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## RESTORATION OF THE LIECHTENSTEIN PALACE

### RESTAURACJA PAŁACU LIECHTENSTEIN

#### Abstract

After roughly four years of restoration works, the Majorat House of the Princes von und zu Liechtenstein in Vienna was reopened on 9 April 2013. The staterooms of the Liechtenstein City Palace will in future also be accessible to the public. Alongside the staterooms, the new use includes the LGT Bank premises and a three-storey art depot that was lowered below the inner courtyard during the conversion work; in addition, there are also rooms that are available to the Princely family during their stays in Vienna. Not only is the restoration of significance from a cultural policy point of view, it is also of considerable importance for monument conservation in Europe. It is the largest completed restoration in the City of Vienna to apply scientific monument-conservation principles, and is beyond doubt already to be regarded as the standard for the restoration of similar buildings in Europe. The restoration has been honoured not only by the City of Vienna; the conservation project related to the Liechtenstein City Palace also received a special mention by the EU in the form of the Europa Nostra (the voice of Cultural Heritage in Europe) in 2014 and the German Light Design Award 2014 in the museums category.

*Keywords: historic architecture, restoration, conservation monuments*

#### Streszczenie

Po około czterech latach restauracji Dom Ordynacji Książąt von und zu Liechtenstein w Wiedniu został ponownie otwarty 9 kwietnia 2013. Komnaty reprezentacyjne pałacu miejskiego rodziny Liechtenstein będą także w przyszłości dostępne publicznie. Poza komnatami reprezentacyjnymi nowa funkcja zawiera także siedzibę banku LGT i trzykondygnacyjny magazyn zasobu dzieł sztuki, który został zainstalowany pod wewnętrznym dziedzińcem podczas prac adaptacyjnych; ponadto są tam także pokoje dostępne dla rodziny książęcej podczas ich pobytu w Wiedniu. Restauracja ta jest nie tylko znacząca z punktu widzenia polityki kulturalnej, ale także odrywa ważną rolę w konserwacji zabytków w Europie. To największa realizacja restauratorska w mieście Wiedniu, która stosuje naukowe zasady konserwacji zabytków i bez wątpienia może już teraz uchodzić za standard restauracji podobnych budynków w Europie. Restauracja została uhonorowana nie tylko przez miasto Wiedeń; projekt konserwatorski związany z Pałacem Miejskim Liechtensteinów otrzymał także specjalne wyróżnienie Unii Europejskiej w postaci nagrody Europa Nostra (czyli głosu dziedzictwa kulturowego w Europie) i Niemiecką Nagrodę za Projekt Oświeślenia w kategorii muzeów za rok 2014.

*Słowa kluczowe: zabytkowa architektura, restauracja, konserwacja zabytków*

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## 1. Introduction

The conservation and restoration of the Liechtenstein City Palace is one of the most comprehensive projects following scientific conservational principles to be undertaken in Austria. At the heart of the interest and all building activities was the historical object, its history and its value, which often had yet to be discovered. The study of sources, archaeology and – particularly important – the scientific conservational evaluation (“the object as the source of research into its own history”) all contributed significantly to the recognition of the value of the monument.

The basic principle underlying the work was the consideration and realization of the monument’s value in accordance with the Management Guidelines for Cultural Heritage Sites. The development and management of a conservation project cannot be compared to other construction projects; as shown by the relevant schematic (Ill. 1).

### 1.1. The history

The high level of public interest and the global media presence upon completion of the restoration work can only be fully understood if one is aware of the importance of this building for Vienna, both historically and today.

From the historical point of view<sup>1</sup>, it must first be mentioned that the building is considered to be the first High Baroque building to be constructed in Vienna. Eight years after the second siege of Vienna by the Turks, at a time when the destruction this had wrought in the city’s structure was still clearly visible, Count Dominik Andreas Kaunitz, the State Chancellor and a patron of the arts, began work on the construction of the palace to plans by Enrico Zucalli. In 1694, whilst it was still in the construction phase, Prince Johann Adam Andreas I of Liechtenstein purchased the building and had it completed as a city palace to plans by the Roman architect Domenico Martinelli, with work by important artists such as stuccateur Santino Bussi, sculptor Giovanni Giuliani and the painters Andrea Lanzani and Antonio Bellucci. On the façade fronting Bankgasse Martinelli created the first monumental Baroque portal in Vienna; the side portal on the Minoritenplatz was added later by Johann Lucas von Hildebrandt.

Prince Johann Adam Andreas I, had intended the palace to be a family residence: the princely apartments were located on the first floor and the rooms on the second floor were, from the start, used as showrooms for the already considerable princely collection. The ground floor and cellar contained the ancillary rooms, such as the kitchen, bakery and servants’ quarters. As was usual in the Baroque period, the horses were stabled in the cellar, and could be led into it via a ramp under the grand staircase.

At the end of the 18th century, the Bankgasse palace lost its importance for the Liechtenstein family. Between 1807 and 1810 the portrait gallery was removed to the Rossau

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<sup>1</sup> The presentation of the history follows basically data and specifications headed at the homepage of SFL-Stiftung Fürst Liechtenstein (<http://www.palaisliechtenstein.com/de/downloads/texte.html>). A comprehensive scientific publication of history and restoration of the Liechtenstein Palace is given by the director of the Princely Collection Art Service GmbH & Co OG, Dr. Johann Kräftner, Vaduz-Vienna, in: Johann Kräftner, *Das Stadtpalais Liechtenstein: Geschichte und Restaurierung des fürstlichen Palais in der Wiener Bankgasse: Barock, Neurokoko, Biedermeier*, 2013.

Garden Palace, during which removal the ceiling paintings by Belucci, among others, were also relocated.

The renovations which still define the City Palace today were undertaken between 1836 and 1847 under Prince Alois II of Liechtenstein to designs by Peter Hubert Desvignes<sup>2</sup>. The remodelling was the first in the Rococo Revival style in Vienna and is considered the most important of its kind. Not least important from the point of view of art history was the creation of the concept of the “Viennese Salon” to which this gave rise. The interior decoration was executed by the craftsmen Carl Leistler and Michael Thonet; not least among their work being the splendid inlaid parquet flooring.

The further history of the City Palace is quickly told: in 1945, in the final days of the war, direct hits by bombs and an aeroplane crashing into the roof resulted in serious damage. The staircase near the ceiling of the second floor was completely destroyed and the adjacent state rooms suffered considerable damage. In the years immediately following the war, temporary work was carried out to secure the fabric of the building and repair the worst damage. However, due to financial losses suffered by the family as a result of the events of war, the first renovation work, still marked by economic pressures, was not carried out until 1974/76, and this was mainly aimed at creating offices in order that the palace could be rented out.

## 1.2. Use of the heritage before the project commenced and state of conservation

The use of the rooms in the palace prior to work commencing was, for the most part, as offices which were rented to a ministry, or as private rooms. Most of the historic state rooms on the first and second floors were not in use and had stood empty for some years.

The conservation work began with the structural work, not least the demolition of the many suspended ceilings and partition walls which can mainly be traced back to the modification work undertaken in the 1970s. What is particularly noteworthy in this respect is that as long ago as the Biedermeier era Peter Hubert Desvignes had had suspended ceilings installed below the vaulted ceilings in two rooms in order to enable the rooms to be divided differently. It was only during the demolition work for the recent renovations that the original historic room structure was reinstated; it was possible to reveal many vaults and stucco ceilings that had literally been “rediscovered”.

With regard to the existing building stock it must be stated that before the conservation work began the City Palace was not in a good structural state. Part of the reason for this was historical subsidence, caused by the fact that the Baroque architects had incorporated existing foundations into the new building, but probably also by ground movement resulting from its location close to the significantly lower lying glacis. Additionally it had suffered significant damage as a result of the plane crash over the great staircase at the end of the Second World War.

The structural renovations were carried out partly by means of a steel skeleton that holds the wings like a belt, and partly through the construction of a three-storey storage vault below ground level. This underground construction, which includes the whole of the courtyard area, and at approx. 17.5 m is almost the same height as the palace to the main entablature, works

<sup>2</sup> Concerning Peter Hubert Desvignes, see in particular: R. Stalla, *Der Stil ist im ganzen und großen Rokoko*, Peter Desvignes Neurokoko – Ausstattung im Stadtpalais Liechtenstein in Wien, [in:] R. Stalla, A. Zeese (Hrsg.), *Architektur und Denkmalpflege*, Innsbruck 2012, pp. 299–314.

like a rigid concrete box, which also contributes significantly to the securing of the now completely renovated structural framework. As far as it is humanly possible to judge, the building will suffer no further subsidence or deformation.

A further reason for the building's instability prior to the conservation work was that the load-bearing walls were riddled with numerous channels for chimneys and ventilation which had been added at some date after construction, and which frequently ran straight across a wall. The majority of these shafts had to be lined with bricks, grouted or enclosed in steel frame before further renovation work could continue. In addition to this, the whole of the south wing, namely the wing against the fire-proof walls of the adjacent houses in the direction of the Ballhausplatz proved to be a suspended wooden structure, all of the partition walls were suspended over two floors from the supporting framework of the roof, with even the timbered ceilings being incorporated into this construction. For structural reasons, particularly in view of the intended use for functions, this frequently used method of construction for the Baroque period could not be retained and had to be replaced. Luckily, due to its low height, this wing had only ever been used for ancillary rooms and did not contain any state rooms or specially furnished rooms.

A fundamental decision which significantly influenced the structural work was the decision to equip the whole house with air conditioning because of the valuable room decor and paintings. A total area of 2,085 m<sup>2</sup>, not including the building services rooms, was included, whereby, by virtue of its connection to the Vienna District Heating System, most of this area must be taken into account for cooling purposes. Not least because of the difficulty of installing shafts in the state rooms, the cooling units have had to be split over two locations: some are located in the cellar, the rest in the attics. Air is provided to and extracted from the machines in the cellar partly by means of a newly-installed, multi-storey air fountain below the triangular courtyard on Löwelstraße, and, for the rest, via a former cellar window. An additional air intake had to be located in the floor of the entrance foyer. The carved bronze ventilation grilles for this were integrated into the stone flooring of the foyer. Air for the machines in the attic is provided and expelled by means of roof openings and skylights.

The revitalization of the Liechtenstein City Palace is the most comprehensive restoration following scientific conservational principles to be undertaken in Vienna in recent years. In the course of the preliminary planning, numerous files, plans and photographs in various archives were consulted, with a considerable proportion of these coming from the Liechtenstein family archives<sup>3</sup>. The knowledge which could be acquired through targeted examination of the building was also important for further planning.

### 1.3. The conservation concept

The conservation concept for both the interior and the exterior was based on the preservation of the existing historic stock.

The restoration of the rooms and external areas was carried out on the basis of scientific conservational criteria. The aim of the restoration was agreed with the Federal Office for the Protection of Monuments.

Any interference with the historical structures was kept to a minimum.

The Alterswert of the surfaces was respected. Patina is desired.

<sup>3</sup> The author thanks Dr. Johann Kräfner, director of the Princely Collection Art Service GmbH & Co OG, Vaduz-Vienna, for scientific support.

#### 1.4. Working methods

Basic research, including a study of the architectural history, was undertaken prior to planning. The review included archives of photographs and plans, plans showing the different periods of construction and historic views of the buildings.

The documentation of the building stock prior to construction work was accorded great importance. In addition to geodesic plans, colour scan imaging was undertaken for the lavishly decorated rooms and all surfaces, (floors, walls, ceilings) were mapped using orthophotography. The decor was detailed and the quality of the partitions (ceilings, wall, floor) recorded in the room data sheet. The room data sheet was also used to estimate the costs.

Where there were new building structures, the installations were reviewed prior to the planning stage, the state of the building assessed and geological investigations and archaeological excavations undertaken in agreement with the Federal Office for the Protection of Monuments.

Appraisals were carried out object by object with scientific evaluation. Damage such as that caused by salt or water was analyzed and recorded in the plans.

The planning process took account of the knowledge gained in the preliminary investigations and appraisals. Interference with historic structures was kept to a minimum, or ruled out altogether in the case of the lavishly decorated areas.

Once the aim of the restoration work had been agreed, samples were produced. The individual stages of the work were documented precisely in order to ensure traceability.

The specifications were drawn up on the basis of the samples and the agreed catalogue of measures.

Implementation of the services was undertaken by qualified restorers.

#### 1.5. Materials

As a matter of principle, only tried and tested materials appropriate to the historic structure were used.

Harmful materials such as repairs using cement plaster which impede the moisture exchange were removed and replaced with appropriate conservationist materials.

For retouching or overcoating work, only reversible materials were used.

#### 1.6. Classical restoration work

Only after the preliminary planning and the work necessary from a technical point of view had been completed could the actual conservation work begin, relying heavily – in accordance with basic conservation principles – on the use of authentic materials and the building techniques of the original period. So, to give just three examples, the lime-based façade paints were applied, similarly to a fresco, to the still damp lime plaster; the world-famous Thonet floors were repaired, where damaged, through painstaking, detailed, handcrafted intarsia work; and in order to replicate individual wall hangings, a weaving loom capable of weaving around 20,000 warp threads was purchased. However, the restoration is also to be seen as an example of monumental preservation in Vienna, where great emphasis is placed on the Alterswert (the value of aging and the importance of marks of usage). For

this reason the gilding was only replaced where replenishment was necessary, otherwise we contented ourselves with simply cleaning the now around 170-year-old gilding.

Furthermore, it was only possible to meet the deadline for the renovations because a platform was erected below the ceiling in the state rooms so that it was possible to work at floor and ceiling level simultaneously.

It is difficult to imagine the investment involved in such a complete renovation. By way of an example, all of the original fittings for the around fifty ornate doors and hundreds of meters of carved picture rails had to be hunted out, rather like a giant jigsaw puzzle, although new examples frequently came to light in the princely depot and in the cellar and attic rooms of the old palace. One of these “finds” concerned a small remnant of the carpet for the grand staircase bearing a leopard skin pattern, which was also reproduced. Historic photographs dating back as far as the mid-19th century were also an invaluable aid in recreating the room interiors.

### 1.7. The restoration of the world-famous Thonet floors presented a particular problem

In order to facilitate understanding we must explain the manufacturing process as it was applied in the case of the Liechtenstein City Palace. The subfloor is of oak and is approx. 28 mm thick; its surface is of a quality that could easily have been used as the visible surface. An approx. 3mm thick layer of intarsia work (marquetry) made from native and exotic wood was attached to this surface. For the intarsia work, Thonet had the loops and curves produced by means of the steam bending process he had developed glued into an approx. 6 mm thick layer with the surrounding wood, and then – for the first time ever in Vienna – used saws powered by transmission belts to cut them into 3mm thick marquetry panels which were then glued to the subfloor. In addition to this, Thonet had floral elements and wide borders extending beyond the edges of the subfloor laid by hand, for which he brought his sons to Vienna.

The state of the floors prior to the restoration work was frankly catastrophic: a large part had simply been left unrestored and covered by a second floor after the Second World War and only the Quadratsaal had been treated to “renovation” by means of the sanding and varnishing of the intarsia surface.

The extent to which the character of the originally waxed “intarsia carpet” had been impaired by this inappropriate measure was only revealed when the double floors in the other rooms were taken up.

The damage to the unrestored floors was also considerable thanks to the war and general use. In addition to shards of shrapnel, the intarsia work in the individual rooms often included damage covering several square metres and in many rooms up to 50% of the intarsia and marquetry work was coming away from the oak subfloor. In some places the subfloors were worn through. The removal and replacement at the right level of approx. 20% of the parquet tiles which was necessary for the technical improvements also posed a serious challenge. For this we had to unglue considerable sections of Thonet’s ornamental, laminated marquetry, carefully remove the parquet tiles, open up the subfloor, and then, once the technology had been built in, re-lay and laminate everything exactly as before at the original level.

The reconstruction of the damaged areas was undertaken using the same technique as Thonet. The individual sections of precious wood were softened in a steam pipe and bent precisely into the original shapes made by Thonet with the aid of custom-made bending

jigs, glued into parcels and, once cut, inserted into the damaged areas. In order to achieve something close to the tone of the historic maple, a vacuum overpressure method was used to colour the prepared maple blocks throughout with a light-fast stain.

However, the most important procedure employed for the historic recovery of the original aesthetic character was the prior cleaning of the entire surface by means of the so-called dry ice procedure. For this the surface was not sanded, but the old, dirty wax, which had been absorbed deep into the pores of the wood, was removed. Since the dry ice sublimates immediately without leaving any residue, there is no exposure to dust caused by a blasting abrasive. The removed wax is simply sucked away.

Anybody seeing the floors in all their glory today would never suspect the simply unimaginable amount of work and expert knowledge that was needed to restore them<sup>4</sup>.

The Liechtenstein City Palace has always been regarded as a “modern” building. It had an ingenious hot-air heating system, and “automatic” door openers and hidden orchestra boxes were built in. The doors to the large ballroom could be either raised or rotated vertically, with one side of the doors decorated in white and gold and the other with mirrored glass, so that the room could be transformed within seconds from a homogeneous grand room decorated in gold to a “hall of mirrors”. Wherever possible these techniques have been recreated as part of the restoration work. The tradition of “modern technology” has been continued in the revitalisation: as mentioned previously, the whole house is fully air-conditioned and the security solutions meet the highest standards. Barrier free/wheelchair access to all rooms was also one of the basic demands for the upgrading of the palace.

A particular challenge was posed by the lighting and in particular by the reacquisition of the original chandeliers and wall lights, which were all sold due to lack of funds in the 1960s. It is thanks to systemic research that all of these light fittings were discovered in the possession of a Viennese antiques dealer, who had never associated even the chandeliers with the City Palace. The items were bought back, so that today, with the exception of one room, all the state rooms are fitted with the original Biedermeier chandeliers and girandoles. The painstaking care required to recreate the light fittings can hardly be imagined, as they had – understandably – been dismantled and stored in boxes, some were very shabby and glass components had been broken.

#### 1.8. The extent to which the light fittings affect the impression created in each room is best illustrated using the ballroom as an example

The central chandelier has a diameter of approx. 3.40 m, a height of approx. 4 m and holds 288 candles; the room also contains four corner candelabras and wall lights, so that the room was originally lit by a total of 560 candles. It is immediately obvious that a reconstruction using traditional light sources is not possible, if only because of the heat that would be given off by such a large number of lights in the one room.

Even in the pre-planning stage – so more than five years ago – it was therefore decided that the state rooms at least should be fitted with LED lights, and this at a time when, although nobody was in any doubt as to the future of LED lighting, the necessary light sources were not yet available on the market. A significant factor in this brave decision was the knowledge

<sup>4</sup> The Thonet floors has been restored by Kopp Restauratoren GmbH. The text follows basically the report of Mag. Peter Kopp, to whom the author is much obliged.

that LED light sources have an average life of 50,000 hours, making on-going maintenance considerably cheaper. As a result, lighting planners and companies first developed the required LED candle model in the course of the restoration work, creating an optical and light pattern which could be compared to that of candles in the Biedermeier era in terms of both the brightness and the colour of light. – Today around 1,200 LED candles cast the right light on the state rooms<sup>5</sup>.

This more detailed example may serve as an illustration of the complexity of many of the decisions that had to be made in the course of the restoration of the Liechtenstein City Palace.

### 1.9. The Liechtenstein City Palace as an example of lasting renovations

Those few problem areas elucidated here demonstrate that the restoration of the Liechtenstein Palace can be seen as a lasting renovation<sup>6</sup> in which not only ecological, but also economic and social cultural aspects came to bear. The preservation of monuments continues to be – considered generally – very labour intensive. The overall production cost of the Liechtenstein City Palace of around one hundred million Euros demonstrates emphatically its importance for job retention in Austria. During the renovation work there were, on average, up to 250 people on the site, and on peak days up to 500.

From the ecological point of view, mention has already been made of the equipping of the house with LED lights. Liechtenstein Palace is generally a good example of how much can be done with regard to the thermal rehabilitation even of old buildings. Nowadays the appropriate insulation of the top floor ceilings and attics as well as that of the cellar floor has become a matter of course, and was, of course, also undertaken in the Palace Liechtenstein. Special emphasis was placed on the design of the new windows, which not only had to fit the historic appearance, but must also meet the highest technical standards with regard to heat and security.

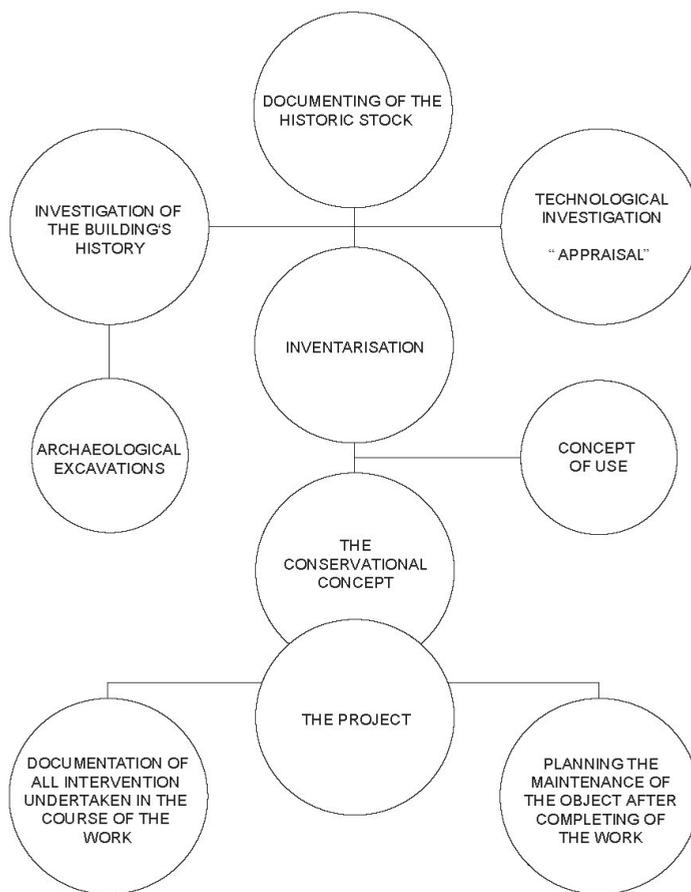
A peculiarity in this regard was presented by the reconstruction of the wooden cornices on the external windows on the second floor. Whilst the state rooms on the first floor generally have closable shutters on the inside, these are not found on the second floor. For this reason, even in the Baroque period, this floor was fitted with external wooden shutters in order to avoid leaving the valuable room decor unprotected against the sunlight; when the shutters were not needed they were hidden behind wooden cornices. This construction later disappeared and was only reconstructed on the basis of historical documents and for the same purpose – although naturally now electronically controlled – during the course of the recent renovation, although as we now know, this construction contributes significantly to controlling the room climate.

After just over four years of building work, the considerable investment in labour and materials, based on scientific research, has restored to the City Palace its Baroque elegance and the celebration of colour of the Biedermeier era.

Ultimately, however, it is thanks to the patronage of Princely House of Liechtenstein that it was possible to recreate the splendor of the palace in the Bankgasse in all its authenticity.

<sup>5</sup> Iris Podgorschek and Michael Podgorschek from podpod. Design, Vienna, are responsible for light design. On the part of Wehdorn Architekten DI Andreas Bruer supervised the work in the field of light engineering, he was also the one who rediscovered chandeliers and Girandoles.

<sup>6</sup> Compare: M. Wehdorn, *Sustainability and Monuments Conservation*, [in:] *Cracow Charter 2000 – 10 years later*, Cracow 2011, pp. 123–130.

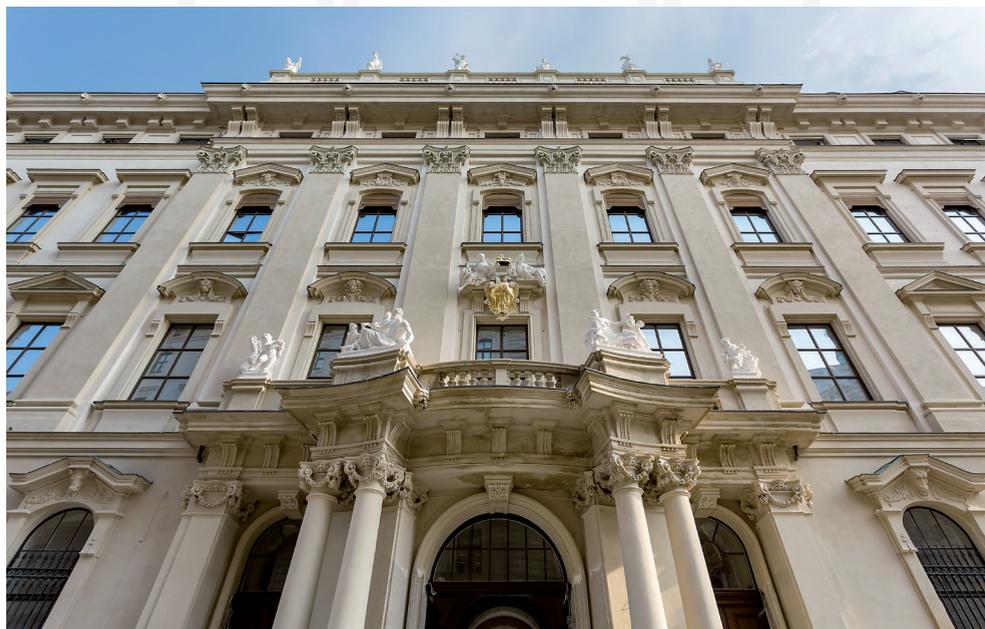


III. 1. Schematic scene of a conservation project

II. 1. Schemat sytuacji projektu konserwatorskiego



III. 2. Quadratsaal chandelier  
II. 2. Kandelabr w Sali Kwadratowej



III. 3. Façade of Liechtenstein Palace after restoration  
II. 3. Fasada Pałacu Liechtensteinów po restauracji

a)



b)



c)



III. 4. Thonetfloor before and after restoration: a) Quadratsaal 2<sup>nd</sup> floor after restoration; b) Thonetfloor Bouquetsaal 2<sup>nd</sup> floor before restoration; c) Thonetfloor Bouquetsaal 2<sup>nd</sup> floor after restoration

II. 4. Podłoga Thoneta przed i po restauracji: a) Sala Kwadratowa na 2 piętrze po restauracji; b) Podłoga Thoneta w Sali Bukietowej na 2 piętrze przed restauracją; c) Podłoga Thoneta w Sali Bukietowej na 2 piętrze po restauracji



III. 5. South Vestibule 2<sup>nd</sup> floor after restoration

II. 5. Południowy westybul na II piętrze po restauracji