Archaeological Committee was also set up, providing protection to ancient architectural monuments of great significance. The next important Law, Act 5351 of 1932 (amending Act BXMΣτ’/1899) was following the French standards and was very strict for the time, even though the definition of ‘listed structures’ was not clearly given, implementing mainly buildings from Classic and Byzantine era. According to the Law, any individual action upon a listed structure was strictly prohibited, introducing the expropriation by the State as the only solution to save a monument. Of course, as anticipated, the State was able to expropriate only a limited number of properties and many significant structures were lost.

The first law referring clearly to the protection of non-ancient but recent significant buildings, including the neoclassical structures of 19th century, was Act 1469 of 1950 and was created by the need of the State to protect the major Public Buildings of Neoclassicism. For the first time, the protection of settlements is also introduced while a special reference is made to the protection of individual residences and landscapes of historic importance. The law, nonetheless, still relied on prohibitions and did not include specific implementation methods or any financial support for the owners (Bourras, 1982, p.18-57; Lavvas, 1982).

Despite the enactment of laws for the protection of cultural heritage, the demolitions of small and medium scale neoclassical residences in the capital –listed or not- continued and year by
year the whole Athens changed dramatically from many points of view. The first organized effort, on the part of the State, to rescue some of the remaining neoclassical structures as dwellings of architectural and historical importance, took place in 1977 when the centre of Athens and especially the area of Plaka was declared as Historical Centre and began to be treated as an urban section with specific requirements. The main concern was to preserve the neoclassical character of the area. The new regulations imposed the reduction of buildings’ height for new-built structures throughout the Historical Centre while the famous Housing Law (Law 947/79) was voted, which aimed to stop illegal demolitions and re-constructions. A critical element of this Law was the establishment of allowable uses of land for each block as well as the conversion of many central streets to pedestrian zones. Similar drastic measures were intended to be taken for other areas of Athens, like Psiri or Metaxourgeio, but they were never implemented in their totality (Dimakopoulos, 1982; Mpiris, 2003).

Apart from the Archaeological Council, a Council for Contemporary Monuments was created after 1977 while the Ministry of Culture (YPPO) and the Ministry for the Environment, Regional Planning and Public Works (YPEXODE) started to be actively involved in the protection of the monuments of cultural heritage. For instance, in 1985, after YPEXODE’s

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6 Plaka embraces the northen and eastern slopes of Acropolis and encloses within its boundaries a large number of important antiquities such as the Athenian Agora, Hadrian’s Library, the Roman market place etc. Moreover includes a significant number of neoclassical and vernacular Athenian houses gradually erected in front of the ancient columns, Byzantine cupolas and muslim mosques.

7 During the decade 1967-1977 the area of Plaka had transformed from a quiet residential area into a noisy district offering to tourists ‘a folk entertainment’. Many of the residents abandoned their houses which were eventually turned into renovated discos, sex bars and restaurants. By the end of 1979 less than 5,000 lived in Plaka and only one third of the residences were inhabited whereas the shops and entertainment units were flourishing. The Housing Law of 1979, imposed residential uses for most of the quarters of Plaka in an effort to reinstate the residential and picturesque character of the area (Dimakopoulos, 1982).
recommendations, 260 Athenian neoclassical residences of the Historical Centre of Athens
were listed whilst special conditions and restrictions were established for their protection.

What applies today for the protection of important structures in Greece are articles of the Act
3028/02 of the Ministry of Culture and the Act 3044/2002 of YPEXODE (amending the Act
2831/2000 and 1577/1985). According to these Acts if a building is built before 1830, the year
of formation of the Greek State, is considered as ‘ancient monument’ and follows the rules and
restrictions of the Ministry of Culture. Any building postdating 1830 that has completed 100
years of life can be considered as potentially preserved building or ‘contemporary monument’,
according to its historical, urban, architectural, social or aesthetic value and can be listed by
YPEXODE. Key element to the declaration of each building is the explanatory and technical
report submitted alongside the application form and the opinion of the relevant Council. It has
to be noted, that local authorities are not involved at all in the listing process. The declaration is
finally completed after the publication of a specific Presidential Decree in the Official Gazette
(FEK) and local press.

To each listed building in Greece, therefore, a different FEK corresponds, where the
significance of the structure, the particular restrictions and methods of implementation for its
protection are explained, setting the building’s exclusive ‘guidebook’. However, special
arrangements and conditions can also be enacted, after decision of the Minister and the
appointed Council; an additional control regulation that, for some, jeopardizes the rigour of the
Law.

In reality, the salvation of neoclassical residences started taking a stronger direction in Greece
only in the last 15 years. The ministry since 1995 has listed more than 11,000 individual
residences and issued decisions to rescue more than 2,000 neoclassical public buildings
considered as monuments (Tzanavara, 2008).
A large number though of smaller neoclassical architectural gems still remain uninhabited and desolated while possessing significant and identifiable qualities. The central boroughs of Athens are full of such houses, erected in their thousands during the 19th century, in order to accommodate the lower and middle class. Unfortunately, today, a number of complications, originated perhaps by the insufficient legal framework, financial difficulties, the prevailing system of shared yet small ownership and other obstacles, which are explained below, obstruct the proper re-use and restoration of these important structures.

### 3.2 The Problems

It is a fact that the State's participation in the salvation of important buildings is restricted to their declaration as listed whereas the costs of restoration, maintenance and enhancement are borne almost entirely by the owners. According to the legislation, people who own listed buildings are excluded from special taxes and are eligible for discounts on repair costs, things which do not balance completely the expenses of a restoration scheme. Furthermore, the shared competence between the two ministries (Ministry of Culture and YPEXODE) seems to produce extremely burdensome bureaucratic processes. Complex application processes, decisions of councils, critical comments and notes of acceptance or disapproval circulate between different departments of the two ministries for an average of one to three years until publication of the Presidential Decree. It is not unusual, that till the desirable interventions to a listed building are finally accepted, funds for the scheme are no longer available as have already been invested to another project.

Nevertheless, it is not only the paperwork that could delay a restoration scheme. The restoration of a neoclassical house in Athens carries dangers, especially when it is implemented in areas of high archaeological risk like Plaka, Metaxourgeio and Keramikos. *The investor must be
prepared to interrupt the works at any stage, for at least another two or even three years, once ancient ruins are found" says the estate agent Mr. Stamoulis (Rigopoulos, 2008).

Most buyers would prefer to spend the same amount of money for a modern, comfortable house in a prestigious area than to renovate a neoclassical residence in the centre of Athens with all the typical problems that this involves (limited space, lack of parking, noise, etc). Few are the properties that could combine a prestigious structure within a nice, quite area. The limited offer, therefore, raises the prices and makes such a redevelopment scheme prohibitive for the low and medium income. The owners of neoclassical buildings cannot easily sell them and being extremely expensive and risky to restore them by themselves, they often feel trapped.

M. Mpiris, points furthermore another serious threat, product of the legislative framework, which leads to the neglect of neoclassical buildings. ‘In accordance to Article 41 of Act 3028/2002, if a structure is found to be derelict, by a committee of engineers of the Ministry of Culture, it can then be demolished’. Thereby, many owners leave their properties to collapse and they even more hope for such a result (Dilapidation and then... Protection, 2005).

Finally, it has to be noted, that the system of joint ownership of an estate in Greece is also not very helpful for the salvation of neoclassical structures. With regard to the Greek real estate ownership's rights, each owner is free to transfer his estate to more than one person; his children for example. Each co-owner has rights and obligations up to his share while the administration of the property belongs to all the owners. Obviously the disagreements among the co-owners are not rare, especially when it comes to listed buildings where the expenses and the financial risks for the buildings’ maintenance and usage are high, and a shared consent of all the joint owners is difficult to be achieved. Thus, the houses remain uninhabited till a wider accepted solution is found.
In recent years, in an attempt to avoid the phenomena of neglect and dilapidation, extensive and drastic interventions that take place frequent in unlisted and even modern listed buildings, the discussion has come around the design options and methods applied for the buildings’ restoration. The choices made during the years seem to have been dictated mainly by the market rules, the standards established from the international experience as well as the personal opinion of the architect or constructor. The results vary and are often very interesting from an aesthetical point of view while they demonstrate the different views as to the values of these buildings. Among the ways of interventions the adaptation to new uses either by combining old and modern elements in the building’s interior or by preserving only the external envelope of the building ‘facadism\(^8\) has become increasingly common in the last few years and has often led to intense controversy.

### 3.3 New Uses and Technical Aspects

‘Is a little history better than none?’ asks Christopher Hume in his article at Urban issues (see Appendix D). As much as this issue falls into the grey area between conservationists and developers, it seems that there is not a right or wrong answer to this long debated question. The change of use in a historic building inevitably means the reshuffling of its interior and an important loss of genuine material, but what if it is a necessary action for the survival of the structure?

Keeping alterations to a minimum and preserve the building’s authenticity and initial use should be the first option, especially to those structures that have been declared as listed due to their high artistic and cultural importance whereas any drastic intervention might permanently affect their value. It is not a coincidence that almost all the international charters for the protection of architectural heritage have special references to the uses, which should be

\(^8\) Facadism: see Glossary of Terms
compatible with the cultural significance of a monument and should require minimal changes to the shell. Modifications should only be accepted when they have little impact on the buildings integrity. The Venice Charter, article 7, states: ‘A monument is inseparable from the history to which it bears witness and from the setting in which it occurs. The moving of all or part of a monument cannot be allowed except where the safeguarding of that monument demands it or where it is justified by national or international interest of paramount importance’.

For most conservationists, to keep the envelope of an historic building without any context of the past is like extracting its soul. By completely reshuffling a building’s interior, the genuine atmosphere, the memory of uses and customs as well as qualities like the general layout, materials and construction techniques employed are lost forever. The essence of a building is not only its external shell.

‘We ought to see old buildings not for their external appearance and morphological shape but for their inward substance and the soul that close within’ noted some years ago the architect Aris Konstantinidis, one of the most significant personalities of the modernist movement in Greece (Tzanavara, 2008).

On the other hand, for others, the change of use is a realistic compromise. Many are the architects who support that only a commercial use will be able to recoup the cost of restoration and where the listing criteria permit it there is no reason for not considering it as an option. ‘We should not reject commercial uses’ says Mr. Polyzos, Professor of Architecture in the Technical University of Athens ‘they are the most secure solutions for the expensive renovations required for historic residences’ and underlines that the possible negative side effects could be prevented with measures and legal specifications (Tzanavara, 2008). Indeed, many organizations and private companies, like banks and financial institutes, prefer to operate
from renovated neoclassical structures for prestige reasons and are prepared to pay high sums to purchase these buildings. In such a case of course, the buildings will inevitable lose their ‘scent’ of residence, with whatever that means, and adjustments of their interior will be required in order to accommodate their new uses. ‘To revive a building and offer it a new lease of life, you need to add modern elements that will carry it into a new era. In Greece, there is still stagnant thinking about the fate of monuments. The interventions are considered as methods of salvation and not ways to incorporate the building in the normal flow of change’ (Vatopoulos, 2007) supports the architect Ioannis Kizis who has been involved in many restoration projects of private and public neoclassical buildings in Athens, and continuous ‘Of course, the design of every restoration scheme should be assessed on its own particular merits’ (Dilapidation...and then Protection, 2005). This kind of approach finds many proponents accepting that some loss of original material is necessary and difficult choices have to be made.

Concluding, another essential issue to be considered is the economical viability of every redevelopment scheme. The preservation of a part of a building and its adaptation to new uses requires complex technical solutions, which make the construction significantly costly. Nevertheless, a long-term appraisal, based upon the quantity and quality of the accommodation provided could prove at the end that a modern use for a historical structure is a much more viable solution (Highfield, 1991, p.17, 18). The impractically planned –for modern standards- neoclassical residences, with their capacious entrance halls, staircases, corridors and the excessive storey heights, after an appropriate alteration could provide additional rooms or even extra floors which could led to possible higher rental incomes.
4.0 TECHNICAL CHALLENGES

In addition to the legislative, philosophical and economical arguments concerning the restoration of neoclassical buildings, the subject also dictates many technical challenges. The long term neglect, the frequent earthquakes and the lack of access in these dense urban sites, especially in Athens, create a plethora of technical difficulties for the preservation of the original masonry of these structures. Of course, each building raises its own unique problems and constraints but there are some common considerations which will always apply.

For start, a close assessment of a building’s condition should be carried out. Engineers have to identify the individual problems and decide the method of intervention that will be followed. It is not unusual though to have to review, more than once, the original project due to the unpredictable nature of the fabric, an incomplete survey or even a long term bureaucratic delay. The primal aim should be to ensure the structure’s stability and limit as much as possible the loss of original material. ‘Conservation is based on a respect for the existing fabric and should involve the least possible physical intervention’ (Article 2, The Burra Charter). Unfortunately, the commonly agreed practice that any kind of repairs and that in general all conservation work should be reversible is not always the case and difficult decisions must sometimes be taken on site.

Once a redevelopment scheme has been determined and all the problems have been taken into account, the principal issues to be considered will include:

- Ensuring stability of the original retained masonry walls.
- Reinforcing the existed original foundations or provide new ones where needed.
- Ensure the diaphragmatic function of the structure by repairs on horizontal elements (Roofs and Floors).
4.1 Repair and Stabilization of load-bearing wall fabric.

The rubble wall masonry, of the small scale neoclassical residences are, as has been mentioned before, in paragraph 2.3.3, roughly constructed and they usually have an inner core of rubble stones bonded with large amounts of mortar. Faults to this kind of masonry therefore are not rare and they usually appear as cracks, mainly discovered around windows and parapets. In most of the schemes, though, cracks and the repair of disintegrated masonry are not the only difficulties for the engineers as the connection of the original stone walls and façades with modern internal structures creates additional complexities in construction and compatibility.

4.1.1 Cracks

Cracking may result from a variety of problems like expansion and contraction movements of wall materials, lateral forces, eccentric loading or differential settlement. It is important during inspection to identify, by appropriate tests\(^9\), whether the cracks are ‘active’ –still moving- , in which case the causes must be immediately found and treated, or if they are static. For a proper assessment of causes, cracks should furthermore be distinguished between hairline cracks, cracks along mortar joints and cracks through units (Beckmann & Bowles, 2004, p.89; Makris & others, 1986, p.13).

-Hairline cracks: They usually are superficial cracks which appear to be located at the external layer of plasterwork, or minor cracks at the bedding mortar. If the cracks are static, and not

\(^9\) Crack movement can be measured by hand, marking on the masonry the length of the crack in every visit to the field. This method though is not precise and requires repeated field visits. Another way is to use a joint movement indicator, a device which is fastened over the crack and records movements over a period of time. Cyclical movements may take six months or more to measure whereas diurnal movements can be recorder over a few days.
expanding deeper into masonry, a simple re-pointing with mortar could be sufficient in order to exclude water ingress.

-Cracking along mortar joints: Cracks which occur along mortar joints could have a minor effect on the stone masonry or they could threat the integrity of the structure. The loose material embedded in the masonry of the neoclassical residences studied in this paper, could budge relatively easy and therefore the cracks are most of the times random in direction and width. After having investigated and treated the causes of the movement, a traditional method to repair the wall is by ‘stitching’. The cracked mortar joint is cleaned out and pieces of dust and debris are totally removed. New mortar, being in composition as compatible to the original one, is then applied taking care not to leave voids behind.

-Cracks through units: They are usually a result of excessive movement within the wall or settlement of the building foundations. In such cases, cracks not only affect the joints but are also expanding through the stones (figure 26). Detached material is often observed and pieces of stone and mortar are eventually falling out of the wall. For their repair, the method of ‘stitching’ could also be used, in which case along with the mortar, broken stones must be removed as well and new ones must be mortared in. ‘Stitching’ or tying across major cracks using epoxy resins formulations or reinforced concrete stitches and joining individual fractured stones with stainless steel rods may also be effective (figure 27), (Makris & others, 1986; Orphanoudakis, 1992).

Figure 26 Crack through masonry units and area that needs replacement (Orphanoudakis, 1992, p.109).

Figure 27 Crack tied across with steel rods (Makris & others, 1986 p.14).
In masonry walls where cracking is still moving, due to tensile stresses that cannot be completely eliminated, the insertion of tie rods may be proposed. This technique is implemented by drilling a number of holes, longitudinally within the thickness of wall, inside which stainless steel reinforcing rods are embedded. Another alternative could be to form horizontal rebates and insert steel bars to hold the materials together (figure 28). However, these techniques - drilling method and horizontal rebates - are common in bigger structures and are almost never implemented to the small houses, studied in this paper, as they require sound, homogeneous masonry of good quality, with limited fissures or voids, otherwise the risk of a sudden and uncalculated collapse could be extremely high.

Finally, when major cracks occur, there are times where the masonry is split from side to side threatening the structural stability of the façade. In this case, the dismantling and rebuilding of a part of a wall, using the same material – e.g. the same old stones – it may be an option, even though objections are sometimes raised against it.
4.1.2 Disintegrated Walls.

If for whatever reason –cracks, defective pointing, absence of roof- rubble core masonry is left exposed to water, bulging of the wall, especially at its base, is very possible to be observed (figure 29). When water enters into the vulnerable core of the wall, it washes the mortar away, leaving behind cavities which will grow until the rubble collapses into them. Nevertheless, if bulging of the wall does not appear, it should not be assumed that the wall is sound. Different tests can be employed to determine the structural soundness of masonry units and their bond to the mortar.\(^{10}\)

\(^{10}\) The simplest way to test the soundness of masonry is by a hammer test. The masonry is tapped slightly with a hammer and the resonance of the sound produced is evaluated. Another test, which could reveal possible cavities, is water testing. In this case holes are drilled in predetermined points and water is poured inside the masonry giving evidence of the presence of voids. Other, more complicated methods could involve the use of gamma or X-rays or ultrasonic testing (Feilden, 2003, p.307).
The most common solution for disintegrated masonry is to pour very liquid mortar into the core of the wall, through the masonry joints, known as ‘grouting’. It is a method widely supported by conservationists, as it enables old structures to be reinforced in an invisible manner preserving at the same time the original material. The simplest form of grouting is the insertion of a fluid lime-based mix\(^{11}\) (avoiding cement as it is incompatible with the original fabric), which flows into the open spaces and consolidates the masonry (figure 30).

Traditional grouting, even though being a good strengthening repair, cannot be regarded as a complete structural treatment in all circumstances.

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\(^{11}\) Grouting mixtures should be formatting differently for each specific project, in order to acquire each time the desired strength and penetration characteristics. In general, it should be a mixture of fine sand, pulverized fly ash or volcanic earth and a cementitious material –lime, hydraulic lime, Portland cement or various epoxy resins– in a proportion 2:1:2.
As an alternative, lime-based injections could also be used, as they are fully compatible with traditional materials and are often reversible. Their disadvantages though, the low fluidity and the long setting time needed, make them rather unpopular for the craftsmen.

All grouting operations and injected materials applied in historic masonry should always be recorder and kept with the archives of the building.

Another consolidation technique, which used to be quite common in Greece especially during the last decades, is the use of shotcrete. Gunite is a dry mixture of cement and aggregate applied on one or both sides of the disintegrated masonry. After the walls have been cleaned out and watered properly, a steel mesh is mounted on, in order to hold the loose materials and to add strength and durability to the wall. The mixture, in combination with water, is then sprayed through a gun at high pressure. Today in Greece the use of this method of consolidation on historic masonry is permitted only in special cases as it has led to many problems during the past. Its use, is not only against the principles of conservation, as no compatible materials are used for the repairs and the cementitious mixture is not reversible, but also the ‘alien’ materials added, change the overall structural behaviour of the building. Thus, even though gunite is an easy and quick solution, its selection must be made under strict and serious consideration (Plate 17).
4.1.3 Restoration of Bracing.

Lately, more and more restoration projects, applied on neoclassical residences, involve the retention of historically or architecturally valuable facades and the construction of modern structures behind them. Such schemes, widely known as facade retention schemes, raise inevitable a plethora of technical difficulties and a number of specialists on conservation and technical matters are always required for their resolution.

One of the most common problems met in facade retention schemes is the tying of the old and new structure together. The selection of the mechanical tie system will determine the stability of the structure as it will provide the lateral support missing after the removal of the existing internal elements. In most of the façade retention projects, the load bearing external walls are capable of supporting their own weight and therefore a suitable type of restraint fixing is just what is needed.

A widely used practice is to employ a resin anchor system. In rubble stone masonry, this method involves the anchoring of steel tie-bars, into very carefully drilled holes, after having previously injected a pre-mixed resin which will allow possible cavities that exist inside the masonry to be filled (figure 31). The anchors are then connected to the new structure (figure 32).

Figure 31 Resin anchoring technique for façade ties (Highfield, 1991, p.43).

1. Hole drilled into masonry.
2. Resin cartridge inserted into hole.
3. Tie bar spun into hole with drilling tool.
4. Tie bar anchored into masonry by rapid setting resinous mortar.

Pre-mixed resinous mortar may be also pumped into hole and tie-bar pushed in.
An alternative method could be the use of steel bars which pass, with various ways, completely through the façade and steel plates secure them on the other side. Anchor plates and tie bars are then concealed inside the layer of external mortar which is applied afterwards on the façade. In general, the factors which must determine the suitable tie-system should depend on the materials that will be used for the erection of the new structure as well as the quality of the existed masonry walls.

At this point, it is important to mention, that no matter which mechanical tie system are chosen, a certain amount of movement between the ties must always be permitted. The use of steel angle ties with vertical slotted holes or the placing of a slip surface between the ties of the old and new structure is a good way to allow a relative movement to occur. Especially in Greece,
where earthquakes are frequent, good detailing should always be considered as the first priority.

Furthermore, there are some façade retention schemes, in which even though roof and floors are being knocked down, the demolition of cross walls is not an issue as they are adjacent to the walls of the neighbouring properties. In these cases, given the small length of the neoclassical frontages, the lateral support provided –by the load bearing existing cross walls- might be sufficient. However, strengthening the wall junctions will be definitely necessary. This can be done, by dismantling the weak parts of the junctions and rebuilding them, with big cornerstones and appropriate mortar, or by forming rebates and inserting either reinforcing steel bars or pre-cast concrete ‘elbow ties’ (figure 33).

![Concrete ‘elbow-ties’ connecting the façade to a cross wall (Beckmann & Bowles, 2004, p.109).](image)

Finally, the formation of a perimetral concrete zone ‘chain’ at the upper edge of the masonry is also common at this type of interventions. Sometimes, for aesthetic reasons, this reinforced zone is concealed behind old stones, placed at the external side of the façade (figure 34). The concrete zone holds façade and cross walls together while bears the loads of the roof, replicating a traditional method where timber ties used to brace the walls in neoclassical residences. Nowadays, even though it is widely known that the application of concrete in stone masonry is not the most adequate material due to irreversibility and high stiffness, this
technique continuous to be in general use. The high stability that this reinforced zone provides to the structure as well as its cheap and quick application in comparison to alternative techniques such as the use of timber or metal ties, has made it over the years a convenient, common practice hard to reject.

![Typical concrete reinforced zone on top of rubble stone masonry](image)

Figure 34 Typical concrete reinforced zone on top of rubble stone masonry (Makris & others, 1986, p.11).

After the masonry walls have been strengthened and the facades are tied again back to the internal structure, proper plastering should take place, in order to restore all the architectural features and elements that give to neoclassical facades their unique character. The work must follow the traditional methods and practices, as they have been described in paragraph 2.3.3.

4.1.4 Temporary works.

In economical terms the shoring and scaffolding of an external or internal stone wall, which seems to be unstable due to surrounding demolitions, loose joints or due to a slight inclination is generally one of the most expensive, but also most important, tasks of the repair procedure. It is not a job for amateurs and should always comply with the current codes of practice in order to ensure that accidents in the construction area or damage to the building will be avoided.

The load bearing walls of neoclassical houses are arranged in a cellular form. The lack of a frame which could carry all the vertical and lateral loads, like the way modern structures
function, means that a balance of the forces applied must be succeeded so as to create a stable shell. The external walls combine with the floor and roof as also internal crossing elements, to create a stable ‘box-like’ assembly. When a redevelopment project, involves the demolition of floors, roof or the dismantling of cross walls or when slight dispositions have taken place, the balance of the structure is lost and the risk of collapse is high. A temporary support system must then be designed.

There are many types of support structures which could be used for the small and medium scale neoclassical residences. The aim is to be easy to install, easy to remove and to disrupt the restoration activities as less as possible ensuring the masonry’s stability at all stages. Due to the narrowness of the specific sites, in most cases, the access of big machinery, like excavating machines, cranes etc, must be thoroughly considered as it may only be accomplished through the retained front façade or pass next to a leaning wall.

Further factors which could influence the selection of the suitable support system could be the adjacent properties, the size of the pavements or other restrictions implied from local authorities (Goodchild & Kaminsky, 1989; Feilden, 2003). For instance, when the erection of an external shoring system is taking place in Athens, apart from the cost of the structure itself, a fee must be paid every six months to the authorities, concerning the occupation of the exact square meters of public space that someone has used, given of course, that the special license needed has already been provided. This additional cost is sometimes that high for the owners, that the constructors are forced to locate the support system entirely inside the site.

In general, the designed support system could be wholly external, wholly internal or a combination of both as well as they could be either self-standing or not. Some different types of support systems are described below (figure 35).
During the tying of the walls, care must be taken to avoid making new holes to the historic masonry. The bracing members should pass through the existed openings whereas where friezes, cornices and other elaborate features occur a sub-frame must be mounted on for their protection. For this kind of collaring, pads of timber and spacer blocks with stainless steel tie rods are commonly used which are then tied up to the main support structure. Overstressing
wedging or rigid ties could result in the cracking of the wall, so a small percentage of movement should be allowed.

In combination with the shoring system, scaffolds also need to be erected in order to provide a working platform and facilitate the repair work. Scaffolds must be free-standing, making sure that they do not add any more loads to the masonry and be strong enough for the heaviest routine work. Before their erection the subsoil has to be checked carefully for potential ground movement (Feilden, 2003; Orphanoudakis, 1992).

### 4.2 Foundations.

In historical residences, most of the damages that appear at the upper structure of a building are mainly caused due to weak and unstable footings. The first concern therefore, before any kind of repairs to masonry walls, should be to check and reinforce the defective foundations.

Some of the strengthening techniques which have been described already in paragraphs 4.1.2 and 4.1.3, referring to the consolidation of walls, like for instance the insertion of stainless steel reinforcing rods into the masonry or some grouting methods, are in general more frequent used for the under-the-ground strengthening, as foundations are on average found to be more carefully constructed and more homogeneous as materials. Other underpinning techniques regularly met, are the construction of adjacent reinforced concrete walls from both sides of an existing stone-base (figure 36) or the enlargement of existed footings (figure 37). In these cases, the ground around the existing foundations is excavated and temporary shoring systems are temporary employed in order to facilitate the examination of the footings (figure 38). Before any attempt is made to repair the defects, the construction team should make sure that
all health and safety procedures are followed and that no additional damage is going to take place to the already suffering historic masonry.

One of the most important issues though, that has mainly to do with foundations in façade retention schemes is the construction of additional footings for the new structure, which must not disturb in any way the existed old ones. A first solution could be to locate new foundations in some distance from the old column bases and cantilever the new floors till the junctions of the façade (figure 39). A second option could involve the construction of new columns adjacent
to the stone masonry walls (figure 40). The new loads could be transferred that way directly to the ground, even though, special care must be taken not to unsettle the existing dead loads of the retained façade. Moreover, a narrow gap between the old and new structure must be left for anti-seismic reasons.

Figure 39 Foundation design to prevent damage to the stability of the retained façade (Highfield, 1991, p.48)

Figure 40 New balanced-base foundations used for the stabilization of the retained façade (Highfield, 1991, p.49)
Of course, if the foundations of the existing shell are strong enough then the option of reusing the façade as load bearing element can be considered as well.

In Athens, like in other historic places of Greece, while uncovering the ground for stabilization work, there is always the risk of discovering that the structures involved in the redevelopment project were not constructed on proper foundations but were erected upon existing roman or classical ruins. In this case, the Council of Classical Monuments along with the Council of Modern Monuments –concerning the neoclassical upper structure- dictate whole new procedures that must be followed and the redevelopment project is kept on hold.

4.3 Horizontal Elements (Roof and Floors).

The roof and floors of neoclassical residences were traditionally constructed in timber, as it was considered to be the cheapest and more suitable approach for small housing structures. In some wealthy houses, especially the ones built during the end of 19th century, the cooperation between vertical and horizontal members was reinforced by metal beams. Their role was to transfer the loads from the horizontal level to vertical units, creating a stable shell. The correct construction of the floor and roof diaphragm bound the bearing members together and thereby strengthened the building.

Most of these timber structures, even though were constructed by second hand materials and accommodated several uses during their lifetime, bearing extensions, additions and modifications, managed to survive till present days with minor damages. Usually, major failures and problems start to appear when a floor joist, a roof truss or another structural member looses strength, initiating progressive failure and eventually loss of stiffness the whole structure. Possible causes for such damage could be the frequent seismic movements (figure
41), high moisture at the edges of joists and beams when are not adequately ventilated or weatherproofed properly (figure 42), the use of inappropriate timber sizes and materials, loose joints and in general poor workmanship.

Today, there are many remediation methods and alternatives for the restoration of these structures. In all treatment strategies though, the first necessary step is the static strengthening and reinstatement of the diaphragmatic function of structural elements. In cases, where the damage has not totally destroyed a timber component, local reinforcements can take place and restoration work can be successful without having to replace the entire member. Such repairs could be done with a combination of materials like clamps, iron angles, gusset plates, brackets, the use of strengthening concrete zones etc. On the other hand, when the condition of a roof or floor is very bad and the materials’ re-use is not an option for safety reasons, there are some different restoration methods that can be followed:

a. Replacement of the old timber structure with new one, with exactly the same form.

b. Replacement of the old timber structure with new one from metal or timber using modern technology and materials.
In general, when the vertical members are unable to bear the stresses of a modern new roof or floor, then a new bearing structure, that will transfer the loads to the ground, has to be constructed. Such interventions, however, are radical, costly and create many morphological problems.

The following figures are examples of different interventions on roofs and floors (figures 43-45). The best choice in each case depends on the specific building and the special problems facing.

Figure 43 Floor joists mounted on masonry walls with traditional (i), (ii), (iii) and modern methods (iv), (v), (vi) (author).
(i) V-shaped roof structure.

(ii) Traditional roof structure.

(iii) A-shaped roof structure.

(iv) Mixed timber frame.

Figure 44 Different types of roof structures met in neoclassical residences (Makris & others, 1986, p. 15).

(i) Use of additional timber rafters

(ii) Slates or bricks in projection

(iii) Principal tie-beams in projection

(iv) Support with reinforced concrete zone with extra metal or timber structure

(v) Purpose-made steel ‘shoe’ mounted on perimetral concrete zone.

(vi) Concrete slab and perimetral reinforced concrete zone.

Figure 45 Details of roof edges. Traditional (i), (ii), (iii) and modern methods (iv), (v), (vi) of remediation (author).
4.4 Some Remarks.

Concluding the theoretical and technical analysis of neoclassical restoration schemes in Greece, it is obvious that each project raises its own unique problems and demands a completely different approach. Engineers, conservationists, planners and developers should always counterbalance the negative and positive effects of each proposed solution so that the best strategy plan, under the specific circumstances, will be followed. Conflicts, complaints, different opinions and dissatisfied parts are common ground in this kind of schemes, even after the completion of the projects, as unfortunately there is not always such thing as ‘middle way’.

At the next chapter, some indicative restoration schemes, which involve small and middle scale neoclassical residences, are described.

In each case, the specific values of every building are being detected whereas the final outcomes are analyzed justifying or not the effectiveness of the legal framework and the personal choices of architects and developers. Moreover the philosophical approach behind each project is being discussed. Of course during each scheme, different problems were faced and less or more drastic methods were applied resulting in a variety of redevelopment examples. At the final overview of each project the current condition of the buildings is presented including comments and opinions of the architects as well as some viewpoints of residents living in surrounding areas.
5.0 CASE STUDIES

5.1 Case Study 1: Residence at Nikiforou Ouranou Street

Address: 26 Nikiforou Ouranou Street, Neapoli, Lycavittos, Athens.

Year of Redevelopment: 2000-2001

Building Description, FEK & Drawing References: Appendices D1

General Information

The house at Nikiforou Ouranou Street is a stone built residence located at the northwest slope of Lycabettus Hill, built around 1870-1900. It is a typical sample of an open type neoclassical two storey residence in Athens with three separate apartments (figure 46), internal yard and linear arrangement of rooms (see also ‘Building’s Description’ and ‘Drawing References’ Appendix E1).
The residence was listed in 1993, by the Presidential Decree published in FEK 889/D/93 of the Ministry of Environment and Public Works (YPEXODE). According to this Act: ‘As listed are characterized the original structures including the surrounding elements such as fences, fountains, gates, pebble floors, as well as the later additions of any kind as long as they do not degrade the character of the original building.’ Moreover ‘any removal, alteration or destruction of the individual architectural and artistic decorations or the building as a whole (...) is forbidden. It is permitted to carry out repairs, modernization of equipment, structural support and re-arrangement of the internal layout(...) only if they do not degrade the overall architectural character of the building and do not affect its preserved elements’ (see also FEK 889/D/93, Appendix E1).

In any anticipated redevelopment scheme therefore the original L-shaped structure should preserve its architectural and artistic qualities whereas the later addition located at the back, would be up to EPAE’s\(^{12}\) decision whether it should be replaced or not (figure 43).

\(^{12}\) EPAE: see Glossary of Terms

Figure 46 Plans of ground and first floor before restoration work (Kizis, 2004, p.117)
When the house was bought by the present owners it was in a very bad state. The internal wooden structures were seriously degraded by their prolonged exposure to weather conditions and the natural ageing of materials as the building was left abandoned for many years. Particularly, some of the timber roof trusses were broken, the timber floors were bending and the ‘hayat’ was in a poor state.

The internal plasterwork and lime washes, even though did not appear to have extensive damages, had obvious opened cracks and detached material in places, while the lath and plaster ceilings were bulging.Externally the façade retained vivid its characteristic yellow-ochre colour whereas the architectural features and the plaster decorations were severely disintegrated (figure 47, plates 21-22).

Figure 47 Front elevation and section depicting the actual state of the building (Kizis, 2004, p.116).

Plate 21 Balcony of external façade (Kizis, 2004, p.115).
Plate 22 Disintegrated plaster and running moulds of external façade before restoration (Kizis, 2004, p.115).
Concept of Redevelopment Scheme

In reality it was the building itself which managed to persuade the couple of professionals, both architects, to respond to the challenge of restoring it. Its location, central and quiet at the same time and its existing layout corresponded entirely to their demands during their quest for a place to settle their offices which could be used as well, as their permanent residence. “I couldn’t be insensitive to the form that the house proposed” said Mr. Enrico Capelli, the architect and owner (Kizis, 2004, p. 117). From the first moment, the principal goal of the repair project was to preserve as much as possible taken that the existed pattern of the structure suited fully the owner’s requirements.

“Restoring the house from abandonment was a small move to preserve the memory of whoever was born and lived here as well as a sign of the identity of the city, a small part of the most recent history. This identity has to be preserved, even in a dreamer’s way, with our own actions, otherwise it could lose its color, or get lost out of negligence and casualness, into oblivion and decline” (Enrico Capelli in Kizis, 2004, p.127).

During the design process, what was decided was to respect the style and the atmosphere of the old stone-built structure at the front and possible alterations to be implemented only to the brick structure at the rear. As expected, many were the elements of the existed layout which even though used to be of vital importance back to 19th century, like the portico, the internal courtyard or the pre-existed external well, were not necessary at all for the modern way of living. These elements though reflected the essence of the open type of neoclassical buildings (see paragraph 2.3.1) and inevitable their preservation was one of the main priorities of this project.
Finally, the building’s original materials were to be retained in their entirety, if possible, otherwise the new repairs would have to be distinct, preserving the building’s authenticity.

**Construction**

The new configuration joined the two separate apartments of the first floor level. Some rooms were unified, in order to modernize the facilities and infrastructure, leaving however signs of the old partitions, so as to be clear the pre-existed arrangement. The residence of the ground floor retained its previous layout, with small alterations to the auxiliary spaces at the back (figure 48).

![Figure 48 The new layout of the structure after restoration work. (Kizis, 2004, p. 119).](image)

In the time of the first assessment of the building’s condition in 2000, the engineers found out that the building was literally based upon the hard rock of Lycabettus Hill. The foundations were solid and since there was no evidence of damages due to earthquakes or any later alterations, the re-use of the external walls as load-bearing elements was confirmed.
The roof of the original structure was dismantled, checked thoroughly and re-erected, retaining as many of its original timbers as possible (plate 23, figure 49). In contrast, the roof of the dwelling at the back of the site was almost entirely reconstructed using a metal frame and other modern materials (see also roof details in ‘Drawing References’, Appendices E1).

The original floors, after consideration, were maintained as they were, so that the structure would not lose its lateral support. Instead of replacing them, the timber floor joists were retained in their original places and strengthened (plates 24, 25) as previously described in paragraph 4.3 (Horizontal Elements).
Under the floors, plastered ceilings were re-constructed, concealing as they used to, the floor joists and beams.

The ‘hayat’, being in a poor condition, was rebuilt almost from scratch by framing a new wooden structure similar to the old, traditional one (plates 26, 27).

Externally, the façade was restored to its previous state. The plastework was carefully repaired by a mixture of marble putty and slaked lime while the final coat was left white as the architects decided not to colour neither the outside or inside walls of the residence (plates 29, 30) a rather disputable decision as the use of colour is one the most characteristic features of neoclassical dwellings (see paragraph 2.3.3). The antefixes and other ornamental features were also repaired and placed back to their initial positions (plate 28).

Plate 27 (Right) ‘Hayat’ after its completion (Kizis, 2004, p.120)

Plate 26 (Left) ‘Hayat’. The timber frame during construction (Kizis, 2004, p.120)

Plate 29 (Middle) Frontage (Author)

Plate 28 (Up) Running moulds and antefixes (Author)

Plate 30 (Left) Interior (Kizis,2004, p.124)
Remarks

“The architect’s sensitive repairs and personal choices seem that revived the small residence, balancing well enough the modern way of living with the memories of the past. Being delicate and simple, the house gained back its old character and ‘heart’ without design excesses. Undoubtedly, when the discussion comes round the appraisal of the architectural and artistic qualities of the building some of the final outcomes could be disputed, like the choice to whiten the walls or the modern distinctive repairs, but nevertheless the fact of understanding and then respecting what was already there, without trying to mimic the past, was a significant base point. Moreover, the re-use of the structure as a residence, ensuring at the same time its integrity and structural stability, proved that the restoration of this neglected residence was a risk worth taken. The redevelopment project liven up not only the structure it shelf but became as well a forerunner, for more restoration schemes, that started the following years to the surrounding area, reviving the neighborhood after decades of abandonment.

“It was a pleasure to see, to start a new life the windows, the doors, the portico (...),and now that the memory is revived new elements of the present day are added” (Enrico Cappelli in Kizis, 2004, p.123).
5.2 Case Study 2: Theatre at Themistokleous Street

Address: 69 Themistokleous Street, Exarheia, Athens.

Year of Redevelopment: 1988-1989

Building Description, FEK & Drawing References: Appendices E2

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General Information

The listed building at 69 Themistokleous Street consists of a typical two storey and a basement neoclassical structure, built at the end of 19th century, and a later three storey addition placed at the back of the narrow plot (see also Building Description, Appendices E2).

Similar to the previous case study, the Decree forbids ‘any removal, alteration or destruction’ of the structure’ (FEK 1040/D/86, Appendices E2) that will degrade its architectural or artistic elements. These elements, according to the submitted technical report, were its front facade, its
internal layout and some other internal ornamental features, typical characteristics of neoclassical residences.

The dwelling was in general well built, a fact that contributed to its relatively good preservation till 1988, the year of reconstruction. The damages were limited to some hairline cracks to the façade and some detachments of the decoration elements. Despite that the structure was initially built as a residence, during the years change a number of uses, with more recent one, its use as a School of Technicians and Electricians.

Concept of Redevelopment Scheme

The property was bought in 1987 from the owners of ‘Theatre of Peireus’ who were looking for a building to place a new theatrical scene in the centre of Athens. The listed building at 69 Themistokleous street was regarded as the perfect chance to accommodate such a use being in an area -Exarheia Square and next to the Technical University- not only at the heart of Athens but also an area closely connected with the concepts of contestation and change. Furthermore, the existence of the pedestrian zones around the property (figure 50) turned out to be a key factor for the final selection.

Figure 50 Pedestrian zones around Exarheia Square (Ktimatologio.gr)
The basic guidelines of the redevelopment scheme— for both the design and construction process— was mainly dictated by the ideas of the well-known Greek architect Mr. K. Decavallas\textsuperscript{13} who undertook the project. The rescue of a traditional building, according to the architect, is not merely to preserve the historical memory and to ensure cultural continuity. A restoration scheme should promote, alongside, more practical tasks such as the sense of economy and should serve deeper philosophical goals such as the perception of non-destruction.

“Particularly in our time, developing the concept of re-use and non destruction becomes crucial” says Mr. Decavallas. “Today, what mainly concerns us is no longer just a monumental restoration or the maintenance of an architectural or historical valuable building but, in general, the reintegration of the building into life by the appropriate adaptation of uses” (Kizis, 2004, p.106).

\textsuperscript{13} K. Decavallas: Konstantinos Decavallas was born in Athens in 1925. He studied at the School of Architecture in Athens, NTUA (1948), Columbia University of New York (1953) and the University of London (1956). After his return to Greece, he joined the Ministry of Public Works (1956-1960) and from 1960 to 1969 was the primary architect of the National bank of Greece. From 1960 retains his own architectural office as well. In 1980 we was elected Professor of the Technical University of Athens (NTUA).
Construction

The general layout of the conversion was determined by the existed elements of the building. The street elevation, the basement and ground floor as well as the vertical communication core at the west side of the structure were maintained. Inevitable though, for the transformation of the once private residence into a public theatre some drastic re-arrangements had to take place as well. The middle floors, therefore, and the structures at the back were knocked down and re-constructed in order to accommodate the building’s new function. On top, an extra floor, not visible from the road, was added in recess, serving as a residence for the owner (figure 51, see also Drawing References, Appendices E2).

**Ground Floor:**
The entrance and lobby areas kept their classicist characteristics in an attempt to re-create to the visitor the sensation of entering in a neoclassical residence of the turn of the century. The back rooms were converted into auxiliary spaces for the theatre; the actors’ dressing rooms, the principal’s office, toilets for the actors and the audience.

**First - Second Floor:**
The first floor of the neoclassical front structure was demolished creating a double space hall, appropriate for the formation of the auditorium and stage.

**Third Floor:**
A penthouse was also added on top of the theatre for the director and his family.

Figure 51 The new arrangement of Themistokleous 69 after the restoration works (Kizis, 2004, p.102-103)
During the construction process many ideas were discussed. The solution of gunite for the consolidation of the rubble stone masonry was rejected while the grouting of the walls was considered as an insufficient solution. At the end, a full load-bearing internal independent structure from reinforced concrete was chosen, adjacent to the neoclassical frontage, to bear the new loads of the theatre (figures 52, 53). The frame of the new roof was also constructed by reinforced concrete, insulated properly and covered by the old Byzantine tiles.

Figure 52 Axonometric drawing indicative of the construction (Kizis, 2004, p. 113).
Figure 53 Section – Perspective of the interior of the theatre (Kizis, 2004, p.109).

Plate 34 The preserved classicist style lobby of the theatre (Kizis, 2004, p.107).

Plate 35 The stage of the new theatre (Kizis, 2004, p.110).
The exterior of the building was completely restored in accordance to its earlier form. The original ceramic antefixes were re-used (plate 36) while all the plasterwork of the façade -flat plaster, running moulds, sunken button decorations- was repaired thoroughly using traditional methods and materials. Other features of the frontage, like the window frames, the iron balustrades and the balcony’s marble brackets were preserved and placed back to their positions.

Finally, for the colouring of the façade, two contradictory options dominated: the use of a single neutral colour for the whole frontage, as the building used to be before the restoration works, or the differentiation of each horizontal zone, a common practice back to the 19th century. The second view eventually prevailed and the various parts of the elevation were emphasized using different colours (plate 37).

Plate 36 Decorative details of the frontage (Author)

Plate 37 The colours of the façade:
White and azurite-blue for coronation, light oxide-red for the middle part and yellow-ochre for the base (Author).
Remarks

After 20 years of continuous and successful operation –first opened in 1990- the theatre has staged many Greek and foreign performances and various other cultural events being one of the most well known theatres in Athens. Its new internal layout has been proved effective as, tested over time, has fully responded to the needs and requirements of troupes and public.

The building’s change of use, from residence to a public theatre, imposed many alterations to its infrastructure in order to enable it to adapt the new needs. Demolitions took place and new materials were introduced to the existing structure. Perhaps, under a different perspective, a greater percentage of original material could have been maintained or some less drastic solutions could have been employed. However, it cannot be denied that the site after its ‘surgery’ managed to ensure its historic continuity and the once redundant and neglected dwelling has been, beyond doubt, brought back to life.

In this case, though, independently of whether the final outcome was successful or not lays the reasonable question of how the implementation of such drastic measures was allowed. Having in mind that in the relevant FEK was indicated that re-arrangements are permitted ‘as long as they do not degrade the overall architectural character of the building’ (FEK 1040/D/86, Appendices E2) it is obvious that the retention merely of the front façade was not the subject.

The answer is actually simpler than it looks and totally legal. By applying for ‘Special Arrangements’ the restrictions for the structure were revised and a new FEK was published (see ‘Special Arrangements FEK 1163/D/87’ Appendices E2). The difficult part in this case would have been to persuade the current Minister or Deputy Minister for the importance of the proposed theatre scheme. After that, the new FEK, not only permitted the accommodation of
the theatre in the listed property, but in reality just validated whatever the restoration scheme proposed.
5.3 Case Study 3: Multicultural Centre at Millerou Street

Address: 24 Millerou and Kerameikou Street, Metaxourgeio, Athens.

Year of Redevelopment: 1998-2000

Building Description & FEK: Appendices E3

Plate 38 The abandoned house at Millerou Street before restoration (Contemporary Monuments Database: eie.gr).

Plate 39 The Multicultural Center at Millerou Street after restoration (Author).

General Information

The two storey building rising at the corner of Millerou and Kerameikou Street, at Avdis Square was built around 1835 and its initial form was characterized by the simplicity of the first Athenian residences. The cubical type building, initially built as a residence, has a long history and changed several uses during its lifetime. It hosted Botsari’s family, the National Archives,

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14 Markos Botsaris was a Souliot captain who fought heroically in the Greek War of Independence. Many of his family members became key figures of the Greek political establishment. Dimitrios Botsaris, Markos’s son, who lived in the residence of Millerou Street was three times Minister of War during the reign of Otto and George I of Greece.
the headquarters of ELAS\textsuperscript{15}, Provelengios and Drakos family and several other members of the Greek cultural and political scene (see Building Description, Appendices E3). The building was finally listed in 1986, by a ministerial decision published in FEK 1227/D/86, due to its significant historical and architectural value (see FEK 1227/D/86, Appendices E3).

In 1998, when the building, after being deserted for decades, was purchased by its current owners, it was found to be in a terrible state (plate 40). Internally, walls had been demolished and rebuilt in new positions, ceilings had been destroyed and floors had almost collapsed. Despite the alterations and the damages though, there was not lack of evidences of how the building used to be as the dwelling, first of all, was a typical sample of a closed-type residence and secondly due to its historic importance the structure was depicted in many engravings held till today at the Archives of Contemporary Monuments (figure 54).

\textsuperscript{15} ELAS: Greek abbreviation for the Greek People's Liberation Army, a resistance organization in Greece. It was one of the first leftish groups to take action against the German-Italian occupation during the years of Second World War.
Nevertheless, all this evidence was ignored and a paragraph published in FEK 1227/D/86, that regards the specific monument, proved to be critical for the future development of the building: ‘In case of restoration of a building that has suffered extensive damage and there are limited data of its initial shape and structure, the surrounding architecture and relative morphology should be taken into account and the technology used for the elevations of buildings in the area’ (FEK 1227/D/86, Appendices E3).

Concept of Redevelopment Scheme

In the late 20th century, the building at 24 Millerou Street was included in a larger redevelopment plan of local authorities for the reformation of squares and public spaces at Metaxourgeio area16.

The building at Millerou and Keramikou corner, being the only structure of Avdis Square (figure 55), was one of the first in the area to be bought by individuals in order to be renovated. The concept was to convert it to a multi-cultural centre for artistic activities. The restoration of the building along with the reconstruction of Avdis Square and the wider redevelopment schemes which were anticipated, would upgrade the area. The general plan was to transform the abandoned historical structure into a modern space, combining the history and architecture, of the building, with the appropriate mechanical and electronic services.

16 Avdis square and Metaxourgeio region in general, used to be widely known for the large percentage of immigrants, the cheap housing rents and the overall image of humble houses and dilapidated neoclassical residences. Today after a long period of abandonment, the area is acquiring slowly the reputation of an artistic and cultural neighborhood due to the opening of many art galleries, museums and small bistros. Local efforts have reinforced the sense of community and artistic expression while trying to transform the area into an Athenian east London or perhaps a next Kreuzberg.
For local authorities and the Council of Modern Monuments which had to provide the required regulatory approvals it was obvious at the time that any effort to preserve the building’s use as a residence would minimize its chances for a forthcoming buyer and the idea of adapting the building a more public character was considered as a necessary action in order to ensure the structure’s continuity into time.

**Construction**

After the appropriate permission for the scheme was provided, the restoration or better the reconstruction of the building took place.

Apart from the foundations, which were retained and strengthened, the rest of the structure was almost rebuilt from scratch. All the internal ceilings, floors and timber structures were demolished and the load bearing walls were dismantled and reconstructed. On top of the first floor, a whole new storey was added, like a loft, increasing the total height of the building.

Internally the layout of the building was also totally re-arranged. New floors, modern internal partitions, open spaces, stylish staircases and lifts were constructed using plasterboards and other modern materials transforming the structure into an office-like multi-space which did not remind at all the atmosphere of the existing neoclassical building (plates 41, 42).
Finally, the external facades were completely remodeled, after the addition of the extra floor, and re-plastered with new ornamental features of neoclassical style (plates 43, 44).

Remarks

The main characteristic of the restoration project at Millerou and Kerameikou Street is the complete lack of sensitivity to the initial structure.
Developers and architects, by interpreting in their own way the legal framework and by using irrelevant features of neighbouring structures, replaced in reality the historic residence with a fake ‘neoclassical’ form that never existed. The insufficient control system and the vague legal framework referring to the use of surrounding elements when ‘there are limited data of (the building’s) initial shape and structure’ actually permitted the loss of this historic residence.

The Council of Modern Monuments itself, which among others they did approve the implementation of the specific project, when referred to it, they mentioned that “the adding of a loft and the ‘neoclassical’ decorative elements do not match with the original robust and simple form of the building” (Council of Modern Monuments).

The interesting point however, of this restoration scheme, is that local residents and visitors of the area are really satisfied with the result. Most of them, when commented on it, they described it as “the jewel of the area” or “the striking building at Avdis Square” an attitude which raises questions about the understanding and real evaluation of the buildings. This lack of knowledge could be really worrying considering that what people actually see today is a fake idea of how a 19th century residence used to be. Buildings and places valued as cultural heritage should not be addressed merely to conservationists and experts but mostly to people who interact everyday with the buildings. And if these people do not appreciate or misunderstand this cultural importance then where exactly lays the historic continuity of a structure?
5.4 Case Study 4: High School at Asklepiou Street

Address: 183-185 Asklepiou Street, Neapoli, Athens.

Year of Redevelopment: 2000-2002

Building Description, FEK & Drawing References: Appendices E4

General Information

The structure located at 183-185 Asklepiou Street is a neoclassical building of 1914, designed by the architect Andreas Kriezis. It is a medium scale structure with all the typical characteristics of its time, such as the use of the newly introduced metal beams and bricks, the internal and external eclectic features as well as the excessive decorativeness of the façades (plates 45, 46; see also Building Description, Appendices E4). The building, constructed at the junction of two streets -Lambrou Katsoni and Asklepiou-, has a V-shaped plan and was initially built as the residence of Eugene Plock, a German trader. After a few years, the structure was sold to the Greek State and became a public building changing several uses. Today hosts the 46th High School of Athens. In 1993 the structure was listed by the ministerial
act FEK651/D14.06.93 as one of the few still surviving samples of the late period of neoclassicism.

The dwelling in general was well constructed and operated without significant structural problems until the earthquake of 1999 when specific failures were observed. More detailed, oblique and vertical cracks were noticed on several walls whereas some detachments of bricks and some seriously corroded metal beams affected the building’s preservation.

**Concept of Redevelopment Scheme**

The restoration project of the 46th High School of Athens was assigned in 2000 to the company Domos Consulting Engineers and the architect G. Mitakidis. The principal aim of the scheme was the thorough inspection and strengthening of the structure in order to continue to operate as a school. The structure, being an educational building, was imposed on additional reinforcements -more than any other neoclassical dwelling- as the first priority was to ensure the desired safety level against seismic actions according to Hellenic Antiseismic Regulations of 2000.

Moreover the restoration scheme had to respect the neoclassical character of the structure and to retain as much as possible of the building’s original material (see FEK651/D93, Appendices E4). Therefore, before any irreversible decision was made, a careful assessment of the
building’s condition was first executed and several tests were programmed. Appraisals upon the mechanical properties of the materials and the carrying capacity of the masonry were prepared while the necessary seismic and static monitoring of the walls was recorded. Finally, samples of mortar and stones were taken into laboratories for the appropriate tests as well as for compatibility reasons (plates 47, 48).

Construction

When the technical approach for the restoration scheme was finally decided, a temporary shoring system with ranking shores placed both internally and externally was erected (see figure 32, at paragraph 4.1.4). The foundations of the building, after the necessary investigation, were found to be strong and sound without serious problems in contrast with the upper structure where many defects and cracks came to light after the 1999 earthquake.

Having in mind that the existed rubble stone masonry was intended to be re-used as a load bearing element, more than one consolidating techniques were required for the strengthening of the walls. Therefore, injections with the appropriate grout, steel meshes, FRP\textsuperscript{17} strips, reinforced concrete zones and gunite behind the pediments were applied on the masonry walls (plates 49-53).

Moreover, the diaphragmatic function of the floor and roof systems was reinforced properly, as the existed metal beams were in a bad condition (plates 54, 55). For the repair of the roof, the existed timber frame was preserved and only a few severely damaged rafters were replaced by new ones (plate 56).

\textsuperscript{17} FRP: Fiber Reinforced Polymer is a composite material, introduced in the mid 20\textsuperscript{th} century to the construction industry and which is since then increasingly used for the repair and strengthening of buildings’ elements with applications on reinforced concrete beams, columns, tilt-up walls, unreinforced masonry walls etc.
The injection of a suitable grout was judged necessary as several laboratory and on-site tests showed that a large percentage of cavities - almost the 20% of the total volume of masonry - occurred at the core of rubble stone walls. After trials the final mixture used for the grouting was a composition of lime, pozzolanic aggregates and a small percentage of cement.

For additional strengthening the masonry walls between the openings of ground and first floor were tightened with a steel mesh and a reinforced mortar was applied.
The flexural and shear capacity of the areas above window and door openings, where many cracks had emerged, was enhanced by the application of FRP strips, placed in an X-shape, to the exterior surface of the masonry.

At the upper edge of the load bearing walls a zone of reinforced concrete was constructed in order to tighten the walls and create a base for the roof.

Gunite was also applied on the internal side of the pediments, found on top of the structure.
The diaphragmatic function of roofs and terraces was also strengthened by the placement of metal beams along the openings.

Replacement of the damaged wooden trusses preserving the sound timbers of the frame.
Concluding all the internal wooden elements –staircase, wooden paneling, timber doors and windows- were repaired carefully while the plastic laminates which used to cover the floors were removed, revealing the original wooden floorboards (plates 57, 58, 59).

The external facades were re-plastered were needed. In particular, all the architectural features - such as mouldings, friezes, cornices, window casings, medallions, etc- were restored with suitable plasterwork and painted with colours based on the previous appearance of the building.

Remarks

The building of Asklepiou Street continues till today to operate as the 46th High School of Athens. Like all educational dwellings, it is a building which carries memories of many generations of Athenians who lived and studied in the area and its restoration was everyone’s wish. The choice to restore it again as an educational institute was in reality one-way decision as the building operated already successfully for many years as the local school.

The redevelopment project of 2000 enabled the structure to regain its structural strength using a number of methods and approaches. Some of them however, even though the construction team did not lack understanding and appreciation for the building, are not reversible as the good conservation practice commands (see paragraph 4.0 Technical Challenges, p.41).
The existed bad condition of the structure along with the strict restraints and safety measures, imposed on educational dwellings, did not allow the use of less drastic practices. The building inevitable became a mixture of the original constructed stone fabric, timbers and metal joists along with steel meshes, FRP strips, cementicious mortars and additional new materials, concealed behind the rendered walls and ceilings.

The final outcome, nevertheless, having the assent of EPAE and by complying as much as possible with the relevant FEK 1227/D/86 that permits “repairs, modernization of equipment, (...) and structural support of buildings classified as listed, only if they do not degrade the overall architectural character and do not affect its preserved elements” justified the architect and technicians as at the end the structure managed to preserve its original atmosphere and classicist features.

In this case, it became clear, that when principles like integrity and authenticity contradict safety and stability, some sacrifices have to be made in order to enable continuity. At the specific project, the flexibility of the Decree upon interventions proved to be positive as even though some irreversible interventions took place the building continued successfully its operation as an educational institute. Without a doubt, however, the level of intervention should have been a matter of more serious consideration by the architect and the effectiveness of control mechanisms and measures is undeniable essential.
6.0 DISCUSSION

The four restoration projects that were presented, show a variety of philosophies and construction techniques employed on neoclassical structures and identify, in each case, the level of protection provided by the legal framework. The starting point for each scheme was the same. The restoration of a small or medium scale neoclassical residence, initially constructed during the 19th century. What is impressive however, is the wide range of the final outcomes.

Different construction teams and architects more or less known, evaluated the individual site restraints and buildings’ conditions and depending on how the legislative framework was interpreted, various results came out. Drastic or gentler techniques were employed, during the construction processes, proving that in practice, is not always possible to conform to the desired ideas. The restoration scheme of Themistokleous Street, for instance, raised the question of whether the building’s architectural and historical value was actually preserved after the erection of a whole new concrete frame inside the structure. Even though the architect appeared reasonable enough when talking about the ‘perception of non-destruction’ and he moreover managed to persuade the appointed Council and Deputy Minister for the success of his project when applying for Special Conditions (see paragraph 3.1 Legislation, p.35), the final outcome evoked a lot of controversy. For sure his choice ensured the structure’s continuity; but was in reality a value-based approach?

It is a fact that in most cases, the personal believes of the people involved in a repair project are reflected on the structure more than any conservation principle or legal restrain; like the romantic attitude of the architect E. Cappelli, in the Nikiforou Ouranou project, which resulted in a gentle restoration approach but to a whitened façade scheme as well. Or even, the more impersonal construction team of engineers of DOMOS Consultants, who were assigned the Educational Institute in Neapoli, and a plethora of techniques were applied, tying, wrapping,
grouting and adding a number of new materials to the structure without of course to be argued the necessity of these actions; only the sensitivity towards the building.

At the end, there is also the great example at Avdis Square. A scheme that reminds us how easy we can lose or twist our cultural heritage and what impact this will have on future generations.

Nevertheless, the success or not of a restoration scheme should not be a matter of luck neither should depend on each architect’s sensitivity. Unfortunately, the legislative protection in all these cases seems ineffective. How can a legal framework, which is in general supposed to be very strict and imposes so many difficulties and legal obstacles to the owners ‘for protective reasons’ to permit such a variety of different outcomes? It has been proved in this paper, that almost all the architects’ ideas, no matter how drastic were or not they were actually implemented with one or another way –either by taking advantage of the free interpretation of the law either by applying for Special Conditions, excluding the properties from the strict restraints-. It is obvious that the once revolutionary and pioneer legislation system, born after the urgent reaction of people against the massive demolitions of neoclassical residences during the 20th century, has today been confined to bureaucratic processes and appears unable to act when it comes to the actual implementation of the projects.

Furthermore it is not a coincidence that none of the restoration schemes presented was implemented by the initial owners. It is really rare to find such a case as most of the times the individual owners cannot bare the high costs required for a restoration scheme. Almost all the listed neoclassical structures –if they do not remain neglected- are either sold to the State or to people who have the financial ease to invest on them.

It is quite clear therefore that the legislation for the protection of contemporary monuments and in particular neoclassical buildings in Greece has a long way to go yet. Maybe a few decades
ago, when the fast rehabilitation of Athens and the introduction of concrete demanded strict
prohibitions for the protection of monuments, this austere bureaucratic-based system had been
a good solution; but not anymore.

The legislative and administrative measures of today require updating. The aim should not be
merely the passive protection -penalties, monitoring, prohibitions-, but the creation of
conditions in order to protect this neoclassical heritage.

First of all the responsibilities and procedures for the protection of contemporary monuments
should not be shared between different Ministries –Ministry of Culture and YPEXODE-. Only
one Institutional body or Ministry should take over the maintenance of architectural heritage
and with the cooperation of different organizations, like the Council of Contemporary
Monuments or the Committee on Urban and Architectural Control, to apply a single national
policy. A good idea could be as well the establishment of an independent body, which could
operate as a statutory adviser between the state and different organizations, similar to the
‘English Heritage’ body in the UK.

In addition, local authorities should start playing a more active role in planning decisions as
they are better aware of the local problems or needs and should be willing to exchange ideas
and information with individual owners (see current listing process in paragraph 3.1
Legislation, p.50).

Furthermore, it is essential the electronic recording and classification of listed buildings in a
single National Register. Instead of considering each building as a special case on its own or
within a group of 30-40 building of its area (see relevant Presidential Acts, FEK, of each case
study) it would be better the listed buildings to be sorted by degree of importance –like the
different listing categories that exist in most European countries- so that the monitoring of the procedures and control regulations would be easier and more properly implemented.

Moreover, financial support and adequate fiscal relief should be made available to individuals in order to help meet the cost of restoration and maintenance of listed buildings. Maybe then, private owners would be motivated to restore their properties rather than abandon them till they collapse or seek merely for commercial uses.

Finally a proper brief for the importance of conservation should be provided to the public. Educational programmes for all ages and training practices for professionals should be organized by experts so that a wider awareness will be raised and younger generations would appreciate and understand the importance of our cultural heritage.

In short, as highlighted during this paper, many are the factors that have to coincide effectively regarding the protection of neoclassical residences. Administrative co-operation, conservation principles, personal sensitivities, building techniques, site constraints and restoration budgets are only some of the considerations which verify that conservation is a complicated procedure. However, for the development of an integrated conservation system, the existence of a modernized and effective legislation should be one of the first concerns, as it is undeniable that new problems require new approaches. Concluding, it has to be noted that the neoclassical legacy delivered to us is a fundamental part of our cultural history and important steps should be taken to ensure that this priceless heritage will survive through time and be held for generations to come.
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