

■ MÁTÉ Zsolt¹

Kortárs komfort a Gödöllői Királyi Kastélyban

■ **Kivonat:** A Gödöllői Királyi Kastély a közel ezer éves Magyar Királyság egyetlen olyan királyi rezidenciája, amely olyan állapotban maradt fenn az utókor számára, hogy korszerű helyreállítás után is képes felidézni a királyi székhely fénykorának hiteles képét.

Maga a kastély épülete, zivataros történelmi állapotok következtében, a harminc éve kezdett helyreállítás idején rendkívül leromlott, romosodó képet mutatott, ugyanakkor állapota megmenthető, veszteségei hitelesen pótolhatóak voltak.

A komfort fogalma a kastély esetében sokféle igénynek alárendelt megoldást rejt:

1. Alapkomfort (funkcionális elrendezés, fűtés, világítás, víz, csatorna, telekommunikáció, épületautomatika stb.);
2. Energiakomfort (általános hőszigetelés, ablakszigetelés, korszerű fényforrások, megújuló energia;)
3. Speciális komfort (műtárgyklíma, múzeumi világítás, UV védelem, utólagos szigetelés stb.);
4. Biztonság (térfelügyelés, beléptetés, tűzvédelem, biztonsági automatika);
5. Akadálymentesség.

A teljesség igénye nélkül ebben a rendszerben kerül áttekintésre a királyi kastély.

A komfort iránti igényünk ambivalens. Igényeljük, mert nem tudjuk nélkülözni a modernség kényelmét, ugyanakkor nem szívesen nézünk szembe a megvalósítás térbeli-fizikai feltételeivel. Elvárjuk, hogy a komfort észrevétlenül szolgáljon, az örökségbe zárt illúzió pedig töretlen maradjon. A többirányú elvárás örökségfilozófiai kérdéseket is felvet: a teljes elrejtés, az esztétikai milióbe komponálás, a kendőzetlen megjelenés avagy a régi és új viszonyára alapozott új esztétikai érték az elfogadható? A válasz – a helyreállításnál alkalmazott megoldás – mindig egyedi megfontolást igényel.

■ **Kulcsszavak:** kastély, komfort, biztonság, energiaracionalizálás, illúzió

■ „Mehr Licht! Több fényt!” – ezek voltak Goethe utolsó szavai a hagyomány szerint. Még építészhallgató koromban jártam a weimári Goethe-házban. Akkor ott a történelmi hűség kedvéért minden komfortosítástól elzárkóztak, még a villanyt sem vezették be. Mikor kissé beborult az idő, szinte börtönként az egyébként nagyon kényelmesre tervezett lépcsőkön. Izgalmas volt, de nem igazán elfogadható és közönségbarát. Ma már ez ott sincs így!

Világos, hogy a műemlékek túlélésének feltétele az élet követelményeinek való igazodás. Így fogadták be a sok évszázados építmények lépésről lépésre az alapkomfortot – a vízvezeték, csatornázást, a gáz- majd villanyvilágítást, központi fűtést.

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Contemporary Convenience in the Royal Palace in Gödöllő

■ **Abstract:** The Royal Palace in Gödöllő is the only royal palace of the Hungarian Kingdom lasting for nearly a thousand years, which was preserved in such a condition, that following an up-to-date rehabilitation it recalls the authentic image of the royal residence's golden age.

Following stormy historic conditions, at the time the rehabilitation started, thirty years ago, the palace itself was in an extremely damaged, ruinous condition. However, its state allowed for saving the palace, and its damages could be authentically substituted.

In the case of the castle the notion of convenience refers to solutions fitted to several demands:

1. Basic convenience – functional layout, heating, lighting, water supply, telecommunication, building management system etc.;
2. Energy convenience – general thermal isolation, window insulation, modern light sources, renewable energy;
3. Special convenience – climate control system (for works of art), museum lighting, UV protection, subsequent water-insulation etc.;
4. Security – video surveillance, access control system, fire protection, security management system;
5. Accessibility.

Without any attempt to comprehensiveness, the convenience of the royal palace is reviewed according to the enumerated considerations.

Our need for convenience is ambivalent. We do have a need for it, and we can't really miss the convenience level of modernity. Yet, we are not willing to face the spatial, physical conditions to achieving this convenience. We expect convenience to serve us unobserved, and illusion enclosed by heritage to remain unaltered. These multiple demands raise the heritage philosophy issue as well: complete concealing, composition into an aesthetic milieu, unvarnished display or a new aesthetic value grounded on the relationship between old and new? The answer – the rehabilitation solution applied – always calls for special consideration.

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■ **Keywords:** palace, convenience, safety, rationalization of energy consumption, illusion

■ “Mehr Licht! More light!” – according to tradition, these were Goethe’s last words. As a student in architecture, I visited once the Goethe House in Weimar. At that time, for the sake of historic authenticity, they neglected all transformations related to convenience, not even electricity was introduced. When the weather was gloomy, we were stumbling around and near to trip over the otherwise very convenient stairs. It was exciting, but not truly acceptable and visitor-friendly. By today all this was changed in the Goethe House as well!

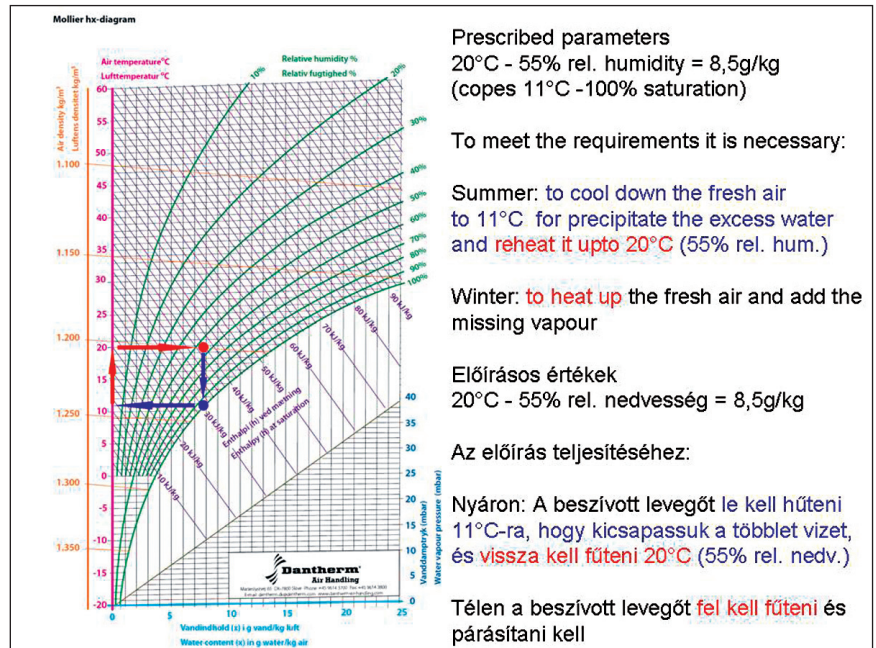
It is obvious that the condition to the survival of monuments is their alignment with the demands of life. That was how centuries-old buildings gradually admitted in basic convenience – water conduits, sewage installation, gas, then electric lighting, central heating.

The challenge of the present is intricate: air-conditioning, energetic modernization, security, telecommunication, building management system and many other demands related to convenience lead us to the pivotal issue of preserving through development and developing through preservation.

Our need for convenience is ambivalent. We do have a need for it, and we can’t really miss the convenience of modernity. Yet, we are not willing to face the spatial, physical conditions to achieving this convenience. We expect convenience to serve us unobserved, and illusion enclosed by heritage to remain unaltered. These multiple demands raise the heritage philosophy issue as well: complete concealing, composition into an aesthetic milieu, unvarnished display or a new aesthetic value grounded on the relationship between old and new? And which one is authentic?

Heritage protection took over and applies the terminology, even the methodology of remedy. What do a doctor do? They heal the patient, then, following healing give them back to their family, to the society. *They won’t keep them for themselves!* We, heritage protectors can’t keep the historic building for ourselves either. We must give it back to its rightful owner, to the community, the nation, the world. But do we know what is expected from us? Do people understand our professional conventions, the set of values of an *enclosed club*?

During the restoration of the Royal Palace in Gödöllő the creed of the designers was that nothing should alter the authentic view and the illusion of those historic days, in the same time the building should meet all the available requirements of the 20th and 21st century. The visitor may only presume, but not see the complex technical equipments, the walls covered with paintings or silk tapestry, the stuccos, the polished tile floors, the two hundred years old, subtly creaking restored parquets should hide the infrastructure of overall security, informatics and convenience.



■ 1. ábra: Elvart légállapot Mollier-diagram

■ Figure 1. Mollier diagram representing expected air temperature

A jelenkor kihívása többretű: klimatizálás, energetikai korszerűsítés, biztonság, telekommunikáció, automatizálás és sok más egyéb komfortkövetelmény a fejlesztve megőrzés, megőrizve fejlesztés sarkalatos kérdése.

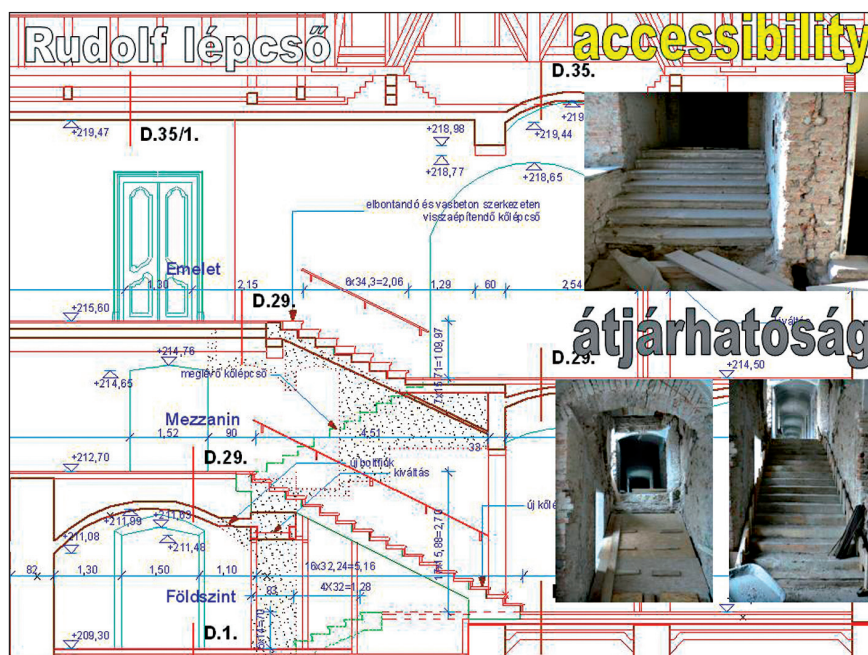
A komfort iránti igényünk ambivalens. Igényeljük, mert nem tudjuk nélkülözni a modernség kényelmét. Ugyanakkor nem szívesen nézünk szembe a megvalósítás térbeli-fizikai feltételeivel. Elvárjuk, hogy a komfort észrevétlenül szolgáljon bennünket, az örökségbe zárt illúzió pedig töretlen maradjon. A többirányú elvárás örökségfilozófiai kérdéseket is felvet: a teljes elrejtés, az esztétikai miliőbe komponálás, a kendőzetlen megjelenés avagy a régi és új viszonyára alapozott új esztétikai érték az elfogadható – és vajon mi a hiteles?

A műemlékvédelem átvette és használja az orvoslás kifejezéseit, sőt módszertanát. És mit tesz az orvos? Gyógyítja a beteget, majd gyógyultan



■ 1. kép: Kéménybe rejtett fűtéselosztó

■ Photo 1. Heating distributor concealed in the chimney



■ 2. ábra: A Rudolf-lépcső átmeneti elbontása árán új kar épülhetett
 ■ Figure 2. As the Rudolf staircase was temporarily removed, a new wing could be built

visszaadja a családjának, a társadalomnak. *Nem tartja meg magának!* Mi műemlékvédők sem tarthatjuk meg magunknak a műemléket. Vissza kell adnunk jogos tulajdonosának, a közösségnek, a nemzetnek, a nagyvilágnak. De tudjuk-e, mit várnak el tőlünk? Értik-e szakmai összekacsintásainkat, egy zárt klub értékrendszerét?

A Gödöllői Királyi Kastély helyreállítása során a tervezői *ars poetica* az volt, hogy a hiteles látványt és a történelmi korok illúziójának légkörét semmi ne bontsa meg, ugyanakkor az épület feleljen meg a XX–XXI. század minden elérhető követelményének. A látogató csak sejtthesse, de ne lássa a bonyolult technikai felszereltséget, a festett vagy selyemkárpittal borított falak, stukkók mennyezetek, csiszolt kőpadlók, finoman nyikorgó kétszáz éves, restaurált parketták rejtsek el a teljes körű biztonság, informatika és komfort infrastruktúráját.

Ez persze sohasem sikerülhet.

A közel ezeréves Gödöllői Kastély a Magyar Királyság egyetlen királyi rezidenciája, amely olyan állapotban maradt fenn, hogy korszerű helyreállítás után is képes felidézni a királyi székhely fénykorának hiteles képét.

Maga a kastély épülete zivataros történelmi állapotok eredményeképpen, a harminc éve elkezdett helyreállítás idején rendkívül leromlott, pusztuló képet mutatott, ugyanakkor állapota megmenthető volt, veszteségei hitelesen pótolhatók. Ez volt a kiindulás. *Hic Rhodus, hic salta!*

A komfort fogalma a kastély esetében sokféle igénynek alárendelt megoldást rejt:

A mai igényszintünk jövőre elavul. A szűkkeblű tervezés és költségvetés már holnapra megbosszulja magát. Amit ma kispóroltunk, holnap duplán kell megfizetnünk a drága helyettesítő megoldások vagy az újabb roncsolással járó beavatkozások miatt.

Egy biztos, minél leromlottabb a felújítandó épület, annál nagyobb lehetőség van arra, hogy a helyreállítással egyidőben építsük be a korszerű komfortelemeket. A jó állapotú, műemlék értékű, dekoratív felületek megbontása mindig nagyobb áldozatokat követel. (Csak közbevetőleg jegyzem meg, hogy például a kastélyszínház falszerkezetének konszolidációjánál a freskók hiányait, hibáit tudtuk felhasználni a falrétegek összevarrásához és a szükséges elektromos vezetékezéshez. Restaurálás után erre már nem lett volna lehetőség.) Nos, Gödöllőn a leromlott állapot bőven, talán inkább túlréprezentált volt.

This, however, can never be achieved.

The Royal Palace in Gödöllő is the only royal palace of the Hungarian Kingdom enduring for nearly a thousand years, which was preserved in such a condition, that following an up-to-date rehabilitation it recalls the true image of the golden age of the royal residence.

Following stormy historic conditions, at the time of the rehabilitation that started thirty years ago, the palace itself was in an extremely damaged, ruinous condition. However, its state allowed for saving the palace, and its damages could be authentically substituted. This was the starting point. *Hic Rhodus, hic salta!*

In the case of the palace the notion of convenience refers to a solution subjected to several demands.

Our level of needs would become obsolete by the next year. There might be a heavy price to be paid even as close as tomorrow for a tight-fisted design and budget. Due to expensive substitutions or interventions implying further destructions we would be compelled to pay the double of what we have saved.

One thing is certain: the more a building to restore is in a damaged condition, the more it is possible to realize modern convenience simultaneously with restoration. The opening of decorative surfaces with heritage value and being in a good condition always calls for greater sacrifices. (I would mention here that for example, at the consolidation of the wall structure of the palace theatre, we could make use of the deficiencies and damages of the frescos when connecting the wall layers and introducing the required electric wires. After restoration this couldn't have been possible anymore.) Well, in Gödöllő we had plenty of decay to work with, even in excess.

1. Basic convenience

(heating, lighting, water supply, telecommunication, building management system, functional layout etc.)

■ The opening of the walls and floors, the concealing of the water conduits, sewage installations and other pipes didn't cause any problem. In order to ensure heating we placed basement channels, lower floor panel convectors, under-floor pipe coils. Thus the original aspect could remain almost unaltered. The main distribution system is in the attic. The old, still usable chimney channels were helpful when installing flow-pipes. The heating control unit was installed behind chimney doors in a stylish way. In order to place the conduits we made use of the hole of the corner tower demolished a long time ago. The heating pipes, with a circumference alike a human waist, are built in the wall behind the silk tapestry of the royal study.

Obviously, the placement of the installations serving much increased energy requirements was a greater challenge. The heating centre was installed in the cellar. Fortunately following the successful agree-

ments concluded with the gas-company we could make use of one of the historic chimneys as smoke exhaust holes, naturally after having coated them with stainless steel, but without a modern deflector. Thus we could avoid the placement of any new unpleasant element on the roof. In order to ensure electricity we had to install a transforming station with high performance. The equipment was installed within the castle's wall. However, installing the air-ventilation system in the garden as a separate construction was not avoidable. The two small nostalgic towers were mocked for a long time as a sunken cathedral. This isn't that bad, as the towers of the St. Peter's Basilica in Rome were called the ears of Bernini.

The penetrability of the palace didn't suit present needs, either. In its historic days the isolation of the traffic of the royal family and one of the servants was much more important than the appropriate penetrability of the building, which is now an obvious demand when rendering a building visitor-friendly.

The restoration project assigned the uses of rooms of the royal children the function of museum.

The most difficult task was to establish a connection between the two wings leading to the Riding Hall. The two-storied Gizella Wing and the three-storied Rudolf Wing weren't connected at the ground-floor level, the mezzanine of the Rudolf Wing could be accessed only from the courtyard or from the first floor.

Due to the several previous transformations, there were no spaces the further transformation of which would have been regrettable. Thus the new Rudolf Stairway was placed here, which ensures a complete passage between the levels together with the historic stairs on the first floor. In order to be able to build it, the two-hundred-year-old stairs had to be dismantled temporarily, because its confused supporting structures were hindering the building up of the new stairs starting from the lower levels. Later on these original carved stone steps were placed back, supported by reinforced concrete plates.

New stairs connect the corridor of the Riding Hall with the Rudolf Wing and the upper level of the Baroque Stable.

The transformation of the Riding Hall into a council room and event-room implied the opening of new entrances and exits towards the courtyard.

2. Energy convenience

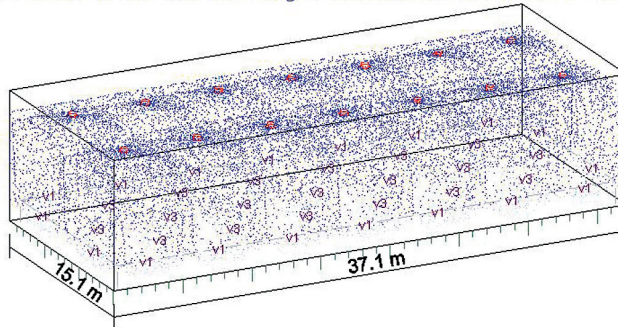
(general thermal isolation, window insulation, modern light sources, renewable energy)

■ Nowadays, no one can allow themselves to neglect issues related to energy. In the case of historic buildings, however, conditions are more restricted than in case of a new building.

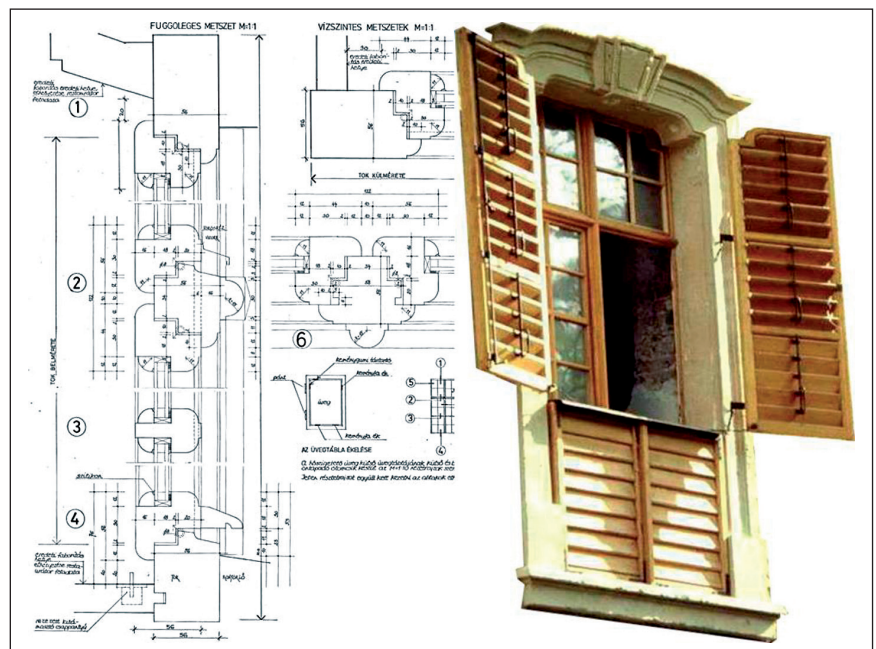
At the restoration of the Royal Palace, we didn't have recourse to renewable energy. Besides the installation of up-to-date

Cooling		TSA-500(R)		2007.02
Room: Gődöllő Lovarda		Supply air flow rate	23800 m ³ /h (14 x 1700 m ³ /h)	
Room size:	37.1 x 15.1 x 9.0 m		42.5 m ³ /(h·m ²)	
Occupied zone:	h=1.5 m / d=0.5 m	Supply air temperature:	19.0 °C	
Room air:	25.0 °C / 50 %	Total pressure drop:	11 Pa	
Heat gain:	-	Total sound pressure level:	23 dB(A)	
Installation height:	8.00 m	Total cooling capacity:	46818 W (14 x 3351 W)	
			84 W/m ²	
Velocity point		L ₁ :		
v	v1	v3		
	-0.25 m/s	-0.25 m/s		
ΔT	-0.1 °C	-0.1 °C		
v _{lim} = 0.20 m/s				

A légáramlási sebesség és térbeli eloszlás modellezése a Lovarda terében
Haltan model of air velocity distribution in the late riding-hall



■ 3. ábra: Haltan-modell
■ Figure 3. The Haltan model

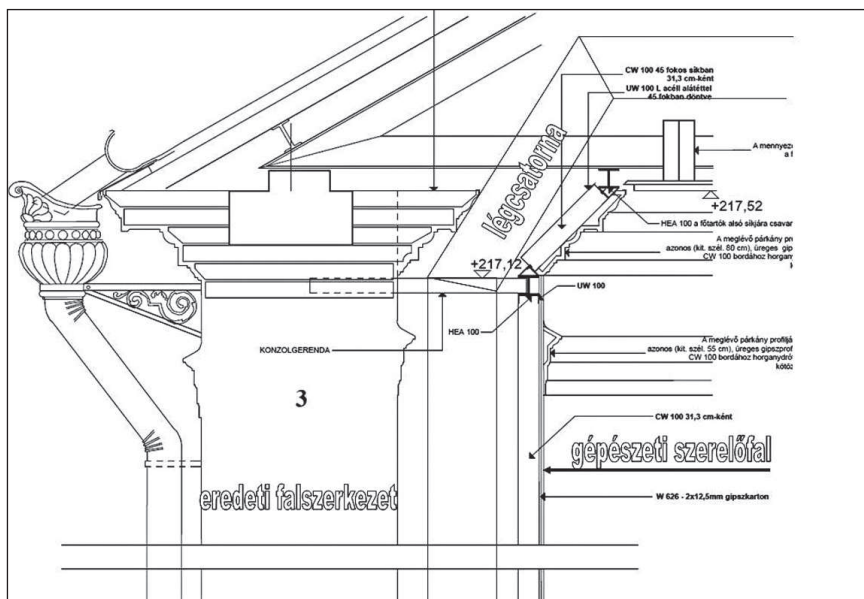


■ 4. ábra: Az energiatakarékosság megkerülhetetlen kényszer
■ Figure 4. Energy-saving is an unavoidable constraint

1. Alapkomfort

(fűtés, világítás, víz csatorna, telekommunikáció, épületautomatika, funkcionális elrendezés, stb.)

■ Nem okozott gondot a falak, padlók megbontása, a víz, csatorna és egyéb vezetékek elrejtése. A fűtéshez padlócsatornákat, padlóba süllyesztett konvektorokat, padló alá csókiqyót helyeztünk. Így a történeti látvány csaknem sértetlen maradhatott. A fő elosztórendszer a padláson van. A felszálló ágakhoz segítségünkre voltak a régi, másztható kéményjáratok. A fűtés szabályozása stílszerűen a kéményajtók mögé került. A vezetékezéshez felhasználtuk a régen elbontott saroktorony megmaradt falüregét.



■ 5. ábra: Lovarda – légcsonna átvezetése szerelőfal mögött
 ■ Figure 5. Riding hall – air-tube behind a front wall

Az emberderéknyi fűtőcsöveket a királyi dolgozószoza selyemkárpitja mögé falaztuk be.

Persze a sokszorosára növekedett energiaigényt szolgáló berendezések elhelyezése már nagyobb gondot jelentett. A fűtés központja a pincébe került. Szerencsére a gázművekkel való sikeres egyeztetés lehetővé tette, hogy füstelvezetésre – természetesen koracél-bélelés után, de modern deflektor nélkül – az egyik történeti kéményt fel tudjuk használni. Így a tetőn kellemetlen új elemnek nem kellett megjelennie. Az elektromos ellátásra nagyteljesítményű transzformátor-állomást kellett létesítenünk. A berendezést a várfalba telepítettük. Azt azonban nem sikerült elkerülni, hogy a szellőzés a kertben építményként megjelenjen. A két kis nosztalgiazó tornyocskát sokáig elsüllyedt katedrálisként csúfolták. (Ez nem baj, a római Szent Péter bazilika tornyait például Bernini füleinek hívták.)

A kastély átjárhatósága sem felelt meg a mai igényeknek. A történeti időkből fontosabb volt a királyi család és a kiszolgáló személyzet forgalmának elszigetelése, mint az épület jó átjárhatósága, ami ma egyértelmű látogatóbarát követelmény.

A helyreállítási programban a királyi gyermekek lakosztályainak helyén múzeum szerepelt.

A legtöbb gondot a Lovardához vezető két szárny forgalmi kapcsolatának megoldása jelentette. A kétszintes Gizella-szárny és a háromszintes Rudolf-szárny csatlakozásánál a földszinten nem volt átjárás, a Rudolf-szárny mezzaninjára csak az udvarról vagy az emeletről lehetett eljutni.

Itt a számtalan korábbi átalakítás miatt nem voltak olyan terek, amelyeknek a feláldozásáért kár lett volna. Ide került az új Rudolf-lépcső, amely az emeleti, történeti lépcsőkarral együtt a szintek közötti teljes átjárhatóságot biztosítja. Megépítéséhez ideiglenesen el kellett bontani a kétszáz éves lépcsőkart, mert annak zavaros alátámasztó szerkezetei az alsó szintekről felvezető új kar útjában voltak. Azután vasbeton lemezre támasztva az eredeti faragott kő lépcsőfokok a helyükre kerültek.

Új lépcsők kötik össze a Lovarda folyósóját a Rudolf-szárnyal és a barokk istálló felső szintjével is.

A Lovarda tanácsteremmé, rendezvényteremmé alakítása új bejáratok és udvari kijáratok nyitásával járt együtt.

mechanical systems, only the thermal isolation of the floors, slabs and windows were possible.

Due to the condition of the windows, a radical solution was compelled to apply. In the 19th century new external casements were built in an insensible and incautious manner. The proportions, sections of the stone frames and the shadow effect of the elevation were ruined. Thus within a century these frames got irreparably damaged.

Due to the one-layer windows with insulated glass with improved closing systems, and the divisions conforming to the original one, the building was re-given its baroque appearance.

3. Special convenience

(climate control system (for works of art), museum lighting, UV protection, subsequent water-insulation etc.)

■ The historic buildings would be most suitable for the original function, if that function and the once-was demands still existed. These, however, don't exist any more. Kingdom was abolished for nearly seventy years, but the convenience-level of those times wouldn't meet even the demands of a civil family.

Regarding new functions, perhaps a museum requires the fewest transformations. Historic environments offer great conditions for historic exhibitions. Museums and collections are placed with predilection into heritage buildings. This, however, means a new challenge. The scientifically grounded protection of works of art cannot neglect air-conditioning, which besides the usual tasks related to isolation and airtight conditions, requires space. Ensuring a constant airflow appropriate for works of art implies the installation of equipments altering the aspect as well. In summer humid, hot air is cooled down, surplus humidity is lead out, then the dried air is blown while warmed up to acceptable temperature. In winter the exact opposite process has to be carried out.

(Unfortunately, in 1982, when rehabilitation was started, air-conditioning was still considered by certain persons as an eccentricity in Hungary, and seemed to be an exaggeration. Despite all our efforts, it was omitted from the budget due to its high costs. By today air-conditioning became an acknowledged field of science. At present, as the former chance was missed, expensive and energy-wasting mobile humidors and demisters must be installed.)

At the rehabilitation of the Baroque Theatre the issue couldn't be evaded. A new ceiling was designed in place of the old ceiling of the theatre destroyed entirely. Unequivocally this was a new architectural creation. We didn't have any data concerning whether the old ceiling was painted or stuccoed. Its architectonic structure was determined by the necessary holes of the air-conditioning system and the opening possibilities of the reinforced concrete slab



■ 2. kép: A gyertyavilágítás ma már nem elég
 ■ Photo 2. Candle lighting isn't enough anymore



■ 3. kép: Lovarda – légszatórna építés közben
 ■ Photo 3. Riding hall – installation of the air-tube

built at the previous preservation works, in harmony with the walls covered with frescos. The frame of the ceiling's mirror and the frames of the air holes were composed on the basis of the stucco patterns in the queen's premises. We did not commit any forgery, since in this large space the patterns taken from smaller rooms don't dominate, and don't create the deceitful illusion of authenticity, but do contribute to the fitting of technological holes into the interior.

We made use of the gained experiences when rehabilitating further premises, but we intensely simplified the formal solution. The air-conditioner system was installed in a cellar created subsequently under the Riding Hall. The vertical pipes had to be concealed with pseudo-wall panels showing the details and proportions of the original wall. The cooling machine is placed in the exterior, under the ground-level.

Energy-saving light sources and UV-free, controllable work of art lighting are increasingly popular. However, fitting these into a historic environment isn't always simple.

2. Energiakomfort

(általános hőszigetelés, ablakszigetelés, korszerű fényforrások, megújuló energia)

■ Ma már senki nem engedheti meg magának, hogy az energiakérdést figyelmen kívül hagyja. Műemlékek esetében azonban általában jóval korlátozottabbak a feltételek, mint egy új épületnél.

A királyi kastélyban megújuló energia alkalmazására nem került sor. A korszerű gépészeti rendszerek telepítése mellett csak a padlók és padlásfödémek hőszigetelésére, az ablakok hőszigetelő üvegezésére nyílt lehetőségünk.

Az ablakok állapota kikényszerítette a radikális megoldást. Egyrésről a XIX. században érzéketlenül és körültekintés nélkül új külső ablakszárnyakat építettek be. Tönkretették a kőkeretek arányait, tagozatait, a homlokzat árnyékhatását. Emellett 100 év alatt ezek az ablakkeretek javíthatatlanul tönkrementek.

A hőszigetelő üvegezésű, de egyrétegű, fokozott záródású ablakszerkezetekkel és az eredetinek megfelelő üvegosztásokkal visszaállítottuk az épület eredeti barokk megjelenését.



■ 4. kép: Lovarda – kész állapot
 ■ Photo 4. Riding hall – end of works



■ 5. kép: A légtechnika költséges és helyigényes
 ■ Photo 5. Air conditioning is expensive and space demanding

3. Speciális komfort

(műtárgyklíma, múzeumi világítás, UV védelem, utólagos szigetelés stb.)

■ A műemlék leginkább eredeti funkciójára lenne alkalmas, ha ez a rendeltetés és az eredeti igény szint még meg lenne, de már nem létezik. A királyság közel hetven éve megszűnt, és az akkori komfort ma már egy polgári családnak sem lenne elegendő.

Az új funkció szempontjából talán a múzeum igényli a legkisebb átalakítást. A történelmi környezet kiváló adottságokkal rendelkezik a történelmi kiállítások számára. A múzeumok és közgyűjtemények valóban előszeretettel költöznek örökségi épületekbe. Ez azonban újabb kihívást jelent. A tudományosan megalapozott műtárgyvédő nem nélkülözheti a klimatizálást, ami a szokásos szigetelési, légzárási feladatok mellett helyigényes. Az állandó, műtárgybarát légállapot biztosítása a látványt is befolyásoló gépészeti rendszerek telepítését vonja maga után. Nyáron a páradús meleg levegőt le kell hűteni, a fölösleges nedvességet ki kell csapni, majd a szárított levegőt elfogadható hőmérsékletre felfűtve lehet befújni. Télen pedig pontosan az ellenkező folyamatra van szükség.

(Sajnos a helyreállítás kezdetekor, 1982-ben a klimatizálás néhányak szemében még különbségnek számított Magyarországon, és túlzásnak tűnt. A magas költségszint miatt pedig minden igyekezetünk ellenére törölték a költségvetésből. Mára már elismert szaktudománnyá vált. Az elmulasztott lehetőség miatt drága és energiapazarló mobil párasító és páratlanító készülékeket kell beállítani.)

A Barokk Színház helyreállításánál már nem lehetett szőnyeg alá söpörni a kérdést. A színház nyomok nélkül elpusztult mennyezete helyett újat terveztünk. Ez egyértelműen új építészeti alkotás. Arra vonatkozóan, hogy a mennyezet festett vagy stukkózott volt, semmilyen adat nem állt rendelkezésre. Architektonikus tagolását a freskózott falakkal harmonizálón a légkondicionálási rendszer szükséges nyílásai és a korábbi állagmegóvás során készült vasbeton födém áttörési lehetőségei szabták meg. A mennyezeti tükör keretelését és a szellőzőnyílások kereteit a kastély királynői termeiből vett stukkóminták alapján rajzoltuk meg. Hamisítást nem követtünk el, mert ebben a nagy térben a kisebb termekből átvett minták nem dominálnak, semmiképpen nem keltik az eredetiség megtévesztő benyomását, viszont elősegítik a technológiai nyílások beltérbe illesztését.

Az eljárás során nyert tapasztalatokat használtuk fel az ezután helyreállított termeknél, de a formai megoldást nagyon leegyszerűsítettük. Utólag kibányászott pincébe került a Lovarda alá beépített klímagépház. A függőleges vezetékeztést pedig álfallal, szerelőfállal kellett eltakarnunk. A hűtőgép kültérben, terepszint alá süllyesztve helyezkedik el.

Egyre jobban terjed az energiatakarékos fényforrások és az UV-mentes, csökkentett fényerejű, irányítható, szabályozható műtárgyvilágítás alkalmazása. A történelmi keretekbe illesztés azonban nem mindig problémamentes.

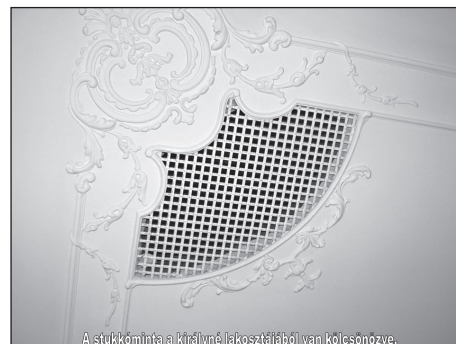
4. Biztonság

(térfigyelés, beléptetés, tűzvédelem, biztonsági automatika)

■ Világszerte előtérbe került a biztonság kérdése. A kijáratok, menekülő utak jelzésére az ipar igényes megoldásokat kínál. A tűzvédelem olyan fontos élet- és vagyonvédelmi problémakör, amely rendkívül körültekintő tervezést igényel. Mindegyre technicizálódik.

Rendkívül drágák a szabványnak megfelelő, de a műemléki szempontokat is kielégítő tűzvédő ajtók. Azonban ezek sem nélkülözhetik a speciális technikai kellekeket: a tartómágnesekeket, az automatikus nyitórendszert, a szárnyak zárásai sorrendjét szabályozó szerkezetet.

A friss levegő utánpótlását megoldó ablakokat motoros nyitóval kell ellátni.



■ 6. kép: Légbefúvó nyílás a Barokk Színházban
 ■ Photo 6. Air supply hole in the Baroque Theatre



■ 7. kép: A szabályok betartása kötelező, de mosolyognivaló
 ■ Photo 7. Compliance with rules is compulsory, though ludicrous

4. Security

(video surveillance, access control system, fire protection, security management system)

■ Security is of vital importance worldwide. Industry offers demanding solutions for signalling exits and escape routes. Fire prevention is a life and goods protection issue of vital importance, which requires an extremely prudent planning. This field becomes more and more sophisticated.

Fire resistant doors complying with standards and meeting historic building protection requirements are very expensive. However, these must be provided with all special technical accessories – magnet supports, automatic opening system, the accessory controlling the closing range of the wings.

Windows allowing fresh air supply must be provided with motorised opener.

The exit panic device to be installed on doors raises special security issues; this device opens the door following a single movement even if it is locked or it is connected to the access control system via an electronic lock.

Sometimes appropriate compromises are concluded while fulfilling multiple requirements. Fire protection is regulated by EU-norms, unfortunately heritage protection often loses in negotiations with fire protection authorities. It seems that bureaucracy sometimes surpasses rationality in regulations.



■ **8. kép:** A légtechnika elrejtése
 ■ **Photo 8.** Concealing air conditioning technique



■ **9. kép:** A komforttechnika próbára teszi a tervezőt
 ■ **Photo 9.** Comfort technique is a challenge to the designer

Surveillance cameras serve property protection and protection against terrorism. Their visible placement also has a hindering effect, and diminishes risks related to private rights.

5. Accessibility

■ Although it is an issue of humanism, generally there is still a lot to do in the field of accessibility.

Exposition areas can be accessed by means of a nostalgia elevator, which was installed in place of a bay previously divided in two. We made use of the same conditions in the Palace's "Bermuda Triangle", where each epoch effectuated a modification or transformation. The two-storeyed Gizella wing and the three-storeyed Rudolf wing are connected on each level by an elevator serving accessibility. Execution intervening in structures of extremely bad condition demanded daring static solution. This elevator having the structure of a passage stops at five levels. The shortest difference of levels is 70 cm – it is at the limit which is technically executable, but thus the entire Palace Museum and the Riding Hall can be accessed on a wheel-chair. The theatre and the lower levels are connected by a separate lift. In the cellar of the Riding Hall a wheel-chair elevator had to be applied. We arranged for appropriate lavatories as well.

Conclusion

■ Among the various approaches to introducing convenience, we always preferred those which, besides meeting technical requirements, allow for the preservation of the aspect, of the historic illusion, of the atmosphere. We chose a solution, which doesn't undertake the ideology of the middle of the 20th century based on the "new aesthetic value" and forged from the opposition between the modern and the heritage. Our approach doesn't propagate the rightfulness of the unconcealed view of the technique *justifying itself with sincerity*. Instead, through acceptable compromises, it preserves the aesthetic and atmospheric unity, since these factors are also conditions to authenticity.

Különleges, biztonsági kérdéseket is felvet az ajtókon elhelyezendő pánikzár, amely akkor is egy kézmozdulattal nyitja az ajtót, ha kulccsal van zárva, vagy elektromos zárral a biztonsági beléptetőrendszerbe van bekapcsolva.

A sokirányú előírások teljesítésében olykor jó kompromisszumokat is sikerül elérni. A tűzvédelem részleteit európai szabvány szabályozza, sajnos az örökségvédelem a tűzvédelmi hatósággal folytatott egyeztetésben gyakran alulmarad. Úgy tűnik, hogy az előírásokban a bürokratizmus néha felülmúlja az ésszerűséget.

A vagyonbiztonságot és a terrorizmus elleni védekezést szolgálják a térfelügyelő kamerák. Látható elhelyezésük visszatartó erőt is képvisel, valamint csökkenti a személyiségi jogokat sértő kockázatot.

5. Akadálymentesség

■ Bár alapvetően humánus kérdése, általánosságban sok még az adósságunk az akadálymentesítés terén.

A kiállítótereket nosztalgia felvonón érhetjük el, amely egy korábban félbevágott boltmező helyére került. Ugyanilyen adottságot aknáztunk ki a kastély „Bermuda-háromszögében”, ahol minden korban valamilyen alakítást, átépítést végeztek. A kétszintes Gizella-szárny és a háromszintes Rudolf-szárny minden szintjét összekötő, akadálymentességet szolgáló felvonóval kapcsoltuk össze. A rendkívül rossz állékonyságú szerkezetekbe avatkozó munka bravúros statikai megoldást igényelt. Ez az átjárórendszerű lift összesen öt szinten áll meg. A legkisebb áthidalt szintkülönbség 70 cm, éppen a műszakilag megoldható minimum határán van, de így a teljes kastélymúzeum és Lovarda bejárható kerekesszékekkel. A színházat és az alsóbb szinteket külön lift köti össze. A Lovarda pincéjében kerekesszék emelőt kellett alkalmaznunk. A megfelelő higiéniai helyiségekről is elérhetően gondoskodtunk.

Összegzés

■ A komfort elemek beépítésének sokféle lehetséges megközelítési módjából mindig azt részesítettük előnyben, amely a technikai követelmények érvényesítése mellett a látvány, a történelmi illúzió töretlenségét, a légkör megőrzését célozta meg. Olyan megoldást választottunk, amely nem vállalja a XX. század közepének, a modern és az örökség ellentétéből létrehozott „új esztétikai értéken” alapuló ideológiáját. A történelmi terekben nem vállalja a technicizmus kendőzetlen látványának – *őszinteségre hivatkozó* – jogosságát, hanem elfogadható kompromisszumok árán megőrzi az esztétikai és hangulati egységet, hiszen ezek a tényezők egyben a hitelesség feltételei is.

■ FEJÉRDY Tamás¹

Változó igények – igényes (?) változtatások történeti épületekben

■ **Kivonat:** A történeti épületeket napjainkban elsősorban nem az eredetileg nekik szánt rendeltetés miatt értékelik, ám nem szabad lebecsülni ezen alkotások napjainkban is meglévő használati értékét. A műemlékek, történeti épületek sokfélesége az általuk befogadott rendeltetés terén is megmutatkozik, emiatt a komfortosítással kapcsolatos igények és megoldások is jelentős eltéréseket mutatnak az egyes műemlékfajták tekintetében. A tanulmány a különféle lakórendeltetést betöltő épületfajták, a középületek, valamint a templomok, várak és vármok néhány jellegzetes komfortosítási igényét, és az azokra adott válaszokat elemzi.

■ **Kulcsszavak:** történeti épületek, használati érték, komfortosítás, komfortosítási igény, lakórendeltetés, műemlékvédelem

■ A történeti épületek már csak mennyiségükönél fogva is jelentős szerepet játszanak a jelen, és remélhetőleg a jövő generációinak életében. Természetesen eredetileg is valamilyen rendeltetéssel, valamilyen használati igény kielégítésére hozták létre őket. Attól függően, hogy mely korszakból származnak, igen jelentős eltérések lehetnek a tulajdonságaikat, az általuk hordozott különféle értéktényezőket illetően.

Bár a történeti épületeket, különösen azok legkiemelkedőbb, és ezért valamilyen védelmet (műemléki, helyi) élvező darabjait napjainkban általában nem elsősorban az eredetileg nekik szánt rendeltetés miatt értékeljük, illetve ismerjük el örökségi jelentőségüket, egyáltalán nem szabad lebecsülni ezen alkotások napjainkban is meglévő használati értékét. Ugyanakkor az is nyilvánvaló, hogy az úgynevezett „erkölcsi avulás”² éppen a rendeltetés oldaláról jelentkezik a leggyakrabban. Ez az erkölcsi avulás nem más, mint az adott épülettel kapcsolatos elvárások, igények változása, azaz új igények megjelenése váltja ki.

Mindez nem különleges, és főleg nem új dolog, hiszen mi sem természetesebb annál, mint az újonnan felmerülő igények kielégítése, legyenek azok akár valóságos, akár csupán egyfajta új divat diktálta igények. Felesleges volna – mondjuk az ókortól napjainkig – példákat előhozni és elemezni ezt a jelenséget, hiszen egyrészt valamennyien többé-kevésbé jól ismerjük a jelentősebbeket, másrészt azért nem vinne előre a választott témánk szempontjából, mert a legutóbbi másfél évszázadot leszámítva, döntően más szemléletű megközelítés jellemezte az említett századok változtatásait. Ez a különbség pedig nem más, mint a műemlékvédelmi gondolat kialakulása és megerősödése, maradjunk itt és most csak az európai keretek között. Ez az új szempont történelmi mércével mérve eléggé

Changing Demands – Demanding Changes on Historic Buildings

■ **Abstract:** Nowadays, it is not primarily due to their originally assigned function that we appreciate historic buildings; however, we should not underestimate the presently extant real value of these works either. The great variety of listed and non-listed historic buildings is manifested also in their functions, therefore demands and solutions related to convenience also show significant differences in the case of certain historic building types. The study analyses some of the specific needs related to convenience of different buildings serving habitation, public buildings, respectively churches, castles and castle ruins, as well as the solutions given to these problems.

■ **Keywords:** historic buildings types, needs related to convenience, usage value, heritage protection

■ To take but their quantity, historic buildings play an important role in the life of present – and hopefully future – generations. Obviously, at the origin of their construction there was a certain destination, the aim to satisfy a certain demand of use. There can be significant differences regarding their features and the values they encompass, depending on the age they were built in.

Nowadays, in general it is not primarily due to the originally assigned function that we appreciate historic buildings and acknowledge their heritage values, especially the most outstanding examples, which thus are enjoying protection (on local or national level). Yet we ought not to underestimate at all the usage value of these works persisting today as well. It is obvious however that “moral obsolescence”² arises in connection to this precise aspect, to that of function. This relates to the topic of this conference because moral obsolescence is caused by nothing else, but the change of the expectations and demands, in brief new needs related to a certain building.

1 Építész, dr., az ICOMOS Magyar Nemzeti Bizottság főtájtára, Budapest, Magyarország.
2 lásd ROMÁN András: 487 bekezdés és 617 kép a műemlékvédelemről.

1 Architect, DLA, general secretary of ICOMOS Hungarian National Committee, Budapest, Hungary.
2 See the book of ROMÁN András entitled 487 bekezdés és 617 kép a műemlékvédelemről.



■ **1. kép:** A várfalat is elérheti a sárga gázvezeték
 ■ **Photo 1.** Yellow gas pipes can appear on the fortress wall as well

There is nothing extraordinary or unusual about this, since meeting newly formulated needs is an outmost natural thing – no matter if these are real needs or demands, rather imposed by fashion. It would be pointless to enumerate examples – let’s say from ancient times up to the present – and to analyse this phenomenon, since, on one hand, we all more or less know the most significant ones, on the other hand it would not serve our better knowledge on the matter, because, with the exception of the last one and a half century, the modifications were determined by a decisively different mentality. The difference that the former period brought about is the birth and consolidation of heritage protection – let us be limited to the European area. Thus, taken historically, this new approach is relatively “young”, if we accept that it dates back to one and a half century. (Of course we could mention exceptions too, like the royal decree issued by the Kingdom of Sweden in the 17th century, as the first monument protection act the Swedes are rightly proud of.)

The special feature of heritage protection endeavours is the wish to preserve the totality of the physically existing constituents, of the building stock³ encom-

„fiatal”, ha színre lépését illetően elfogadjuk az említett másfél évszázados datálást (kivételeket nyilván említhetnénk, mint például a svédek által jogos büszkeséggel emlegetett XVII. századi királyi rendeletet, amely az első műemlékvédelmi aktus).

A műemlékvédelmi törekvések sajátja mindannak a meglévő, fizikailag létező alkotóelemek összességének, a történeti értéket (is) hordozó lényegnek³ a megőrzése, amelyek együttesen alkotják a megőrizni, és a jövő generáció számára továbbadni szándékozott, mai szóval, örökséget. Ráadásul ezek az úgynevezett attribútumok nemcsak a fizikailag létező, hanem a nem anyagi értékek átadását is szolgálják. Egy-egy neves művész alkotta falkép példája alapján azonnal érthető, hogy nemcsak azért kell (szükséges) megőrizni, mert például az eredeti rendeltetéshez tartozik, vagy éppen dekorációs kvalitásai miatt, hanem az adott kor művészetének és az adott művész munkásságának megjelenítésében (dokumentálásában) játszott kiemelkedő jelentősége miatt is. A műemlékek, tágabb értelemben a történeti épületek lehetőleg változtatás nélküli megőrzése is tekinthető olyan, a XIX. század közepétől fokozatosan kibontakozó új igénynek, amellyel számolni szükséges. Ez az igény természetesen nem abban az értelemben szolgálja a tulajdonosok, használók, illetve a legszélesebb értelemben a társadalom által megfogalmazott „komfortigényeket”, mint ahogyan az a fizikai-biológiai, szociális, stb. komfortnövelési igények esetében. Ezen a ponton szinte drámai pontossággal jelenik meg előttünk az az ellentmondás, amely e kétféle komfortigény egyidejű jelentkezése esetén jószerivel elkerülhetetlenül fellép.

3 In German called Bausubstanz.

3 német nyelvterületen: bausubstanz.



■ 2-3. kép: Csatornavezetés a homlokzaton (máltai példa)
 ■ Photo 2-3. Drainage on the façade (example from Malta)

A továbbiakban következzenek – a teljességre nem törekedve, hiszen az bizonyosan szétfeszítené ennek a rövid eszmefuttatásnak a kereteit – néhány jellegzetes komfortosítási igény, és az azokra keresett és megtalált válasz elemzése. Az elemzést talán érdemes még annak az előrebocsátásával indítani, hogy a műemlékek, történeti épületek sokfélesége egyebek között az általuk befogadott rendeltetés terén is jelentkezik, emiatt a komfortosítással kapcsolatos igények és megoldások is jelentős eltéréseket mutatnak az egyes műemlékek tekintetében.

Bár a műemlékvédelem kialakulásának történetében a kezdetekkor korántsem a különféle lakórendeltetést betöltő épületfajták értékelése és megbecsülése jelent meg először, a komfortosításról szólva mégis indokoltnak látom, ennek a csoportnak a vizsgálatával kezdeni. A komfortosítás elsődlegesen az ember, mint sajátos élőlény igényeinek a kielégítését szolgálja – alighanem a komfort/kényelem fogalma is sajátosan jellemző emberi (egyéni és közösségi) meghatározottságú. A továbbiakban az egyszerűség kedvéért mindenhol a „műemlékekről” beszélek, kérem, hogy értsük ez alatt a tágabb értelemben vett történeti épületeket is, annak ellenére, hogy ez utóbbiak esetében „bátrabb”, azaz mélyrehatóbb beavatkozást eredményező válaszok is elképzelhetők a komfortosítási kihívásokra.

A lakófunkciót betöltő műemlékek csoportján belül további alcsoportok különíthetők el: a hagyományos helyi építészeti⁴ „minimalista”, ugyanakkor sokszor zseniálisan letisztult megoldásaitól kezdve az „egylakásos épületek” (városi házak, villák, illetve kastélyok-kúriák) során keresztül

⁴ Személyes javaslatom a „vernakuláris” fogalom magyar változataként, részben a „népi lakóház”, vagy népi építészeti fogalom alkalmazása helyett is. Vö.: FEJÉRDY Tamás: *Hollókő a világörökségi falvak között* in: *Hollókő öröksége*, Szerk: DOBOSYNÉ Antal Anna és KOVÁCS Dezső, kiadja: ICOMOS Magyar Nemzeti Bizottsága, 2013, Budapest, old. 157–168.

passing historic values (as well), which together form the heritage (as called today) we wish to preserve and to transfer to future generations. What is more, these so-called constituents serve the transfer of not only physically existing, but immaterial values as well. If we take the example of a fresco painted by a famous artist, we understand at once that it has to (needs to) be preserved not only because it belongs to the initial destination, or because of its decorative qualities, but also due to the outstanding significance it has in the illustration (documentation) of the art of that time and of the work of the respective artist. The preservation of monuments or historic buildings, preferably without any alterations, can be seen as a further new demand gradually unfolding from the middle of the 19th century, which one has to reckon with. Of course, this new demand does not aim at the “convenience” needs formulated by owners, users, or the society in the same manner as the demands related to the increase of physical, biological, social etc. convenience needs. At this point we can see emerging with a dramatic accuracy the contradiction which is practically unavoidable in case of the simultaneous manifestation of these two types of convenience needs.

In what follows I will present – without any attempt to comprehensiveness, since it would surely surpass the limits of

this short essay – a few typical convenience needs and analyse the answers given to these. It would be worthy to mention at the outset that the great variety of monuments and historic buildings is manifested also in the destinations they fulfil, therefore demands and solutions related to convenience can also show significant differences, and they actually do so in the case of different monument types.

Although at the commencement of heritage protection, the estimation of historic buildings was not centred at first to buildings serving habitation, I find it expedient to start with the examination of this group when treating the issue of convenience needs. After all, convenience is aimed primarily to satisfy the needs of humans, as particular beings – most probably the definition of the convenience/comfort term itself is fundamentally related to humans (as individuals and communities). In what follows I will use the term “monuments”, but please note that I mean by this also historic buildings in general, despite the fact that obviously in the case of the latter, more “daring” answers can be conceived to convenience-related challenges,

a többlakásos lakóépületek sokféle megoldásáig. Megvizsgálva ezeket, és tekintetbe véve a változatok kimeríthetetlenül hosszú sorát, csak röviden szólnék mindegyikről.

A legelsőként említendő tétel, a hagyományos falusi ház komfortosítása közismerten az egyik legnagyobb kihívás, amellyel a műemlékvédelem azóta küszködik, amióta ez a kategória is bekerült a védendő értékek körébe. Miközben az „eredetileg”, tehát a megépítések elvárt komfortigényeknek nagyon gazdaságosan és a maga kategóriájában kiválóan eleget tudtak tenni ezek a falusi épületek, a városias igények megjelenését, illetve kielégítését csak egy bizonyos szintig tudták és tudják lényeges értéksérelem nélkül befogadni. A XIX. és főleg a XX. századi gyökeres változások következtében kimondható, hogy ezek az épületek eredeti kialakításukban, éppen az általuk biztosított komfortszint alacsony volta miatt, az eredeti lakófunkciót nem tudják már a mai, de még a tegnapi komfortszinten sem kielégíteni. Számos szellemes és kevésbé elfogadható terv és javaslat született arra nézve, hogy egy-egy falusi porta (és ezen már nem csak a lakófunkciót teljesítő részét kell érteni) miként volna alkalmassá tehető pl. a faluban lakó, de városi komfortszintet igénylő értelmiségi foglalkozású személyek, családok számára.⁵ Bár részleteiben egyáltalán nem ismerem, bizonyos részinformációk alapján mégis úgy vélem, hogy alighanem különleges vizsgálati terep lehet e tekintetben egyes erdélyi szász falvak, korábbi lakosaikat elvesztett,

5 lásd például MENDELE Ferenc és ROMÁN András „orvoslakás” tervét egy kisvárdai népi ház kibővítése és felújítása érdekében.



■ 4. kép: Falusi utcasor átépített homlokzatok különböző fokozataival
■ Photo 4. Rural street with facades rebuilt to various extents



■ 5-6. kép: Fontos, de ideiglenessége miatt zavaró rámpa
 ■ Photo 5-6. Important ramp, which is though annoying due to its provisionality

majd újak által birtokba vett házáinak legújabb kori átalakítása. Talán nem túlzás azt állítani, hogy a „népi” épületek a mai komfortigények kielégítése után csak igen kis részben tudják megtartani értékeiket, akár igényes, akár kevésbé igényes megoldások születnek. Az igényes megoldásokra példaként az üdülővé átalakított, a közelebbi-távolabbi városok lakói által használt népi házakat, pincéket, stb. szokás említeni, valójában azonban ezeknek már nincs sok közül az eredeti épületekhez. Ez az az épületcsoport, amelynek az esetében a történeti fejlődés nem alakult úgy, hogy ha lassabban is, de szervesen átalakulva válják képessé a fokozatosan változó komfortosítási igények kielégítésére, mégpedig azon egyszerű oknál fogva, hogy ezek az igények éppen nem fokozatosan, hanem szinte robbanásszerűen jelentkeztek. A komfortosítást célzó változtatások mikénti alakulásának egyenkénti számbavétele természetesen nagyon tanulságos lehet, de attól még ezek az épületek gyökeresen átalakítottak maradnak. A fűtési technológiák, majd a fűtőanyagok változását például még többnyire szervesen be tudták fogadni beleértve például a füstelvezetéssel, a kémények kialakításával kapcsolatos történetet. A nyílászárók, főleg az ablakok átalakítása vagyis a világosabb belső tér, mint komfort- (és persze divat-) cél elérése nyomán elterjedt nagyméretű, hármas osztású, kellemetlen arányú, mifelénk „tüzép” ablaknak nevezett szerkezetek beépítése jóvátehetetlenül megváltoztatta a legszebb népi házak homlokzati kialakítását, arányait, és persze mit sem törődött a sok esetben csodálatosan szép vakolatdíszek, tagozatok csonkulásával, értelmetlenné válásával.

A „vezetékeskomfort” megjelenése hasonlóan súlyos következményekkel járt. E tekintetben talán még az elektromosság jelentette a legkisebb kihívást, bár a légvezetékek és az azokat tartó oszlopok megjelenése⁶ gyökeresen megváltoztatta a települések képét. A vezetékes víz, majd a csatornázás elterjedése olyan komfortigény kiszolgálását célozta és célozza, amelyre aligha mondható, hogy nem engedélyezhető. A bevezetéssel járó, alaprajzi, szerkezeti, anyaghasználati változtatásoknak a történeti kialakításra kifejtett hatásáról nem szólnék, mindenki ismerhet példákat a kedvezőbb és az egészen kedvezőtlen megoldásokra. És persze itt van a vezetékes gáz, a maga sárgán kigyózó, térbeli vonalvezetésében hihetetlen képzeletgazdagságot megjelenítő vezetékrendszerével, a legváratlanabb helyeken áttörve a történeti felületeket, tagozatokat. A mobiltelefon elterjedésével a telefonvezetékek, és persze a vonalas internetkábelek „gazdagító” hatásával már egyre kevésbé kell számolni.

6 Ez akkor is így van, ha messze nem érte el nálunk az Ázsiában (Japán, Kína) sokféle látható vezetékáosz szintjét...

which thus would result in more profound interventions.

Within monuments with habitation function further sub-groups can be set up: starting from “minimalist”, yet brilliantly clear solutions in traditional local architecture, through the series of “one-apartment buildings” (urban houses, villas, or mansions and manors) to the various solutions found in buildings with several apartments. Taking into account that variations are countless, I would briefly present these sub-groups.

The first item to discuss, traditional rural houses is well-known to be one of the greatest challenges when it comes to transformations for the sake of convenience. Heritage protection struggles with this challenge from the very moment this category was included among values to be protected. While these rural constructions met convenience needs existing “originally”, at the time of their building in a very economical and – within their category – excellent way, they could and can accommodate urban needs only up to a certain level without significant damage to their values. As a result of the radical changes that occurred in the 19th, but especially in the 20th century, one can state that in their original structure, precisely due to the low level of convenience they were intended to serve, these houses cannot fulfil habitation functions at today’s convenience level, but even of yesterday’s convenience level either. Many ingenious and less acceptable plans and suggestions were elaborated on how to render appropriate a rural homestead (comprising thus not only the part fulfilling habitation functions) for persons and families of intellectuals living in the village, but asking for urban convenience level.⁴ Although I do not have detailed knowledge of it, on the basis of certain partial informa-

4 See for example the plan of Ferenc MENDELE and András ROMÁN for a “doctor’s house” within the project of extending and restoring a vernacular house in Kiszvárd.

tion, I think that the recent transformation of houses in certain Transylvanian Saxon villages – which lost their owners, then got new ones – could be a particular field for examination. Perhaps I am not exaggerating when stating that following the satisfaction of present convenience demands, “vernacular” houses can keep only a small part of their values, whether the applied solutions are demanding or not. Vernacular houses, caves etc. transformed into summer cottages by persons living in towns are the most frequently mentioned examples to exigent solutions, but in fact these do not have much to do with the original buildings. This is the group of buildings, which did not develop organically through time, even at a slow pace, in a manner to become able to serve gradually changing convenience needs, right because of that simple fact that these needs did not appear gradually, but almost all at once. The separate examination of modifications due to convenience demands indeed, could be very edifying, but these buildings would remain radically altered anyway. For example they could take in mostly organically the change of heating technologies, then of heating materials – in-

Valószínűleg túl hosszan is időztem a lakórendeltetésű épületek első csoportjánál, de az előzőekben leírtak nyomán már talán rövidebben tárgyalható a többi csoport sajátossága. Az egylakásos, egycsaládos lakóépület történetileg is mintatípusnak tekinthető változata a méretében és felszereltségében is bizonyos értelemben extrém főúri, urasági lakás, azaz a kastély és kúria. Tulajdonosainak, lakóinak igényei és az azok kielégítésében kevesebb korlátot ismerő lehetőségei miatt ezek az épületek mindig is igyekeztek elérni a legmagasabb komfortszintet, a legfrissebb fejlesztések és divatos megoldások követésével, alkalmazásával. Éppen ezért se szeri, se száma a kastélyok építési és átépítési periódusainak, amelyek egy része ugyan feltehetően presztízsépítkezés, de ez éppen, hogy nem zárja ki a komfortelvárások igényes kielégítésére törekvést sem, ellenkezőleg, jó alkalom azok megvalósítására. A bökkenő éppen az, hogy a műemlékvédelem bekövetkeztekor fennálló állapot megváltoztatása már nem olyan magától értetődő, ezért, bár nagyon cinikusan hangzik, tulajdonképpen a kastélyok sorsában, tulajdonosi viszonyaiban a II. világháborút követően bekövetkezett drámai változás e tekintetben akár előnyös is lehetett volna. Természetesen valamennyien tudjuk, hogy a változás ennél sokkal nagyobb veszedelmet, súlyos pusztulást és pusztítást eredményezett ezeknél az épületeknél.

Annyit azonban megállapíthatunk, hogy a történeti komfortosítások többségénél inkább hozzátétel, mint az értékek eltüntetése volt a szándék. Közismert példa az egyszeres üvegezésű ablakszárnyakkal rendelkező



■ **7. kép:** Hozzáépítés történeti épülethez, megváltoztatva annak tömegét és nyílászáróit
■ **Photo 7.** Addition to a historic building, altering its volume and openings



■ **8–9. kép:** Ideiglenes épület – engedély nélkül
 ■ **Photo 8-9.** Provisional building – without authorization

épületek esetében a második, a külső szárnyak későbbi hozzákapcsolása, és ezek esetében az üvegezett, illetve zsalugáteres ablakszárnyak téli és nyári cserélésének rendszere. Ez utóbbi, napjaink energiagazdálkodási követelményeire gondolva, igencsak követendő példaként említhető. Nem meglepő, hogy ezen épületek új rendeltetéssel történő hasznosításakor a mai komfortigények elérése érdekében a vizes helyiségek kialakítása jelenti a legnagyobb kihívást. Ezekből eredetileg, ha volt is egyáltalán, nagyon kevés és nem vezetőkes megoldású volt. A I. világháború előtt nagyrészt annyiban változott a helyzet, hogy kialakították a vízellátás vezetőkes megoldását. Miután a kastélyok jelentős részében történetileg is biztosítottak szálláshelyet a vendégeknek, sok esetben napjainkban is a szállásfunkciót kívánják kialakítani a kastélyokban. Mindenképpen mérlegelés tárgya, hogy erre mely helyiségeket szabad „feláldozni”, milyen

cluding the story with chimney-pulls and the conformation of chimneys. Following the transformation of the openings, mainly of the windows (aiming at a lighter space, which was not just a convenience objective, but also a matter of fashion), the use of large-sized, tripartite structures of unpleasant proportions, of industrially manufactured windows became general, which irredeemably changed the conformation and proportions of the vernacular houses' elevation, and of course did not mind that marvellous plasterworks or segments were broken or lost their reason in some of the most beautiful vernacular houses. The introduction of the “pipe-convenience” had similarly serious consequences. In this respect perhaps electricity meant the smallest challenge, although aerial cables and the poles supporting these radically changed the image of settlements.⁵ The spreading of drinking-water and of the sewerage system aimed and aims at fulfilling convenience needs one could hardly say are not allowable. I will not go in details concerning the changes due to the introduction of drinking-water on the historic layout, structure and material use, as everybody knows examples of favourable and entirely unfavourable solutions. And we also have gas, with its yellow, twisting pipe system displaying an astonishing abundance of formulas in its spatial conduits, breaking through historic surfaces and sections at the most unexpected spots. Thanks to the spreading of mobile phones perhaps the “enriching” effect of telephone and, of course, internet wires might be diminished.

Perhaps I dwelt on the first sub-group of buildings with habitation functions, but hopefully the peculiarity of the other groups needs less discussion if we relate to the above discussed aspects. The palatial house, which is somewhat extreme both in its dimensions and outfitting, namely the castle and the mansion are historic models of residences with one apartment for one family. Due to the needs of their owners and occupants and their less limited possibilities to satisfy these needs, these buildings always attempted to reach the highest possible convenience level, by following and applying the newest developments and fashionable solutions. Therefore castles underwent innumerable building and rebuilding processes, part of which presumably are works done for the sake of prestige – but this does not exclude endeavours to satisfy convenience needs in a demanding manner; on the contrary, it ensures a good opportunity to realize these. The problem is precisely that the modification of conditions existing at the birth of monument protection is not so self-evident; thus, though it might sound very cynical, the dramatic change that occurred following World War II in the fate and ownership of castles could have been even advantageous in this respect. Of course we are all aware that this change brought about

⁵ This is true even if the chaos of wires existing in many places of Asia (Japan, China) is not on the same level in our country.

a much greater peril, serious damage and destruction for these buildings.

We can assume however that in most cases of historic transformations aiming at convenience, the purpose and the direction of the interventions was rather the addition, than the removal of values. A well-known example is the subsequent addition of a second, external casement in case of single-glazed buildings, and the winter/summer changing system of the glazed panels, respectively shutters. Thinking about today's energy-saving requirements, this latter is worthy to think of as a model to be followed. Not surprisingly, when using these buildings with a new function, regarding modern convenience needs, the setting up of wet areas means the greatest challenge. Originally, there were only a very few of these, if any, and obviously water pipes did not exist as such. The only change prior to World War I was that water supply was ensured through pipes. Since in a significant part of the castles accommodation was ensured to guests in former times as well, in many cases, castles are intended to ensure accommodation function today as well. It is to consider by all means which premises can be "sacrificed" for this purpose, which is the convenience level, which can be adjusted to initial spatial structure without its serious, irreversible detriment. For example a separate bathroom to each room cannot be ensured in all cases, but it is not always

komfortszint biztosítása illeszthető még az eredeti térkapcsolatokhoz azok súlyos, visszafordíthatatlan sérelme nélkül. Például nem minden esetben biztosítható minden szobához külön egyéni fürdőszoba, de ez nem is mindig szükséges. A „romantikus” kastélyszálló-hangulathoz elég lehet, ha például a szobákban csak bútorba rejtett mosdó van, és több egység számára biztosítanak (amúgy igen magas komfortszintű) fürdőegységet.⁷

A városi, kisvárosi egylakásos lakóházak, és különösen az egykori úgynevezett „villa” épületek komfortosítása sok esetben (kis túlzással) a főúri lakások kompaktabb változataként is értelmezhető. Ugyanúgy nyomon követhetjük például a gáz-, majd a villanyvilágítás bevezetésével „elkövetett” beavatkozásokat, természetesen a villany esetében a korai, kerámia-görgős, falon kívül szerelt változattól a falba vésett, többszörösen átalakított hálózatokig. Aligha kell hangsúlyozni, hogy mindez milyen rombolást végezhet az épületek látható felületein, de nem kevésbé például a későbbi rétegek takarásában elfelejtett, nem ritkán igen értékes rejtett falfestésekben is. A műemléképületeket érintő komfortosítással kapcsolatban ezen a ponton már biztosan állítható, hogy azokat, bármennyire is „legitim” igények alapozzák meg, kizárólag csak az épület minden (látható vagy rejtett) értékeinek ismerete és feltárása után, azok megőrzését biztosítva szabad megvalósítani.

Következzenek mármost a többlakásos, ezért csaknem kizárólag városi lakóházak. Ezek között is akad jócskán védett, vagy akár (még) nem védett, de nagyon értékes történeti épület. Ha eltekintünk attól az egyébként sem „szalonképes” megoldástól, hogy homlokzatkonzervként⁸ ezen épületeknek csak a városképben megjelenő homlokzatát őrizzük meg, bizony szá-

7 Bár nem kastély, a Cesky Krumlov-i Hotel Ruze, vagy a szécsényi ferencesek celláiban kialakított szekrény-mosdók jó megoldásként említhetők.

8 Ez az a bizonyos faszádizmus.



■ **10. kép:** Külső felvonó elhelyezése az udvarban, zavaró megoldás
 ■ **Photo 10.** External elevator in the courtyard, an inconvenient solution



■ **11. kép:** Modernkori műemlékhez épített új, külső felvonó, jó példa
 ■ **Photo 11.** New, external elevator built to a monument from the modern era, a good example



■ **12. kép:** Sárga gázvezeték és kicserélt ablakok – magasabb komfort, kisebb történelmi érték
 ■ **Photo 12.** Yellow gas pipe and replaced windows – increased comfort, decreased historic value

mos sajátos kihívást jelent a megfelelő komfortfokozat elérése. Talán sokak számára ismert a XIX. századi Pest, annak méltán világhírű eklektikus, mai szóval historizáló városszövetét, városképét alkotó tipikus beépítés, illetve az annak alapegységét jelentő épülettípus. Az eltérő szociális helyzetű lakók eltérő komfortszintű kialakítása az építés korában nem jelentett problémát. Mindenki számára elfogadott volt az utca felőli magas komfortszintű traktusok elegáns (gyakorta a háztulajdonos által is lakott) sokszobás, fürdőszobás lakások, illetve az udvari szárnyakban sorakozó szobakonyhás, a folyosó végén elhelyezett közös toalett – elnézés: pottyantós árnyékszékkel „megoldott” lakások közötti különbség. Ennek a helyzetnek a társadalmi változások nyomán egyre sürgetőbbé váló feloldására számos terv, javaslat született, amelyek egy része csakis az államosított tulajdonviszonyok között jelenthetett volna megoldást, ha megvalósították volna.⁹ A rendszerváltás után, az egyes lakásoknak – inkább bérleményeknek – a bérlők számára törvényben biztosított megvásárolhatóságának lehetőségével ez a helyzet gyakorlatilag konzerválódott. Komfortosítási megoldást egyenként igen nehéz találni, e bérházak egységes felújítására pedig igen ritkán születik meg a társasházi közösség egységes döntése. A komfortosítás, többnyire a „kivásárlás-átalakítás-funkcióváltás” keretében, egyáltalán nem „műemlékbarát” módon valósul meg, és ez még a jobbik eset, mert a teljes lebontás–új építés radikális igénye sem ritka!

Ezeknél az esetek túlnyomó többségében többszintes műemlékeknél – nem részletezve a közműellátás fejlesztésével, az új vezetékek, szerelvények, berendezési tárgyak elhelyezésével kapcsolatos kihívásokat – egy további sajátos komfortosítási igényként merül fel a felvonó létesítése. Ez persze nem teljesen új keletű igény, de az építési szabályzatokban rögzített komfortkötelezettségek sorába csak mostanában került be. A műemléképületek esetében sem indokolt elzárkózni eme igény kielégítésétől, jóllehet ez akár igazán nagy nehézségekbe is ütközhet. A „klasszikus” elhelyezés a történelmi lépcsőház orsóterében, ha az egyébként elég tágas a felvonó befogadására, számos épületben megvalósult, súlyos kompromisszumokkal, elsősorban a történelmi értékek kárára. Ezeknek az épületeknek a legszebb terei ugyanis éppen a bejáráthoz, a lépcsőházhoz és a körülépí-

necessary either. In order to achieve a “romantic” castle hotel atmosphere it could be enough to install washbowls concealed in furniture within the rooms, and to ensure one common bathroom (of high convenience level) for several units.⁶

The transformation process aiming at convenience needs carried out in urban, one-apartment buildings, especially in former so-called “villas” takes place in many cases in a similar way to aristocratic residences, only on a lower scale. We can similarly follow the interventions “done” because of the introduction of gas, then electricity – in this latter case from the early version fitted on the wall surface and equipped with ceramic rollers to networks engraved into the walls and transformed repeatedly. It might be useless to stress the destructions these processes carry out on the visible surfaces of the buildings, but also on the frescos concealed behind subsequent layers, which are often extremely precious. Regarding the transformation of monument buildings aiming at convenience, we can certainly claim that no matter how “legitimate” needs give grounds for such transformations, they should be carried out exclusively following the discovery and survey of the buildings’ (visible or hidden) values, in a manner ensuring their preservation.

Let us speak now about the houses with several apartments, which are mostly urban buildings. There are plenty of protected buildings in this group as well, or ones which are not protected (yet), but are historic buildings of great value. If we neglect the solution which is not “presentable” anyway, when only the façades of these buildings displayed in the townscape are preserved like a “façade conserve”,⁷ ensuring the adequate convenience level means many special challenges. Perhaps many know well the typical development pattern, respectively the building type serving as its basic unit, which formed the eclectic or historicist townscape of the 19th century Pest. The conformation of various apartments serving the different convenience needs of occupants with diverse societal conditions did not cause much difficulty at the time of the construction. The difference between the elegant apartments with several premises and bathrooms, with a high level of convenience, facing the street (in which often the owner lived), respectively the room-and-a-kitchen flats facing the courtyard and disposing over a common toilet (pardon me: latrine) at the end of the corridor was generally accepted. Due to social changes, many plans and suggestions were born to solve this increasingly urgent situation, part of which would have meant a solution only within the conditions of ownership specific to nationalization, if these plans have been implemented at all.⁸

⁶ Although it is not a castle, the Hotel Ruze in Český Krumlov, or the wardrobe-washbowls installed in the cells of the Franciscan monastery in Szécsény are good examples in this respect.

⁷ This is the so-called facadism.

⁸ See the doctoral thesis of András ROMÁN.

⁹ lásd ROMÁN András kandidátusi értekezését.

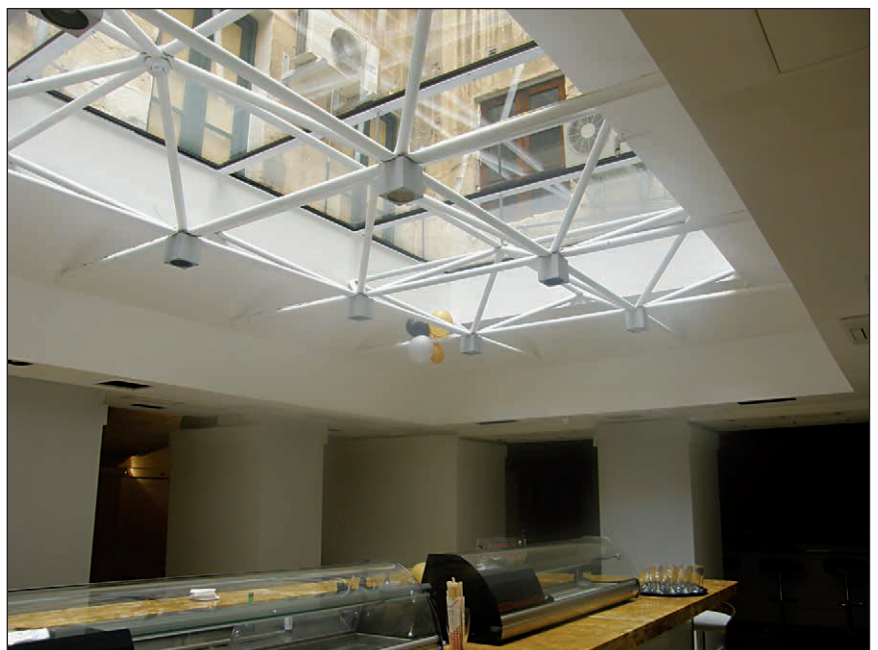
Following the change of regime, the tenants were given the possibility to buy the apartments (rather leased flats) as provided by the law, thus this situation in fact was conserved. It is very hard to find individual solutions to provide convenience, and a uniform decision from the part of the building's community aiming at a consistent restoration is very rarely born. Thus adaption to convenience needs is usually carried out within the process of "purchase–transformation–change of function", not at all in a "monument-friendly" manner – and this is the better of two, since the radical demand of complete demolition–new construction is not rare either!

These – usually many-storied – monuments raise a further issue of convenience, the building of a lift – let us not detail at this point the challenges related to the development of public utilities, to new conduits, plumbing, furnishings. This of course is not a recent demand, but it was recently included within the convenience obligations specified in building regulations. There is no need to be averse to the satisfaction of this demand either, although this could meet really great difficulties. The "classic" placing within the stair-well of the historic staircase, provided that it was large enough to accommodate the lift, was effectuated in many buildings, with serious compromises – mainly to the detriment of historic values. The most beautiful details of these buildings lie in the spaces connected to the entrance, to the staircase and to the internal yard and in the connections between these. Due to insensitive solutions taking into account only technical specifications and aspects related to prices, the original values of many beautiful historic spaces were lost. One of the possible compromises is to place the lift within one of the staircases (lateral, backstairs) reflecting the former social stratification. Taken from a broader perspective, the issue of placing a lift may have significance in the case of almost every multi-storied monument. The building of such a structure can be carried out following the demand of the owner, of the builder, or even the requirement of an authority, for the sake of accessibility or a higher level of convenience. One must give a careful consideration in each case which are the interior spaces that can be "amputated", where can historic slab structures be broken through. It is to consider also whether the lift can be built as an exterior addition (within the courtyard or at the facade). In fact, the 20th and 21st century addition means a new "historic" period, grounded by the aim of ensuring convenience.

All these ideas and statements formulated with regard to different monuments having habitation functions can be valid to buildings with other functions as well. First of all public buildings can be mentioned here. With regard to buildings with administrative, educational, health or justice-related, financial etc. function, ensuring convenience is formulated as a need for "modernization". In the case of such buildings new demands arise much more rapidly than the

tett belső udvarhoz kapcsolódó terek, és azok egymáshoz való kapcsolata. Érzéketlenül, csak a technikai előírásokat és gazdasági megfontolásokat szem előtt tartó megoldásokkal számos szép történeti tér eredeti értékei vesztek el. Áthidaló megoldási lehetőségként jelentkezik például a historizáló épületek esetében – az akkori szociális rétegződést is leképező – további (oldalsó, hátsó) lépcsőházak valamelyikének „feláldozása” a felvonó elhelyezése érdekében. A komfortosítás-felvonóépítés kérdéskörének tágabb megközelítésben szinte minden, egynél több szintes műemlék esetében lehet jelentősége. Akadálymentes megközelítés, vagy tényleg csupán az emelt komfortszint biztosítása érdekében lehet tulajdonosi, építetetői igény, vagy akár hatósági előírás is ilyen szerkezet beépítése. Minden esetben mérlegelendő, hogy mely belső helyiség(ek) esetében jöhet szóba a történeti terek „csonkolása”, a történeti födém szerkezet(ek) áttörése. Ugyanígy azt is szükséges mérlegelni, hogy egyfajta külső (udvari vagy homlokzati) hozzátételként illeszthető-e a komfortosítást szolgáló felvonó. Valójában ez az a terület, amely esetében XX.–XXI. századi hozzátétel, új „történeti” periódus megvalósítása az igény, amelyet a komfortosítás szándéka alapoz meg.

Az előzőekben a különféle karakterű, lakórendeltetést betöltő műemlékek kapcsán elmondott gondolatok, megállapítások értelemszerűen vonatkozhatnak a más rendeltetésű épületekre is. Elsősorban és legközelebb a különféle középületek jöhetnek számításba. Igazgatási, oktatási, egészségügyi, igazságszolgáltatási, bank-pénzügyi stb. épületek vonatkozásában a komfortosítás úgynevezett „korszerűsítési” igényként fogalmazódik meg. Ezek esetében az újabb és újabb igények kielégítése általában nehezebben követi azok felmerülését, többnyire akkor kerül sor a megvalósításukra, ha az épület felújítják. Emiatt viszont egy másik, eddig még nem említett sajátos komfortosítási kihívás, a műemléki értékek szempontjából valójában komoly veszély jelentkezik: nevezetesen az ideiglenes megoldások alkalmazásának a veszélye. Történeti épületek esetében ez utóbbi amennyire lehet, kerülendő! Nemcsak azért, mert az amúgy is csak korlátozottan rendelkezésre álló anyagi források felesleges felhasználásához vezet, hátráltatva ezzel a valóban igényes és a műemléki adottságokhoz átgondoltan illesztett megoldások megvalósítását. Azért is kerülendő, mert az ideiglenesnek szánt beavatkozások gyakorta, sőt a leggyakrabban igény-



■ 13. kép: Udvarlefedés és homlokzati klímaberendezések a komfort növelésére

■ Photo 13. Covered courtyard and air conditioning apparatus on the facade for increased comfort



■ 14. kép: Vezetékek a homlokzaton

■ Photo 14. Wires on the façade

telen, a történeti épülethez méltatlan állapotot hoznak létre – miközben az „ideiglenességük” ugyancsak relatív, hiszen a legfeljebb néhány évre szánt ideiglenességek sajnos nem ritkán évtizedekig a helyükön maradnak. Az egymás után jelentkező újabb és újabb komfortigények természetesen nem sorolhatók csupán a divat változásával felbukkanó ötletek sorába, nem egyet közülük valós folyamatok alapoznak meg és teszik szükségessé a ki-elégítésüket. Erre példaként hadd említsem meg a globális klímaváltozás – nagyjából már mindenki által elfogadott – jelenségéhez kapcsolható, egyre szélesebb körben jelentkező klimatizálási, pontosabban épület- (belső tér) hűtési igényeket. Sajnos ezzel kapcsolatban rögtön vissza is utalhatok a csúnya és elfogadhatatlan ideiglenes megoldásokkal összefüggésben az imént elmondottakra; azt hiszem, mindannyian ismerjük a történeti épületek homlokzatain is egyre gyakrabban megjelenő, azokat rákos daganatként elcsúfító klímadobozokat.

A végéhez közeledve jelzem, hogy a már érintett témák közül többé-kevésbé komfortosítási igényként is értelmezhető akadálymentességi, valamint energiahatékonysági követelmények, akárcsak bizonyos biztonsági előírások teljesítésének következményei, illetve lehetséges jó megoldásai nagyon messze vezetnének, ezért nem is foglalkoztam velük részletesebben.

A végére hagytam azokat a műemléképületeket, amelyekkel a műemlékvédelem története kezdődött: a templomokat, a várakat és a városmo-
kat. Nem azért nem esett szó eddig ezekről, mintha nem lennének érintve a komfortosítási igényekben, hanem azért, mert éppen a nagyon is sajátos adottságaik, használati követelményeik miatt minden egyes velük kapcsolatos megoldás tökéletesen egyedi megközelítést igényel. Nem csak abban az értelemben, ahogyan azt minden műemlékre érvényesnek tartjuk, hanem már a kérdésfelvetés pillanatában is. Azon műemlékek esetében, amelyekről a korábbiakban beszéltem, a komfortosítás „legitimitását” hangsúlyoztam. Ezeknek a most említett, kiemelkedő értékű műemlékeknek a komfortosítása azonban olyan kérdés, amelyet minden esetben alá lehet és kell rendelni a műemléki, örökségi értékelés szempontjainak – akkor is, ha az jelentős többletenergiát, többlet-odafigyelést és többlet-ráfordítást igényel. Az igazi, mással nem pótolható komfortot ugyanis a műemlék hordozta, saját emberi, közösségi identitásunk átélését lehetővé tévő értékek fennmaradása és hozzáférhetősége biztosíthatja.

pace their satisfaction is effectuated at, as this occurs rather when the building itself is restored. For this very reason a further challenge in ensuring convenience arises, which means a serious danger to monument values: namely the risk of applying provisional solutions. In the case of historic buildings this must be avoided as much as possible! Not only because it means the futile consumption of financial resources, which are limited anyway, thus the implementation of truly demanding solution, which would be fitted adequately to the monument features of the building, is impeded. It is avoidable also because interventions often intended to be provisional, moreover, most often create a situation unworthy for the historic building – while their “provisional” feature is relative, since quite often interventions intended for a few years would not be removed for decades. Newly arising convenience demands cannot be classified all in the series of ideas following fashion, as many of them are grounded by real processes, which make necessary their satisfaction. As an example let me mention air-conditioning needs, more precisely (interior space) cooling demands arising in a widening sphere, and connected to mostly generally acknowledged global climate change. Unfortunately, related to this issue, I can instantly refer back to ugly and unacceptable temporary solutions; I presume we are all familiar with air-conditioning boxes placed more and more often on the façade of historic buildings, spoiling them like tumours.

Nearing the end of my essay, I will briefly mention that requirements regarding accessibility, respectively energy-saving, which can be interpreted also as convenience demands, furthermore, the fulfilment of certain security requirements and the related adequate solutions would lead us much too far, therefore I did not treat these issues in detail.

I will end with the heritage buildings, the history of heritage protection started with: churches, fortresses, ruins of fortresses. The reason for neglecting them so far was not that these edifices would not be affected by growing demands of convenience, but the very fact that due to their special features and requirements related to use, every intervention on them calls for an individual approach. We have to adapt an individual approach not only as we do in the case of monuments in general, but in the moment when the issue comes up. In the case of monuments discussed earlier in the study, I laid emphasis on the “legitimacy” of transformations aiming at convenience. But the modification aiming at convenience on these monuments with outstanding value is an issue which can and must be subordinated to considerations regarding heritage protection – even if this requires a significant surplus of energy, attention and expenditure. The true, unique convenience can be ensured by the endurance and accessibility of values encompassed by the monument and which enables us to experience our human and communal identity.

■ BABOS Rezső ■ KIRÁLY Béla¹

The Biological Condition of the Buildings and Wooden Structures of Buda Royal Garden Pavilion and Wood Preservation Works prior to Conservation

■ **Abstract:** Brief history of the Buda Castle and the construction of the Várkert Bazár (Royal Garden Pavilion) on the basis of the plans of Miklós YBL. The functions and the subsequent neglect of the buildings, the evolution of the biological infection. On one hand part of the World Heritage, on the other hand inclusion on the World Monuments Fund's list of 100 most endangered sites. In 2011 a government decree was issued on the restoration of the Várkert Bazár building complex. Thus, besides restoring the beauty of the structure and the world heritage site, the area is transformed into a cultural and touristic centre, into a multifunctional area. At the commencement of the restoration biological infection of the buildings is rem-

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A Budai Várkert Bazár épületeinek és faszerkezeteinek biológiai állapota és a helyreállítást megelőző megszüntető faanyagvédelmi munkák

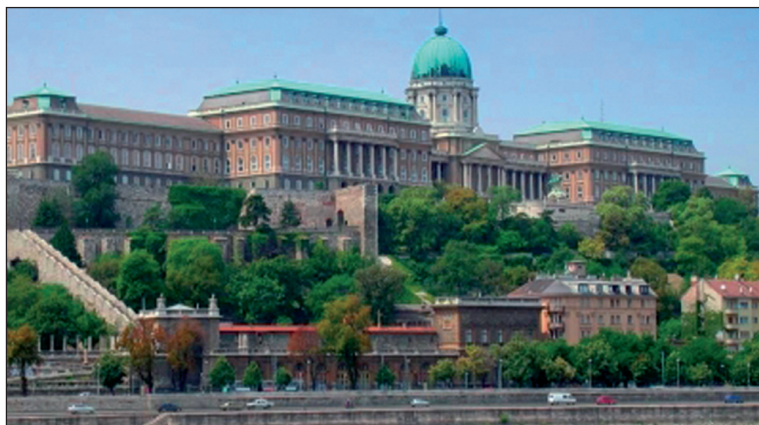
■ **Kivonat:** A budai vár története dióhéjban és a Várkert Bazár megépítése YBL Miklós tervei alapján. Az épületek funkciói, későbbi elhanyagolása, a biológiai fertőzöttség kialakulása. Egyfelől a Világörökség része, másfelől felkerülése a WMF (World Monuments Fund) „A száz legjobban veszélyeztetett műemlék” listájára. 2011-ben kormányhatározat születik a Várkert Bazár épületegyüttes felújításáról. E szerint a kialakítás szépségén és a világörökségi tér helyreállításának szándékán túl, kulturális és turisztikai központtá, multifunkcionális térré alakul a terület. A felújítás kezdetén megtörténik az épületek biológiai fertőzöttségének felszámolása. Első lépésben elkészülnek a szükséges szakvélemények, az erre alapuló mentesítési technológia kidolgozása, majd megtörténik az épület- és tartószerkezetek teljes gomba- és rovarmentesítése.

■ **Kulcsszavak:** Budai vár, Várkert Bazár, szakvélemény, könnyező házigomba, pincegomba, házicincér, gombamentesítés, felújítás

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■ **1. kép:** A Várkert Bazár légi felvétele © Google légi fotó
■ **Photo 1.** Aerial photograph of the Várkert Bazár © Google aerial photo



■ **2. kép:** A testőrségi palotától a vízfordó lépcsőig
 ■ **Photo 2.** From the Guards' Palace to the stairway for water carrying



■ **3. kép:** Rámpák az 1900-as évek elején a Duna felől nézve
 ■ **Photo 3.** Ramps at the beginning of the 1900s seen from the Danube's bank

■ Buda, a két szerzetesrendnek is lakóhelyet adó gazdag város, feltehetően már a XIII. században vonzotta az udvart, bár csak később lett a Magyar Királyság fővárosa, amikor felépült a Várhegy délkeleti részén a nagyobb udvartartást befogadni képes palota, helyük lett a bíróságoknak, a kormányhivataloknak.

Addig középkori szokás szerint a királyok udvartartásukkal együtt „vándoroltak” az országban, törvénykeztek, döntöttek alattvalóik ügyesbajos dolgaiban, adót szedtek és felélték az uradalmak javait.

Már ekkor is voltak azonban kiemelt helyek, amelyeket a király gyakrabban látogatott. Ilyen volt Esztergom, az első érsekség, a magyar egyház központja és Székesfehérvár, a magyar királyok ősidóktól fogva létező szakrális központja.

A XIII. század közepétől Óbuda is egyre inkább a kiemelt helyek közé emelkedett. A királyok minden év húsvétja táján itteni palotájukban tartottak törvénykezési, bíráskodási napokat, fogadták alattvalóikat, így lassan Óbuda lett a királyság központi városa, egészen addig, amíg a tatárok el nem pusztították.

Váratlan és gyors kivonulásuk után IV. Béla (1235–1270) a 7–8 kilométerrel délebbre lévő és sokkal jobban védhető Várhegyen épített megerősített várost. Az új város gyorsan fejlődött, rövidesen átvette Óbuda szerepét és az ország közepe (*medium regni*) lett. Palota, királyi szállás épült a városban, és vannak adataink királyok látogatásáról, és itt töltött idejéről.

Igazán széppé LUXEMBURGI Zsigmond (1387–1437) tette. Követek, utazók Európa legnagyobb és legszebb palotáihoz hasonlították, dicsérték padlófűtési szobáit. A Zsigmond korabeli gótikus palota Mátyás király (1458–1490) alatt kapott reneszánsz arculatot.

A török megszállást a palota viszonylag kevés károsodással átvészelte volna, de a visszafoglalására indított öt kísérlet (amelyből az utolsó volt sikeres 1686-ban), valamint két lőporrobbanás és egy tűzvész nagyon komoly károkat okoztak. Helyreállítása, bővítése 1715-ben indult.

A XIX. század végén YBL Miklós és HAUSZMANN Alajos közreműködésével egy hátsó szárny hozzáépítésével szinte megkétszereződött a palota területe.

A II. világháborúban a várterület harcterré vált és súlyosan megsérült, különösen a neobarokk kupola. Helyreállítása a 60-as években történt, de az eredetitől némileg eltérő építészeti megoldással.

A Budai Királyi Várhoz tartozó Várkert Bazár, a várkert Duna felőli lezárására épült 1875 és 1883 között, YBL Miklós tervei szerint neoreneszánsz stílusban.

A Bazár épületegyüttese a szó szoros értelmében „beleépült” a Várhegy oldalába. Az Öntőház utcai lépcsősor, az Ybl Miklós tér és az Orvostörténeti Múzeum melletti lépcsősor határolja.

Még a helyreállítás megkezdése előtt készült Google műholdfelvételen látható, hogy a Várkert Bazár szervesen illeszkedik a Várhoz (1. kép), és látható

edied. As a first step necessary expertises are elaborated, then the technology to be applied is conceived, finally the building structures and load-bearing structures are cleaned from fungi and insects.

■ **Keywords:** Buda Castle, Várkert Bazár (Royal Garden Pavilion), expertise, dry rot fungi, cellar fungi, old-house borer, clearing of fungi, restoration

■ Buda, the rich city home to two religious orders, presumably attracted the royal court from the 13th century, becoming the capital of the Hungarian Kingdom only later, when the palace for the larger court was built on the south-eastern part of the Várhegy (Castle Hill), becoming the seat of courts of law and government offices.

It had previously been a Middle-aged practice that the kings would “wander” together with their court throughout the country, ruling, deciding on their subjects’ nitty-gritty matters, collecting taxes and eating up the resources of the lordships.

There were already special places that the king would visit more often. Such settlements were Esztergom, the first arch-



■ **4. kép:** Ifjpark © Budapest e-oldal
 ■ **Photo 4.** Youth park © Budapest e-site

bishopric and seat of the Hungarian church and Székesfehérvár, the holy seat of all Hungarian kings since ancient times.

Óbuda became one of those featured settlements starting the mid-13th century. The kings ruled, judged and received their subjects in the palace every year around Easter, thus Óbuda slowly became the capital city of the kingdom until the Tartars devastated it.

After their unexpected and fast withdrawal, king Béla IV of Hungary (1235–1270) built a fortified town 7-8 km to the south on the Várhegy, which was easier to defend. The new town developed fast and soon it took over the role of Óbuda, becoming the middle of the country (*medium regni*). The palace, the royal lodging was built in the city. We have data about the kings' visits and the time they spent there.

The palace was embellished by Sigismund of Luxemburg (1387–1437). Messengers and travelers compared it to the biggest and the most beautiful palaces in Europe, complementing the rooms heated by in-floor heating. The Gothic palace of King Sigismund's times got its Renaissance aspect under the reign of King Matthias I (1458–1490).

The palace would have tided over the Turkish occupation with relatively small damage but the five attempts aimed at reconquering it (the last one was successful in 1686), as well as the two gunpowder explosions and the fire caused major damages. Its rehabilitation and expansion started in 1715.

At the end of the 19th century, thanks to Miklós YBL's and Alajos HAUSZMANN's cooperation, the area of the palace almost doubled by adding a back wing to the original building.

The fortress became a war field in World War II, suffering serious damages, especially the Neo-Baroque dome being damaged. Its conservation from the 60s was made using an architectural solution that slightly differed from the original.

The Royal Garden Pavilion appertaining to the Buda Royal Castle was built in Neo-Renaissance style between 1875 and 1883 according to Miklós YBL's plans to close up the side of the royal garden facing the Danube.

The Pavilion ensemble was literally "built into" the side of the Castle Hill. It is bordered by the flight of stairs in Öntóház Street, the flight of Ybl Miklós Square and the flight by the Museum of Medicine.

It is visible on the Google satellite images taken before the conservation started that the Royal Garden Pavilion organically fits the Castle (Photo 1) and it is also visible that the ensemble can be divided into four main units: the northern end is closed up by the so-called Guards' Palace and the southern end by the northern and southern block of the so-called Southern Palace, made up of two buildings and having a closed yard. The two palaces are connected along the Ybl Miklós Square by niches, niche pavilions, ramps and stairs.

The northern part from the Guards' Palace to the so-called water-carrier's flight can be seen on the old postcard (Photo 2). One can also see the middle ramps and the southern niche pavilion (Photo 3).

az is, hogy az épületegyüttes négy nagyobb egységre bontható: az északi végét az úgynevezett Testőrségi Palota, a déli végét a két épületből álló, zárt udvaros, úgynevezett Déli Palota északi és déli tömbje zárja le. A két palotát az Ybl Miklós tér mentén fülkesorok, fülkepavilonok, rámpák és lépcsők sora köti össze.

A régi képeslapon látható az északi rész a testőrségi palotától az úgynevezett vízholdó lépcsőig (2. kép). Láthatók továbbá a középső feljáró rámpák és a déli fülkepavilon (3. kép).

A fülkesort eleinte üzletekkel töltötték meg, de a Várkert Bazár eredetileg megálmodott „bazár” funkciója sosem valósult meg. Kiderült, hogy a csekély forgalom miatt a budai Duna-partból nem lehet a pestihez hasonló üzleti negyed és korzót csinálni, így a kereskedők elköltöztek. Sokáig állt üresen az épületegyüttest lezáró két bérpalota is. 1883-tól 1888-ig az északi szárnyában működött a Budai nőipari tanműhely. 1890-től 1895-ig a Történeti arcképcsarnok kapott helyet, majd női festőiskola is működött itt, de a hely egyiknek sem felelt meg, ugyanis már korán jelentkeztek az épületek nedvesedési problémái. A fülkesorban a festők helyét egyre inkább keramikusok, szobrászok foglalták el, őket kevésbé zavarta a vizesedés.

A 60-as, 70-es évek fiataljai a számos zenés rendezvénynek otthont adó Budai Ifjúsági Park („Ifipark” vagy BIP) néven ismerték. 1961-től a Bergendy, Edda, Kex, Karthago, Mini, P. Mobil, Hobo Blues Band, a Beatrice és a többiek koptatták a színpad deszkáit. Az Ifipark volt a magyar rock szülőhelye, a szigorú Kommunista Ifjúsági Szövetség felügyelete alatt. (Fiúk, csak nyakkendőben... legalábbis eleinte.) (4. kép)

Az építmények, amelyek felújítását már a 20-as években tervezték és csak a háború miatt nem került rá sor, nem bírták a terhelést és 1982-ben egy Edda-koncerten a leomló balusztrád sérüléssel okozott. Ekkor még próbálkoztak védőkorrallal, de az állagromlás miatt 1984. szeptember 23-án végleg bezárta a kapuit. Az épületekben ezután voltak még bérlakások, de az egész épületegyüttes állapota tovább romlott.

A királyi vár történelme során megélt három nagyobb és több kisebb ostromot a török kortól a második világháborúig. Az egész területet átszövi a magyar történelem, a régészeti ásatások nyomán megannyi régi falmaradvány, régi és újabb lőszer, robbanóanyag kerül elő.

Környezeti tényezők

1. Nedvesedés

Mint hogy az egész létesítményt „beleépítették” a Várhegy keleti oldalába, a talajszint alá került részek klímaviszonyai erősen rányomják bélyegüket az épületek egészére. (5. ábra)

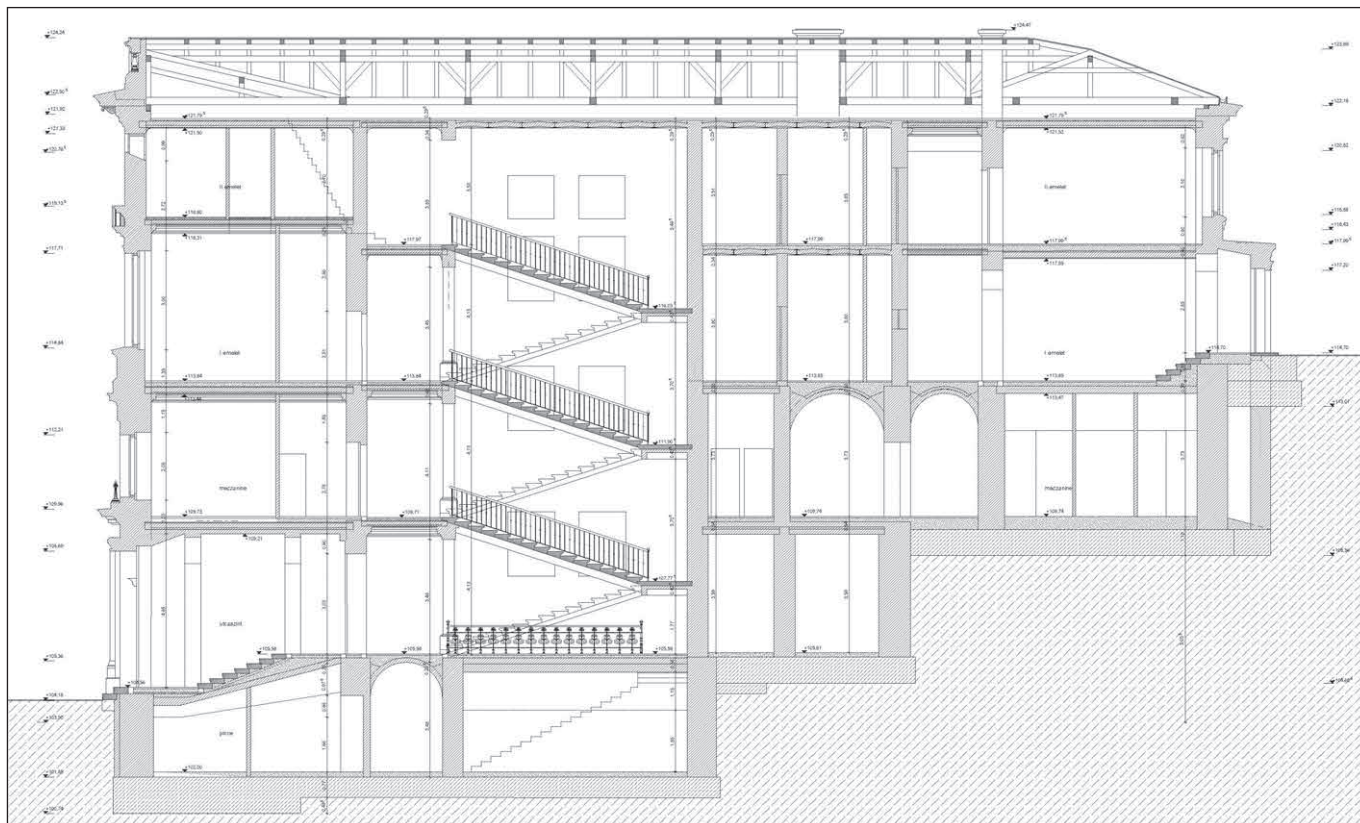
A Testőrségi palotában, valamint a Déli Palota mindkét tömbjében öt szint van: 2. emelet, 1. emelet, mezzanin szint, földszint és pincésint. Az 1. emeletről lefelé érezhetően egyre párásabb a levegő- és ennek megfelelően egyre több helyen jelenik meg gombafertőzés.

A belső udvarokba szinte sosem süt be a nap, minden nyirkos. A hűvös, párás klímaviszonyok mind a rovar- mind a gombakártevők számára kiváló életkörülményeket biztosítanak, de a nedves falakban jól érzik magukat a virágos növények, az algák és a zuzmók is.

A falakon a beázásoknál számos helyen láthatók salétromos só kivirágzások, elszíneződések, pikkelyes leválások. A várhegy felőli falakon több helyen gyöngyözik a víz, a Déli Paloták pincéiben pedig egy ásónyomra van a talajvíz.

A palotákat összekötő Fülkesorban a fülkék hátfala egyben a várhegy szigeteletlen támfala is, ahonnan árad a nedvesség. Minden fülke beázik, gyakorlatilag egyikben sincs ép vakolat. Minden tárgy penészes, dohos. (Érthető, hogy a nyitás után nem sokkal elköltöztek a kereskedők.)

Az építés idején vagy nem álltak rendelkezésre megfelelő vízszigetelési technikák, vagy nem fordítottak elég figyelmet a speciális körülményekre, mindenesetre a közel másfél évszázada elkövetett építési hibák követ-



■ 1. ábra: A testőrségi palota metszete © Tervlap, KÖZTI
 ■ Figure 1. Section of the Guards' Palace © Design sheet, KÖZTI

kezményeit ma is megszenvedjük. Egyes feljegyzések azt mutatják, hogy meglehetősen takarékosan kellett tervezni és építeni. Azért lett a tervezett árkádsorból fülkesor, mert valamilyen megtérülésben reménykedtek. Ha pedig takarékoskodni kellett (talán az ésszerűség határán túl is), akkor – mint sok esetben manapság is –, elsőnek a szigetelés esett áldozatul.

Az a véleményünk alakult ki, hogy biológiai veszélyeztetettség szempontjából talán a vízszigetelés nem megfelelő volta az épületegyüttes egyik legnagyobb problémája.

2. Elhanyagoltság

A II. világháború okozta súlyos károk úgy-ahogy történt kijavításán és az Ifipark létrehozásán kívül kevés figyelmet fordítottak az épületekre és a parkra. Ez vezetett a koncert során bekövetkezett balesethez, majd a park 1984-es bezárásához, ami után rohamosan tovább romlott az épületek állaga.

A rendszerváltás után számos koncepció látott napvilágot, de se pénz, se akarat nem volt igazán a helyreállításra. Láthatóan próbálták valahogy megvédeni az épületeket, de valószínűleg a kevés pénz és az átgondolatlanság szakmailag képtelen megoldásokat szült. Ahelyett például, hogy két-háromhetente alaposan kiszellőztették volna az üresen álló lakásokat, a műves betétes bejárati ajtólapokba, kb. 2 cm átmérőjű lyukakat fúrtak. Ezzel természetesen nem oldották meg az olykor 300–500 légméteres lakások légcseréjét, viszont tönkretették az ajtókat.

Néhány megerősítés történt ugyan a padlástérben, de az igazi problémát, a padlástéri nyitott esővíz-elvezető vályúk bádogozásának javítását nem végezték el. Emiatt átáztak a födémelek, és hatalmas méretű gomba- és rovarfertőzés lépett fel.

Az elhanyagoltságra jellemző, hogy az egyik 2. emeleti fürdőszobában esővízzel teli fürdőkád mellett a WC-csészében galambfészek volt (két tojással). (5. kép)

The niche range was packed with shops, at first, but the originally envisaged “bazaar” function of the Royal Garden Pavilion never materialized. It turned out that due to poor traffic, it was impossible to turn the Buda bank into a business neighborhood and esplanade similar to the Pest bank, and so the merchants moved away. The two Palaces of tenants closing up the ensemble had stood empty for a long time. The workshop of female industry in Buda functioned in the northern wing between 1883 and 1888. Between 1890 and 1895 it housed the Historical Portrait Hall then a painting school for women but the place did not suit any of the needs since moisture started to damage the building very early. The painters' place in the niches was taken rather by ceramic-workers and sculptors as they were less disturbed by the moisture in the walls.

The youth of the 60s and 70s knew it under the name of the Youth Park of Buda (“Ifipark” or BIP) hosting many a musical event. Starting from 1961, the stage hosted many star bands such as Bergendy, Edda, Kex, Karthago, Mini, P. Mobil, Hobo Blues Band, Beatrice and others. The Ifipark was the cradle of Hungarian rock music under the strict supervision of the Hungarian Communist Youth Organization. (Boys only wearing ties... at the beginning, at least.) (Photo 4)

The conservation of the buildings was already planned in the 20s but it was not carried out due to the war. They could not stand the load anymore and the parapet that collapsed during the Edda concert in 1982 caused an accident with many casualties.

Then some protective rails were mounted but due to degradation it closed its gates for good on September 23, 1984. The buildings still hosted rental flats but the condition of the entire ensemble kept worsening.

During its history the royal castle survived three major and several smaller sieges from Turkish times to World War II. The entire area interweaves with Hungarian history; archaeological diggings revealed many an old wall fragments, earlier and later munitions and explosives.

Environmental factors:

1. Moisture

Since the entire establishment was practically "built into" the eastern part of the Castle Hill, the climate conditions of the underground parts strongly impair the buildings as a whole. (Figure 5)

There are five stories in the Guards' Palace as well as in the Southern Palace: 3rd floor, 2nd floor, mezzanine-floor, 1st floor and basement level. Going from the 2nd floor down, the air is getting more and more humid and accordingly, fungal infections are more and more visible.

The sun never shines in the inner courtyards, everything being moist. The chilly and misty climate conditions ensure exceptional living conditions both for insects and fungus and the phanerograms such as algae and lichens also feel good in the damp walls.

In the flooded corners of the walls there is rising damp, discoloration and scaling in many spots. Water beads on several parts of the walls facing the castle hill while underground water is at a spade depth in the cellars of the Southern Palaces.

In the niche range joining the palaces, the back wall of the niches coincides with the not insulated supporting wall of the castle hill where dampness emanates from. All niches get flooded, there is practically no intact plasterwork in any of them. All the objects are moldy and stuffy. (It is completely understandable that the merchants moved away shortly after the opening).

During the building works there were no waterproofing technologies available or they did not pay enough attention to the special circumstances; anyway, we still bear today the consequences of the architectural mistakes made almost one and a half centuries ago. Certain records show that the design and building works had to be performed rather economically. The designed range of arcades became a niche range because they hoped for some kind of a return. And if they had to save (even way beyond being reasonable), insulation was sacrificed first as in so many cases nowadays, too.

We are of the opinion that the inappropriateness of waterproofing is one of the major problems of the building ensemble from the point of view of biological vulnerability.

2. Neglect

Besides the poor repairs of the major damages caused by World War II and the creation of the Youth Park, there wasn't too much attention paid to the buildings and the park. This led to the accident that oc-



■ **5. kép:** Galambfészek © BÁNKY László, KIRÁLY Béla

■ **Photo 5.** Pigeon nest © BÁNKY László, KIRÁLY Béla

A nyitott légudvari ablakokon keresztül beköltöző galambok nagy mennyiségű trágyát termeltek, és tönkretettek jó néhány lakást.

Külön kellett fertőtleníteni a galambóvantagok (*Argas reflexus*), és a kék kullancsok (*Argas persicus*) ellen, mert az általuk okozott bőrgyulladás, esetleg valamilyen másodlagos fertőzéssel kombinálva, komoly veszélyt jelentett volna a dolgozók számára.

Ilyen körülmények között született meg 2011-ben az épületegyüttes helyreállítására vonatkozó kormánydöntés, amely szerint, a kialakítás szépségén és a világörökségi tér helyreállításának szándékán túl, kulturális és turisztikai központtá, mai szóval multifunkcionális térré alakul a terület. A Duna-part szintjéről a szobrokkal díszített barokk kerten keresztül lépcsők, sétányok vezetnek föl a várba, a kert alá mélygarázs épül.

A monarchia hangulatát idéző „épület-kert-sétány” komplexumban kiállító tereket alakítanak ki állandó és időszakos kiállítások számára. Lesznek előadótermek, készül múzeum és lesznek irodák és éttermek. Az újjáépülő bazársorban üzletek, cukrászdák várják a bel- és külföldi látogatókat. A komfort XXI. századi, de a Várkert Bazár a gazdagok mellett tökéletesen kiszolgálja a kispénzű turistákat is.

Az épülő hajóállomás és a hajójárat állandó összeköttetést biztosít a szemben lévő nyüzsgő, pesti Duna-parti szállodasorral. A királyi várral 16 lift biztosítja az összeköttetést.

Vizsgálatok

■ A befektető megbízása alapján 2012 augusztusában átvizsgálták a Várkert Bazár épületeinek tetőszerkezetét, majd a nyertes kivitelező, a konzorcium felkérésére 2013 február-márciusában megtörtént az épületegyüttes akkor elérhető részeinek az átvizsgálása is. A teljes átvizsgálás a gomba- és rovarmentesítési munkák során folyamatosan történt egészen június végéig. Átfogó kép alakult ki az épületegyüttes biológiai állapotáról és világossá vált, hogy a világörökség részét képező Várkert Bazár nem véletlenül került fel a WMF (World Monuments Fund) „A száz legveszélyeztetettebb műemlék” listájára.

A Várkert Bazár biológiai károsítói

– Virágos növények: Az elhanyagolt épületek szép, de igen veszélyes károsítói a Várkert Bazárban is megfelelő életteret találtak. A növények

gyökerei a falakból értékes tápanyagot vonnak ki. Erre csak úgy képesek, hogy gyökereik csúcsát gombafonalak veszik körül, amelyek feloldják a falak anyagát és így teszik a gyökerek számára hozzáférhetővé. A gyökerek, száruk idővel megvastagodnak és feszítik a falakat. Elpusztulásuk, elkorhadásuk után lyukak, rések maradnak, amelyek bevezetik a csapadékvizet a falak belsejébe. A bejutó víz tovább növeli a pusztítást és elősegíti újabb növények megtelepedését. (6. kép)

– Algák: A falak hűvös, nedves részein alkotnak általában zöld színű telepeket. Műszaki kárt nem nagyon okoznak, esztétikait annál inkább. Együttel jelzik, hogy a fal nedvesség- és hőmérsékletviszonyai nem megfelelők, de akadályozzák a falak kiszáradását is. (7. kép)

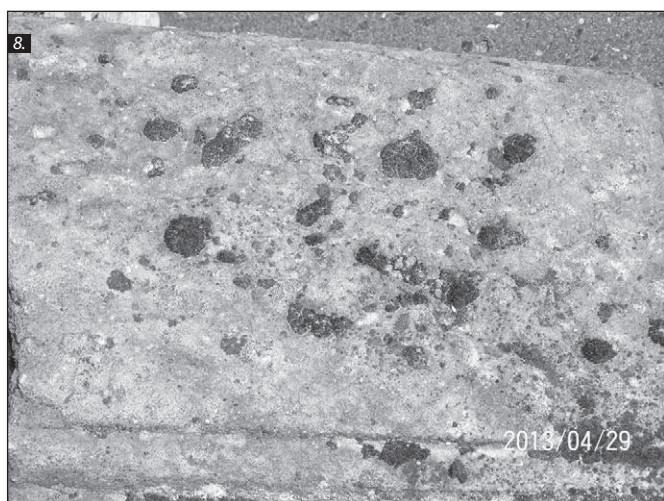
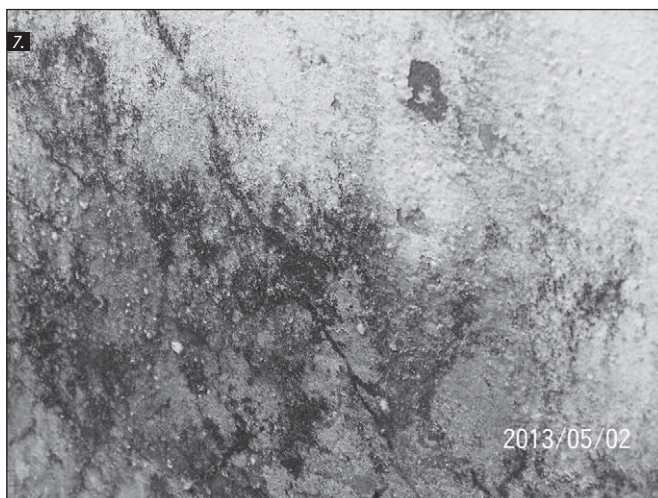
– Zuzmók: A zuzmók többnyire tömlősgombák változó „szorosságú” együttélései kéalgákkal vagy zöldmoszatokkal. A gombák oldott kémiai anyagokkal és széndioxiddal látják el a moszatokat, cserébe kész szerves anyagokat kapnak. Ez az együttélés olyan szoros, hogy egy élőlénynek tekintjük őket és fajaik számát mintegy 20.000-re becsüljük. Úgynevezett pionír élőlények. Köveken, téglán megtelepedve zuzmósavakkal mállasztják, így készítik elő a terepet a magasabbrendű szervezetek számára. Így mállasztják a Várkert Bazár köveit is. A zuzmókat indikátor szervezetnek tartjuk, mert nagyon érzékenyek a levegő tisztaságára, különösen a kéndioxid tartalmára. (Ismerve Budapest levegőjét, nem csodálkozhatunk, hogy a Várkert Bazár kövein csak kisebb zuzmótelepek tudtak kialakulni...) (8. kép)

curred during the concert and the closing of the park in 1984, after which the condition of the buildings deteriorated even more.

Several new concepts were born after the change of the regime but there was neither will, nor money for a true rehabilitation. They visibly tried to conserve and protect the buildings but presumably the little money and the lack of consideration and reasoning over gave rise to professionally impossible solutions. Instead of properly airing the empty flats every two-three weeks for example, 2 cm bores were drilled into the adorned paneled doors. And obviously this did not solve the ventilation problem of the 300-500 m³ flats, only ruining the doors.

Some consolidation was performed in the attic but the real problem of the repairs needed on the open tin rainwater gutters was not solved. This is the reason why the slabs got soaked and consequently a huge fungal and insect infection has occurred.

Typical for the state of neglect, in one of the bathrooms on the third floor there was a pigeon nest in the toilet pan near the tub full of rainwater (with two eggs). (Photo 5)



■ 6. kép: Virágok a falban © BÁNKY László, KIRÁLY Béla ■ 7. kép: Algásodás © BÁNKY László, KIRÁLY Béla ■ 8. kép: Zuzmótelepek © BÁNKY László, KIRÁLY Béla
 ■ 9. kép: Rétegesen szétfagyott fal
 ■ Photo 6. Flowers in the wall © BÁNKY László, KIRÁLY Béla ■ Photo 7. Algae © BÁNKY László, KIRÁLY Béla ■ Photo 8. Lichen © BÁNKY László, KIRÁLY Béla
 ■ Photo 9. The flaked frozen wall

The pigeons that moved in through the open window facing the light well generated large amount manure and ruined quite a few flats.

Disinfection was separately done against pigeon ticks (*Argas reflexus*) and fowl ticks (*Argas persicus*) because any skin inflammation caused by them and combined with any secondary infection would have seriously endangered the workers' safety.

These were the circumstances that lead to the adoption of the Government decision on the conservation of the building ensemble published in 2011, according to which beyond the beauty of the solution and the will to rehabilitate a world heritage asset, the area became a cultural and tourist center i.e. in modern terms a multifunctional area. Flights of stairs and alleys start from the banks of the Danube, crossing the Baroque garden adorned with sculptures up to the castle; an underground parking is being built under the garden.

The "building-garden-alley" ensemble evoking the mood and atmosphere of the monarchy hosts permanent and temporary exhibitions. There will be performance halls, a museum is under construction, and it will host offices and restaurants. In the bazaar range under rehabilitation there will be shops and confectionaries welcoming the tourists from all over the country and abroad. It offers 21st century comfort, but the Royal Garden Pavilion will also suit perfectly the impeccable tourists, as well as the richer visitors.

The ship station under construction and the regular sailings will ensure a permanent connection with the vibrant range of hotels across on the Pest bank of the Danube. 16 lifts are to connect it with the royal palace.

Investigations

■ Upon the order assigned by the design company, the roof structure of the Royal Garden Pavilion was investigated in August 2012 and then the winning contractor examined all the reachable parts of the building ensemble in February-March 2013, upon the consortium's request. The entire examination and analysis lasted continuously until the end of June during the insect and fungus control works. We got a comprehensive image of the biological condition of the building ensemble and it became clear that the Royal Garden Pavilion, part of the world heritage, was not recorded on the WMF (World Monuments Fund) "One hundred most endangered monuments" list by chance.

The parasites in the Royal Garden Pavilion

– Phanerograms: The beautiful but highly dangerous parasites of the neglected buildings found proper living conditions in the Royal Garden Pavilion as well. The roots of the plants extract valuable nutrients from the walls. They are able to penetrate the walls only by having hyphae surround the top of the root branches, loosening the material of the walls and making it accessible and reachable to the roots. In time, the roots and stalks get thicker and stress the walls.



■ 10. kép: Penészedés © BÁNKY László, KIRÁLY Béla
 ■ Photo 10. Mould © BÁNKY László, KIRÁLY Béla

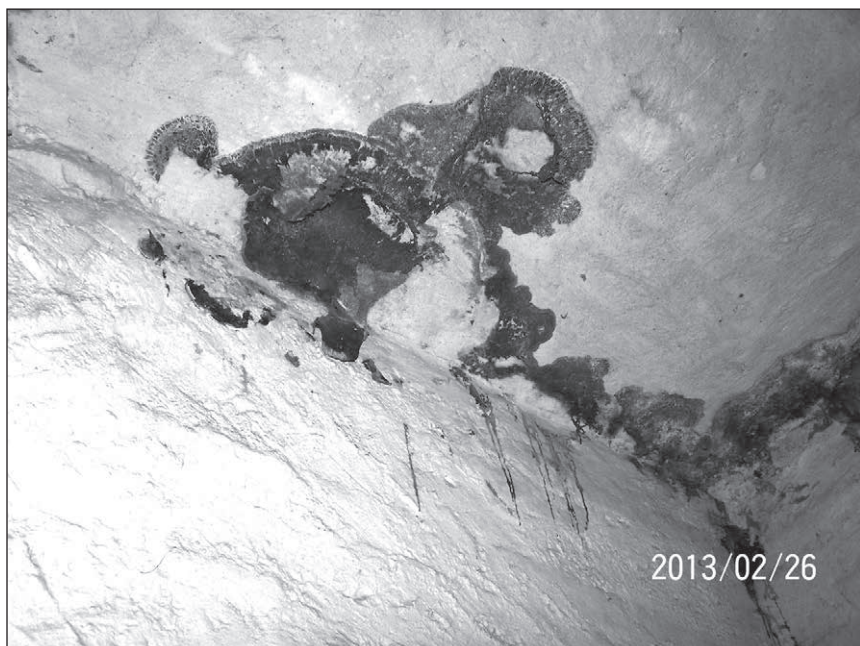


■ 11. kép: Pincegomba micéliumai © BÁNKY László, KIRÁLY Béla
 ■ Photo 11. Mycelia of cellar fungi © BÁNKY László, KIRÁLY Béla

– Mohák: Szárazföldi életmódhoz alkalmazkodott zöldmoszatokból fejlődtek ki. Levélszerű és gyökérszerű képződményeik vannak ugyan, de ezek nem levelek és nem gyökerek. Utóbbiak kizárólag a növény rögzítésére szolgálnak. A mohák egész testfelületükön veszik fel a tápanyagokat. Nincs önálló vízháztartásuk. Rövid idő alatt nagy mennyiségű vizet képesek felvenni (egyes fajaik akár testtömegük hússzorosát is), amit lassan adnak le és ezzel nedvesítik a környezetüket.

A Várkert Bazárban az építéskori szigetelési hibák, majd a későbbi elhanyagoltságból adódó beázások miatt a falak nedvesek lettek. Kiszáradásukat az algák, a zuzmók és a mohák tovább nehezítették. Ezután a vizes falak télről téle „természetesen” rétegesen szétfagytak. (9. kép)

– Penészek: Az állandó nedvesség miatt a fekete korompenész (*Aspergillus niger*) terjedt el (10. kép). A penészgomba ugyan nem okoz „mérhető” kárt az épületben, de egyrészt előkészítheti a terepet a komoly farontó gombák számára, másrészt nagyon komoly betegségeket okozhat. A penészfertőzés felszámolása egészségügyi szempontból veszélyes művelet, a biztonsági előírások betartása kötelező.



■ **12. kép:** Könnyező házigomba előregedett termőteste © BÁNKY László, KIRÁLY Béla
 ■ **Photo 12.** Aged sporophore of dry rot © BÁNKY László, KIRÁLY Béla

– Gombák: A Várkert Bazár faszerkezetein és falazatán szinte minden fontosabb gombakárosító megtalálható. Leggyakrabban a reves (vörös vagy barna) korhadás, a pincegomba (*Coniophora puteana*), a könnyező házigomba (*Serpula lacrimans*), lemezes fenyőgomba (*Gloeophyllum abietinum*) és a házi kéreggomba (*Poria vaporaria*) fordult elő. Ezek mind barna korhasztó gombák. Fehér korhasztó gombák egyáltalán nem fordulnak elő az épületek faanyagán.

Az épületekben a legnagyobb károkat a pincegomba és a könnyező házigomba okozta, ezért ezekkel részletesebben foglalkozunk.

A pincegomba (*Coniophora puteana*) légzése folyamán csak kevés vizet képes termelni, ezért száraz faanyagban nem telepszik meg. Nedves-ségigénye 30–70% között van, optimuma 50–60% közé esik. Hőmérséklet igénye minimum 8°C, maximum 29°C, optimuma 23°C. Hővel szemben ellenállóbb, mint a könnyező házigomba, de +50°C-on kb. 15 perc alatt el-

Cracks remain behind after they die or fester, conducting the inside the walls. The water inside increases degradation and facilitates the emergence of other plants. (Photo 6)

– Algae: They generally form green clumps on the cold and damp sides of the walls. They do not really cause technical harm but rather cause aesthetical damages. At the same time they warn us that the humidity and temperature conditions of the walls are not appropriate, preventing the walls from drying out. (Photo 7)

– Lichens: The lichens are mostly a variably “tight” cohabitation of sac fungi with blue and green algae. The fungi provide solutes and carbon dioxide to the algae receiving ready organic matter in exchange. This cohabitation is so tight that they are considered a living being and the number of their species is estimated to around 20,000. They are so-called pioneer creatures. They settled on stones and brick crumbling them with lichen acids and preparing the place for higher organisms. This is how they crumble the stone of the Royal Garden Pavilion. We consider lichens indicator organisms because they are very sensitive to air freshness especially to the sulfur dioxide content. (Knowing the air in Budapest, it is no wonder that there are only smaller lichen clumps on the stones of the Royal Garden Pavilion...) (Photo 8)

– Mosses: They developed from the green algae adapted to living conditions on land. They do have leaf-and root-like formations but they are not real leaves or real roots. The latter serve only to fastening the plant. The mosses get the nutrients through the entire surface of their body. They do not have their own water balance. They can absorb large amounts of water in a short time (some species even twenty times their body mass), which they release slowly, thus wetting their environment.

The walls became damp in the Royal Garden Pavilion due to the insulation faults



■ **13. kép:** Könnyező házigomba micélium kötege © BÁNKY László, KIRÁLY Béla
 ■ **Photo 13.** Mycelia of dry rot © BÁNKY László, KIRÁLY Béla



■ **14. kép:** Könnyező házigomba kártétele © BÁNKY László, KIRÁLY Béla
 ■ **Photo 14.** Decay caused by dry rot © BÁNKY László, KIRÁLY Béla

during construction, then to the floodings occurring as a consequence of later neglect. Their drying was made even more difficult by algae, lichens and mosses. Further on, the damp walls froze “naturally”, sheet by sheet, winter in winter out. (Photo 9)

– Mold: Black mold (*Aspergillus niger*) has spread due to permanent moisture. (Photo 10) Mold fungi do not actually cause “measurable” decay in the building but they may make room for the more serious wood fungi on the one hand, and may also cause severe illnesses on the other hand. Decontamination of mold infections is a hygienically dangerous operation requiring the observance of certain safety standards.

– Wood-rotting fungi: Almost all major fungal contaminants can be encountered on the wooden structures and the walls of the Royal Garden Pavilion. The most often encountered are the wet rot (red or brown), the cellar fungus (*Coniophora puteana*), dry-rot (*Serpula lacrimans*), *Gloeophyllum abietinum* and cooke fungus (*Poria vaporaria*). They are all brown rotting fungi. There are no white fungi with rotting effect in the wooden material of the buildings.

The biggest decay in the buildings has been caused by the cellar fungus and the dry-rot. This is why we are going to deal with them in more detail.

The cellar fungus (or wet-rot, *Coniophora puteana*) can generate very little water during breathing and that is why it does not settle on dry wood. It requires 30-70% humidity, the optimum value being 50-60%. It requires a temperature of at least 8°C, the maximum being 29°C, and the optimum 23°C. It is more resistant to heat than the dry-rot fungus but it perishes in approx. 15 minutes at +50°C. The mycelium branching which is white at first and then brownish typically spread as a fan. (Photo 11) It may grow between 8-10 mm a day in optimum conditions. They rarely grow a fruit body but it does not decrease its cellulose molecule breaking capacity. Its fruit body is white at the beginning, then it becomes muddy and tawny. In buildings it ruins the ends of the wooden materials on first floors, in case of lack of the basement and not or poorly insulated floorings, as well as the ends of the slab beams in the walls. The wooden material contaminated by the cellar fungus (and the dry-rot) must be burnt.

In the buildings of the Royal Garden Pavilion there are many cellar fungus colonies. There were highly aggressive specimens in the Niche range and the southern building of the Southern Palaces.

The dry-rot (*Serpula lacrimans*) is the most dangerous contaminant of our buildings. It requires at least 8°C, maximum 27°C (optimum 19°C) for growing. Its optimum humidity range is 20-30%. But after settling in the wooden material it requires a relatively low humidity of around 19-20% for further growth. In favorable conditions (moisture, humid warm air) it develops its rich fluffy mycelium branches quite quickly, which can generate severe putrefaction. The fungus spreads quickly with these branches, creating a white or grayish spider web-like coating on



■ 15. kép: Házicincér kártétele © BÁNKY László, KIRÁLY Béla

■ Photo 15. Decay caused by old-house borer © BÁNKY László, KIRÁLY Béla



■ 16. kép: Szijácsbogár kártétele © BÁNKY László, KIRÁLY Béla

■ Photo 16. Decay caused by European lyctus beetle © BÁNKY László, KIRÁLY Béla

pusztul. Eleinte fehér, majd megbarnuló micéliumnyalábjai jellegzetesen levegőszerűen terjednek. (11. kép) Optimális környezetben naponta kb. 8–10 mm-t is növekedhet. Ritkán képez termőtestet, de ez nem csökkenti a cellulóz molekulákat lebontó képességét. Termőteste kezdetben fehér, majd fakó, sárgásbarna. Épületekben, különösen a földszinti, pince nélküli, szigetetlen vagy szakszerűtlenül szigetelt padlóburkolati faanyagoknak, valamint a fűdémszerkezeti gerendák falba érő végeinek pusztítója. A pincegomba (valamint a könnyező házigomba) által megtámadott faanyagot meg kell semmisíteni.

A Várkert Bazár épületeiben sok pincegomba-góc alakult ki. Különösen agresszív példányok voltak a Fülkesorban és a Déli Paloták déli épületében.

A könnyező házigomba (*Serpula lacrimans*) épületeink legveszedelmesebb kártevője. A növekedéséhez minimum 8°C, maximum 27°C (optimum 19°C) fok hőmérséklet szükséges. Nedvességoptimuma 20–30%. A faanyagban történt megtelepedése után azonban a további fejlődéséhez már viszonylag kevés, 19–20 %-os víztartalom is elegendő. Kedvező fel-

tételek között (nedvesség, párás meleg levegő) igen gyorsan kifejleszti gazdag, bolyhos micéliumkötegeit, amelyek igen erős korhasztásra képesek. Ezekkel a kötegekkel a gomba erőteljesen terjed, és a megtámadott fa felületén fehér vagy szürkés, pókhálószerű bevonatot képez. Termőteste redős, öblös, sárga-rozsdabarna, a széle fehéres.

Ha valamely épületben megtelepedett, fonalai és kötegei a betonon, falon és a földemen is áttörnek, az összes cellulóztartalmú anyagot megtámadják, így a gomba rövid idő alatt az épület minden faanyagát elpusztíthatja. (12–14. kép)

A cellulóz lebontását az alábbi, kicsit egyszerűsített képlettel szemléltethetjük: $C_6H_{10}O_5 + 6O_2 = 5H_2O + 6CO_2$.

Enzimei segítségével tulajdonképpen visszafordítja a fotoszintézis folyamatát. Láthatjuk a képletből, hogy a cellulózbontás során a gomba megtermeli a számára szükséges vizet, sőt többet is. A fölösleget „kikönyvezi”, amivel további kárt okoz.

A könnyező házigombával fertőzött téglafal gombamentesítése nagy körületekintést igényel. A szakértő és a megszüntető védelemmel foglalkozó, sok éves tapasztalattal bíró szakmunkások felismerik a falazatban is a gombafonalakat, tudják, milyen irányba terjednek a micéliumok. Tudják, hogy milyen anyagú falhoz milyen technológia szükséges, milyen védőszerből mennyit és hogyan kell felhasználni, mekkora biztonsági sávokat kell hagyni stb. Tévedni nem szabad, mert nagyon nagy a visszafertőződés veszélye.

A Várkert Bazárban már az előzetes vizsgálatok megmutatták, hogy az épületek gomba- és rovarfertőzöttsége nem egyenletesen oszlik meg, hanem kisebb-nagyobb gócot alkot. A legkomolyabb károsodás a Déli Palota két tömbjében mutatkozott. Ez a terület volt az egész Várkert Bazár legfertőzöttebb része. Három szintet átfogó, rendkívül virulens, „tankönyvbe illő”, nagy kiterjedésű (egész lakásokat tönkretévő) könnyező házigombagócok alakultak ki az épület legkülönbözőbb részeiben. Számos helyen rejtve, parketta alatt, vakpadlóknak, feltöltésben, ajtó- és ablaktokokban terjedt szét a gomba, és nagy területeket szőtt át a micéliumaival.

A közbenső födémek szerencsére poroszszüveg rendszerben épültek, amelyekből, ha nem is egyszerűen, de kiülhet a gomba. Ilyen agresszív gombatámadás estén a fafödémek már leszakadtak volna.

– Rovarak: A tetőszerkezetben a fő károsító a házicincér (*Hylotrupes bajulus*), de a szerkezet kora miatt a károsítás egy része inaktív. A házicincér szerepét több helyütt átvette a közönséges kopogóbogár (*Anobium punctatum*). Ugyancsak a kopogóbogár a fő károsító a parketták párnafáiban és vakpadlóiban, főleg ahol a parketta nedvesebb.

A párásabb helyiségekben megjelennek a nedves, gombabontott faanyagot kedvelő rovarfajok, a dacos kopogóbogár (*Dendrobium pertinax*) vagy az ormányos bogarak közé tartozó bányafabogár (*Rhyncolus culinaris*) is. Magát a parkettát (különösen a később lerakott „szíjácsos” anyagot) a szíjácsbogarak (*Lyctus brunneus*, vagy *L. linearis*) károsítják.

A házicincér (*Hylotrupes bajulus*) nagysága 7–12 mm között változik. Színe barnásfekete, két fényes dudorral a nyakpajzson. Rendkívül szapora. A nőstény 200–400 petét is lerakhat. Kedveli a 30°C körüli hőmérsékletet és a 28–30%-os nedvességtartalmú faanyagot. Rajzási ideje júniustól augusztusig tarthat az időjárás függvényében. Ovális kirepülő nyílásokat hagy maga után. Kifejlődése optimális viszonyok mellett is 4–5 évig tart, de kedvezőtlen környezetben 10–15 év, vagy több is lehet. Az épületek faanyagának, a beépített fenyőféléknek legnagyobb kártevője. Tetőszerkezetek kitaró roncsolásával jelentős károkat okoz. A faanyag felszínét épen hagyja, de alatta a teljes szíjácsréteget károsítja. Kedveli az erdeifenyőt, de lucfenyőben is jól érzi magát. (15. kép)

A közönséges kopogóbogár (*Anobium punctatum*) gyakori elnevezése a „halál órája”. Sötétbarna, 3–4, esetleg 5 mm nagyságú bogár. Fenyőt,

the wood. Its fruit body is crinkly, round, yellow and rusty, its margins are whitish.

If it settles in any building, its hyphae and branches can break through concrete, walls and slabs attacking all cellulose-based materials and thus the fungus can destroy all the wooden material in any building in a short time. (Photos 12-14)

Cellulose decomposition is illustrated below with this simplified formula: $C_6H_{10}O_5 + 6O_2 = 5H_2O + 6CO_2$.

It practically reverses photosynthesis with the help of its enzymes. We can see from the formula that during cellulose decomposition the fungus can produce the water it needs and even more than that. The excess is “watered out”, by that producing even more damages. Fungal control in the brick walls infested by the dry-rot requires a great deal of care. The professionals and the experienced skilled workers dealing with its control recognize the branching in the walls and know the direction of mycelium spreading. They know the type of technology required for each material, the quantity of solutions to use and the way to use them, and the size of the safety stripes etc. It is forbidden to make any mistake because there is a very high risk of re-infection.

The preliminary investigations carried out in the Royal Garden Pavilion have shown that the degree of fungal and pest infestation in the buildings is not uniform, but rather forms bigger or smaller nuclei. The most serious damages have occurred in the two blocks of the Southern Palace. This was the most infested area of the entire Royal Garden Pavilion. In various areas of the building, extremely virulent large dry-rot fungus nuclei formed on three levels, proper to be displayed in any handbook (damaging entire flats). It was hidden and spread in many places, under the parquet, double floors, priming charge, window and door casements and wove over large areas with its mycelia.

The intermediary slabs were fortunately built in the Prussian vault system from which the fungi can be eradicated, even if it is not an easy task. In the case of such an aggressive fungal infestation the wooden slabs would have collapsed.

– Insects: The house longhorn beetle (*Hylotrupes bajulus*) is the main parasite of the roof structure, but due to the age of the structure, part of the damage is inactive. The role of the old-house borer has been taken over in many places by the common furniture beetle (*Anobium punctatum*). The common furniture beetle is the main parasite of the sleepers and double floors of the parquet, especially where the floor is damper.

The more humid rooms host the pests which prefer the moist wooden material decomposed by fungi, such as the woodworm (*Dendrobium pertinax*) or the snout beetle (*Rhyncolus culinaris*) of the rynchites' family. The parquet floor (and especially the “sapwood-like” material laid later) was damaged by powderpost beetles (*Lyctus brunneus*, or *L. linearis*).

The size of the house longhorn beetle (*Hylotrupes bajulus*) varies between 7-12 mm. It is brown and black, having two shiny

protrusions on the neck shield. It is very fecund. The female can lay even 200-400 eggs. It likes temperatures around 30°C and the wooden material with 28-30% humidity. Swarming time lasts from June to August depending on the weather. It leaves behind oval pop-out holes. Its full development lasts 4-5 years even in optimum conditions but in unfavorable conditions it may last 10-15 years or even more. It is the most harmful insect of the wooden materials and built-in pine structures of the buildings. It causes serious damages by ceaselessly decaying roof structures. It leaves the surface of the wooden material intact decaying the entire sapwood layer below. It prefers Scots pine but it feels at ease in spruce, too. (Photo 15)

The furniture beetle or "woodworm" (*Anobium punctatum*) is frequently called the "time of death". It is dark brown, 3-4 or even 5 mm long beetle. It damages pine and both the sapwood and heartwood of wooden material from deciduous trees. Its generation time lasts for 2-4 years. Swarming time lasts from April to August. It grows

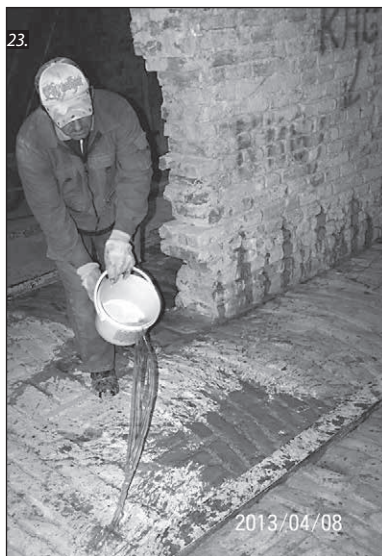
valamint a lombos faanyagok szíjácsát és geszt részét egyaránt károsítja. Generációs ideje 2-4 év. Rajzási ideje áprilistól augusztusig tart, gombásodott faanyagban kifejlődési ideje rövidebb. A bogarak sorozatos támadása a faanyag felmorzsolódását okozza. Szárazságtűrése nagy. Több száz éves, 10-12% nedvességtartalmú faanyagban is megél és pusztít.

A *bányafabogár* (*Rhyncolus culinaris*) az ormányos bogarak közé tartozó, 3-5 mm nagyságú, barnásfekete színű bogár. A 27% feletti fanedvességet, és a 20-23°C körüli hőmérsékletet kedveli. Kártétele az épületek átmedvesedő, gombásodott faanyagában jelentkezik. A felfelület vékony felső rétege hibátlannak látszik, a fatest belsejét eközben szitaszerűen szétrágják. Kártételét növeli, hogy a kifejlett bogarak akár több hónapon át is a fában maradnak, és rágásukkal hozzájárulnak a faanyag gyors roncsolódásához. Nem hagyják el a megtámadott faanyagot addig, amíg életfeltételeiket megtalálják benne. Fenyőkben és lombos fákban egyaránt megélnék.

A *szíjácsbogár* (*Lyctus linearis*) 3-5 mm testnagyságú, világosbarna színű bogár. Álcája sárgásfehér, has felé görbült, 4-5 mm hosszú. Generációtartama 1 év. Gazdanövényei a tölgyek, a cser, az akác, a kőris és a dió. Kör keresztmetszetű menetei a faanyagban a rostokkal párhuzamosan haladnak és rágcsálékkal eltömöttek. Az álca, a rágcsálék egy részét a faanyag felületén épen hagyott rétegen rágott lyukakon keresztül, kis kupacokat képezve kitolja. 9-20% nedvességtartalmú faanyagban él. (16. kép)



■ **17. kép:** Gombafonal követése, téglafugák kivétele © BÁNKY László, KIRÁLY Béla ■ **18. kép:** Falazat hőkezelése © BÁNKY László, KIRÁLY Béla ■ **19. kép:** Falazat permetezésének előkészítése © BÁNKY László, KIRÁLY Béla ■ **20. kép:** Falazat permetezése © BÁNKY László, KIRÁLY Béla
 ■ **Photo 17.** Follow-up of a fungus line, carving out the interstices between bricks © BÁNKY László, KIRÁLY Béla ■ **Photo 18.** Heat treatment of masonry © BÁNKY László, KIRÁLY Béla ■ **Photo 19.** Preparing the spraying of the masonry © BÁNKY László, KIRÁLY Béla ■ **Photo 20** Spraying of the masonry © BÁNKY László, KIRÁLY Béla



■ **21. kép:** Lyukfúrás mélyvédelemhez © BÁNKY László, KIRÁLY Béla ■ **22. kép:** Mélyvédelem (illusztráció) © BÁNKY László, KIRÁLY Béla ■ **23. kép:** Poroszsüveg földém átáztatása védőszerrel © BÁNKY László, KIRÁLY Béla

■ **Photo 21.** Boring holes for in-depth protection © BÁNKY László, KIRÁLY Béla ■ **Photo 22.** In-depth protection (illustration) © BÁNKY László, KIRÁLY Béla ■ **Photo 23.** Steeping a barrel vault with protective agent © BÁNKY László, KIRÁLY Béla

A *dacos kopogóbogár* (*Dendrobium pertinax*) a nedvesebb gombabontott faanyagot kedveli. Mivel a Várkert Bazárban sok ilyen állapotú faanyagot talált, el is szaporodott.

Az épületek átvizsgálása során azokat az épületkárokat vettük számba, amelyeket különböző élő szervezetek okoztak. Meg kellett állapítanunk, hogy ezek kiváltó oka szinte minden esetben a minimális állagvédelem elmulasztása, tehát végső soron az emberi hanyagság volt.

Voltak természetesen fizikai károk is, amelyek szinte teljes egészében a víz bejutására vezethetők vissza. A víz bejutásának lehetősége pedig az építéskori hiányos vízszigetelést nem számítva szintén a karbantartás elmaradásának következménye. A bejutott víz pedig a fizikai kártétel mellett (salétromosodás, szétfagyás stb.) kiváló életfeltételeket teremtett az élő kártevők számára.

A kártétel megszüntetése két szakaszban történt:

faster in fungus-damaged wooden material. The serial attack of the beetles causes the routing of the wood. It can stand drought very well. It can survive in and damage hundred year old 10-12% humidity wood.

The *snout beetle* (*Rhyncolus culinaris*) is a 3-5 mm long, black and brown beetle belonging to the rynchites' family. It likes wood dampness above 27% and temperatures around 20-23°C. It damages the damp fungus-infected wooden material of the buildings. The thin top layer of the wood may seem flawless but the inner part of the wood is riddled. The damage is boosted by the fact the adult beetles remain in the wood even for several months and contribute to the quick charring of the wooden material by chewing on it. It does not leave the wood they settled in until they find proper living conditions in it. It can survive in pine and wooden material from deciduous trees.

The *powderpost beetle* (*Lyctus linearis*) is a 3-5 mm long, light brown insect. The larvae are yellowish-white, bended to the belly; they are 4-5 mm long. Generation duration: 1 year.

Its host plants are oak, Turkey oaks, locust-tress, ash and nut. Its section is round; its threads go along in parallel with the fibers in the wooden material and are clogged by chewing remains. The larvae push out a part of the remains in small mounds through the holes chewed in the intact top layer of the wooden material. It lives in wooden material with 9-20% moisture content. (Photo 16)

The *woodworm* (*Dendrobium pertinax*) likes damper fungus-damaged wooden material. It spawned because there is a lot of such wooden material in the Royal Garden Pavilion.

During the investigations performed on the buildings we considered the damages caused by various living organisms. We ascertained that the reason behind them is, in all cases, the lack of conservation and ultimately human neglect.

Certes, there were physical damages as well, which can be traced back almost exclusively to flooding. And the possibility of flooding is also the consequence of the lack of maintenance besides the defective waterproofing. And the penetrating water has created excellent living conditions to the pests besides the physical damages it has caused (nitrates, frosting etc.).

The decays have been eliminated in two stages:

In the first stage, prior to the construction demolition work, all the protective works listed in the "basic" expert opinion were performed. All the areas were determined in order to prevent the infection from spreading. The second stage took place in parallel with the demolition works. The previously hidden or unreachable building parts, which were unveiled during the demolition works, were released.

After the construction demolition, further demolition was carried out in order to remove fungal infections, then heat and chemical treatments were performed on the surface and inside the walls. The infected slabs were soaked with protective solution, and then the disinfected areas were documented in each flat and "handed over" to the contractor.

The main steps of fungal control:

1. Tracking the hyphae and carving the pointing (Photo 17)
2. Heat treatment of the walling (Photo 18)
3. Preparing the walls for spraying (Photo 19)
4. Spraying the walls (Photo 20)
5. Drilling holes for in-depth protection (Photo 21)
6. In-depth protection (Photo 22)
7. Impregnating the Prussian vault with solution (Photo 23)

In the second stage conducted simultaneously with the demolition, many more infected areas were revealed and the works were more difficult to organize than in the previous stage.

The presence of several contractors on the same building site is always a source of conflict and even more so, sometimes they must unavoidably hinder each other's work. Contrarily, in the Royal Garden Pavilion there was a great cooperation among all partner contractors. The staff performing the demolition understood their tasks, the workers performing the fungal control and treatment did not needlessly hinder their work and the technical management of the main contractor was able to synchronize the works all the time.

Conclusions

In conclusion we can generally ascertain that whenever we build, we rip out a part of nature to ourselves according to our goals, barring out all living organisms, plants and animals from the surroundings but we also bar out the non-living environment such as rain, wind etc. We create a spot where we can be comfortable.

But consequently a gap is created for the living creatures, which they try and occupy for themselves. This is highly unpleasant from our perspective because these creatures can spread diseases, can be parasites, could attack our food, can produce poison (e.g. mycotoxins) or they are simply unwanted in our environment.

Without exaggerating, another group would like to demolish our buildings. The fungi and certain beetle species destroy wood, the plants ravage the walls and the rainwater that gets in speeds up decay.

Rehabilitation must be planned and carried out by knowing the biological condition of any building, as well as any subsequent dangers. Further on, we must ensure the comfort of the owners by taking into account the biological aspects during the use and maintenance of the building.

There are special standards regarding community and food storage buildings, pertaining to the topic of food safety and pest control etc. The food safety authorities are bound to have them abided by.

Acknowledgements

Many thanks for the photographs to László BÁNKY, expert in wood preservation.

Az első szakaszban az építőipari bontási munkák megkezdése előtt minden olyan védekezési munka megtörtént, amit az „alap” szakvélemény előírt. Megtörtént az egyes területek lokalizálása is, a fertőzés széthurcolásának megelőzésére.

A második szakasz a bontási munkákkal párhuzamosan zajlott. Az építőipari bontások során előkerülő addig eltakart, vagy valamilyen okból megközelíthetetlen épületrészek ekkor kerültek mentesítésre. Az építőipari bontást követően elvégezték a gombamentesítés érdekében szükséges további bontásokat, majd megtörténtek a hő- és vegykezelések a falak felületén és belsejében. A fertőzött födémeket átitatták védőszerrel, majd pontosan dokumentálva a fertőtlenített területeket helyiségenként „adták vissza” az építőipari kivitelezőknek.

A gombamentesítés főbb lépései:

1. A gombafonal követése, a téglafugák kivésése (17. kép)
2. Falazat hőkezelése (18. kép)
3. Falpermetezés előkészítése (19. kép)
4. Falpermetezés (20. kép)
5. Lyukak fúrása mélyvédelemhez (21. kép)
6. Mélyvédelem (22. kép)
7. Poroszsvég födém átitatása védőszerrel (23. kép)

A bontással párhuzamos második szakaszban sokkal több volt a fertőzött terület és komplikáltabb volt a munkaszervezés, mint az első szakaszban.

Mindig konfliktusforrás, ha több kivitelező egyszerre dolgozik ugyanazon a munkaterületen, ráadásul úgy, hogy bizonyos mértékig elkerülhetetlenül akadályozniuk kell egymást. A Várkert Bazárban ezzel szemben kiváló együttműködés alakult ki a társkivitelezők között. A bontók megértették a feladatot, a gombamentesítők főlegesen nem akadályozták őket és a fővállalkozó műszaki vezetése mindvégig kézben tartotta a munkák összehangolását.

Következtetések

■ Összefoglalásképpen általánosságban elmondhatjuk, hogy amikor elkészül egy épület, a természetből hasítunk ki egy darabot magunknak, a saját céljainknak megfelelően, ahonnan kizárunk minden a környéken élő szervezetet, növényt, állatot, de kizárjuk a nem élő környezetet is, mint eső, szél stb. Olyan helyet teremtünk, ahol „komfortosan” érezzük magunkat.

Az élőlények számára viszont képződött egy üres hely, amit igyekeznek elfoglalni. A mi szemszögünkből nézve ez kellemetlen dolog, hiszen ezek az élőlények lehetnek betegségeket terjesztők, élősködők, megtámadhatják az élelmiszerinket, mérgező anyagokat termelhetnek (pl. mikotoxin), vagy egyszerűen csak nem kívánatosak a környezetünkben.

Egy másik csoport – túlzás nélkül mondhatjuk – le akarja bontani az épületünket. A gombák, a rovarok egyes fajtái elpusztítják a faanyagot, növények rombolják a falakat, az így bejutó csapadék felgyorsítja a pusztulást.

Egy épület biológiai állapotának és a várható veszélyeknek ismeretében kell a felújítást megtervezni és elvégezni. A későbbiek során pedig az épületben lakók megfelelő komfortérzetét is úgy kell biztosítani, hogy az üzemeltetés és a karbantartás során figyelembe veszik az épületbiológiai szempontokat.

Közösségi- és élelmiszerrel kapcsolatos funkciókat ellátó épületekre külön előírások vonatkoznak, amelyek az élelmiszerhigiénia, a kártevőmentesítés stb. fogalmkörébe tartoznak. Ezek betartásáról és betartatásáról az egészségügyi hatóságok gondoskodnak.

Köszönetnyilvánítás

Köszönet illeti BÁNKY László faanyagvédelmi szakértőt a fényképek elkészítéséért.

■ Mircea CRIȘAN¹

Monumentele istorice – între reglementări, principii și cutremure

„Fiecare generație dispune temporar de acest patrimoniu și este responsabilă de transmiterea lui către generațiile viitoare.”
(Carta de la Amsterdam, 1975²)

■ **Rezumat:** În confruntarea cu diverse situații de zi cu zi, ne întrebăm frecvent: Ce se întâmplă cu monumentele în România? Sunt ele protejate? Cum? Ce șanse avem să transmitem posterității ceea ce am moștenit de la înaintași, respectiv un patrimoniu întreg și autentic? Protejează și se aplică Legea nr. 422 din 18 iulie 2001 privind protecția monumentelor istorice? În ceea ce privește intervențiile structurale, există în România reglementări specifice monumentelor istorice? Și dacă nu există, cu ce se confruntă operatorul la astfel de construcții?

Acestea sunt întrebările la care prezentul articol încearcă să răspundă.

■ **Cuvinte cheie:** „casa bunicului”, autenticitate, lege protecție monumente, norme

■ În confruntarea cu diverse situații de zi cu zi, ne întrebăm frecvent: Ce se întâmplă cu monumentele în România? Sunt ele protejate? Cum? Ce șanse avem să transmitem posterității ceea ce am moștenit de la înaintași, respectiv un patrimoniu întreg și autentic? Aceste întrebări ne-au îndemnat către unele reflecții asupra cadrului legal în care se desfășoară intervențiile la monumente.

În România, protecția monumentelor istorice este reglementată de Legea nr. 422 din 18 iulie 2001³. Citind această lege, observăm însă că o serie de articole ridică mari semne de întrebare; iată două exemple:

„Art. 22 – (2) În sensul prezentei legi, intervențiile ce se efectuează asupra monumentelor istorice sunt: a) toate lucrările de cercetare, construire, extindere, reparare, consolidare, conservare, restaurare, amenajări peisagistice, precum și orice alte lucrări care modifică substanța sau aspectul monumentelor istorice [s.n.], inclusiv reparațiile curente, lucrările de întreținere și iluminarea interioară și exterioară de siguranță și decorativă.”

Întrebare: Oare se poate accepta ca o intervenție asupra unui monument istoric să îi modifice substanța sau aspectul?

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2 Carta europeană a patrimoniului arhitectural, Consiliul European, 1975.

3 Publicat în Monitorul Oficial nr. 407 din 24 iulie 2001. Legea 422 din 2001 a fost republicată în temeiul art. V din Legea nr. 259/2006 pentru modificarea și completarea Legii nr. 422/2001 privind protejarea monumentelor istorice, publicată în Monitorul Oficial al României, Partea I, nr. 573 din 3 iulie 2006, dându-se textelor o nouă numerotare.

Historic Buildings – between Rules, Principles and Earthquakes

“Each generation has only a life interest in this heritage and is responsible for passing it on to future generations.”
(Charter of Amsterdam, 1975²)

■ **Abstract:** When confronted to various situations every day, we often wonder what happens with the historic buildings in Romania. Are they protected and how? What chances do we have to pass on to the posterity what we inherited from our predecessors, i.e. an intact and authentic heritage? Is the Law No 422 of 18 July 2001 concerning the protection of the historic buildings really protecting and being implemented? As to structural interventions, are there specific rules concerning the historic buildings in Romania? And if not, what issues is the operator confronted with in the case of such buildings?

These are the questions this article tries to find answer to.

■ **Keywords:** “Grandfather’s House”, authenticity, law on the protection of the historic buildings, rules

■ When confronted to various situations every day, we often wonder what happens with the historic buildings in Romania. Are they protected and how? What chances do we have to pass on to the posterity what we inherited from our predecessors, i.e. an intact and authentic heritage? These questions made us think over the legal framework governing the interventions on historic buildings.

The protection of the historic buildings in Romania is regulated by Law No 422 of 18 July 2001³. When reading this law

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2 European Charter of the Architectural Heritage, Council of Europe, 1975.

3 Published in the Official Journal of Romania No 407 of July 24, 2001. The Law 422/2001 it was republished on the basis of art. V of Law No 259/2006 on the amendment and completion of Law no. 422/2001 on the protection of historical monuments, published in the Romanian Official Journal, Part I, no. 573 of the July 3, 2006, renumbering the texts.

though, we notice that a whole series of articles raise big question marks; here are two examples:

“Article 22 – (2) For the purpose of the present law, the interventions performed on historic buildings are a) all research, construction, extension, repairing, consolidation, preservation, conservation, landscaping works, *as well as any other works changing the substance or the appearance of the historic buildings* [italics mine], including current repairs, maintenance works, interior and exterior lightening works for safety or ornamental purposes.”

Question: Is it acceptable that an intervention on a historic building should change its substance or appearance?

“Article 55 – (1) Unauthorised destruction, partially or total loss, expropriation without having obtained the endorsement of the Ministry of Culture and Religious Affairs, damaging, as well as profanating historical objects *are considered to be infractions and shall be punished according to the present law* [italics mine]. (2) In all the cases mentioned at paragraph (1), *the doer is compelled to recover the damaged object and replicate the monument or the damaged parts of the monument* [italics mine], in accordance with the endorsements stated in the present law. Question: Is it possible that the destruction of a historic building be solved as simply as by “replicating” it? What about the authenticity of the materials which stand for its value and status? After “replicating”, do we still have to do with a historic building? Doesn't it become a product of the present?

Let alone the leniency of the sanctions provided for in case of *irreparable* damage!

Anyway, this law is not implemented, as we have no knowledge of any sanction applied to any person who – by negligence, ignorance or, even worse, willingly – destroyed a historic building, while the number of such cases increases every day. Consequently, we wonder whether the historic buildings in Romania really benefit from effective legal protection. The answer is a categorical NO.

Besides these issues related to the fundamental law – the one that should primarily protect historic buildings and the way it is (not) being implemented –, the practice of the interventions on “protected” historic buildings emphasises more and more another issue, i.e. the structural interventions.

Considering the cultural consequences and the extremely delicate nature of the area concerned, the structural interventions on the historic built heritage cannot be given over to improvisations by operators who do not have the necessary experience and to extrapolations of the seismic rules for new buildings. Even if the protection of human lives is an essential criterion within the intervention, this does not mean that the objective of cultural heritage protection should be overlooked, either in terms of image, or of materiality, whose nature ensures its *authenticity* and thus the preservation of its

„Art. 55 – (1) Desființarea neautorizată, distrugerea parțială sau totală, exproprierea fără avizul Ministerului Culturii și Cultelor, degradarea, precum și profanarea monumentelor istorice *constituie infracțiuni și se sancționează conform legii* [s.n.]. (2) În toate cazurile prevăzute la alin. (1) *făptuitorul este obligat la recuperarea materialului degradat și la reconstituirea monumentului sau a părților de monument lezat* [s.n.], conform avizelor prevăzute de prezenta lege.”

Întrebare: Oare distrugerea unui monument istoric se poate rezolva atât de simplu, prin „reconstituire”? Și cum rămâne cu autenticitatea substanței materiale care îi garantează valoarea și statutul? În urma „reconstituirii”, mai avem de-a face cu un monument istoric? Nu cumva el devine un produs al prezentului?

Cât despre „blândețea” sancțiunilor prevăzute pentru pierderi *ireparabile*, ce să mai spunem?

Oricum, această lege nu se aplică: nu avem cunoștință despre vreo sancțiune aplicată vreunei persoane care – din neglijență, din ignoranță sau, mai grav, cu bună știință – a distrus un monument; iar cazurile de acest fel se înmulțesc pe zi ce trece. Ca atare, ne întrebăm: Beneficiază monumentele din România de protecție legală efectivă? Răspunsul este categoric NU.

Dincolo de aceste aspecte privind legea de bază – cea care întâi de toate ar trebui să protejeze monumentele și felul în care ea (nu) se aplică –, practica intervențiilor la clădiri istorice „protejate” pune în evidență din ce în ce mai acut o altă problemă: cea a intervențiilor structurale.

Având în vedere consecințele în plan cultural și natura extrem de delicată a domeniului, intervențiile structurale asupra patrimoniului construit istoric nu pot fi lăsate pe seama improvizațiilor unor operatori lipsiți de experiență necesară și a extrapolării normelor antiseismice pentru clădiri noi. Dacă protejarea vieților umane constituie un criteriu esențial în cadrul intervenției, aceasta nu înseamnă a neglija obiectivul protejării patrimoniului cultural, nu doar sub aspectul imaginii, ci și sub aspectul materialității sale, de natură să-i asigure *autenticitatea* și deci păstrarea valorii reale. În acest sens, legislația privind protecția antiseismică a clădirilor și modul în care ea este aplicată ar trebui să țină cont de problematica particulară a patrimoniului arhitectural istoric în raport cu noile construcții. Intervențiile structurale asupra monumentelor istorice nu ar trebui să eludeze obligația transmiterii acestui patrimoniu către generațiile viitoare, inclusiv a mesajului demistificat ce rezidă în consistența sa fizică autentică: materiale, manoperă, concepție, amplasament, toate reprezentând esența valorii ce se dorește a fi prezervată. Practica demonstrează însă o situație diferită și, în diverse situații curente, nu putem să nu ne amintim de spusele lui B. FEILDEN: „Cel mai mare pericol ce amenință clădirile istorice vine din partea inginerilor care ignoră valorile acestora cu caracter de excepție și aplică mecanic Codurile sau care nu vor să-și asume responsabilitatea de a formula judecăți proprii. Se poate spune, cu oarecare îndreptățire, că multe clădiri istorice au de ales între a fi distruse de Coduri sau de următorul cutremur.”⁴

Chiar așa să fie oare? Ce se întâmplă în România cu monumentele confruntate cu Codurile de proiectare antiseismică? Există în România reglementări specifice monumentelor istorice? Sau inginerul care intervine pe monumente este „dirijat” pas cu pas spre a aplica reglementările concepute pentru construcții noi? Răspunsul vine dintr-o analiză atentă a evoluției normativelor de proiectare antiseismică, în particular în ceea ce privește referirile la monumente istorice.

Normativul P100/92 precizează la Capitolul 1 „Generalități”, aliniatul 1.2.: „următoarele categorii de construcții: [...] monumente istorice și

4 Bernard M. FEILDEN, *Conservation of Historic Buildings*, Oxford, Architectural Press, 1996, p. 123.

de arhitectură [...] *se vor proiecta pe bază de prescripții specifice* [s.n.].” Relativ la clasa de importanță a construcțiilor, tabelul 5.1. menționat în normativ nu cuprinde niciăieri referiri la monumentele istorice și de arhitectură, ci doar la clădiri ce *adăpostesc* valori artistice, istorice, științifice deosebite.

Nu mai că lucrurile evoluează în timp și, în următoarele versiuni ale normativului, noțiunea de „monument istoric și de arhitectură” este transformată în „construcțiile care *constituie* sau *adăpostesc* valori istorice culturale sau artistice de mare valoare”. Astfel, în proiectul P100-1/2004⁵ la Capitolul 1 „Generalități”, aliniatul 1.1.4., se precizează: „Construcțiile care *constituie sau adăpostesc valori istorice, culturale sau artistice de mare valoare se proiectează pe baza unui cod specific*” [s.n.]. Cu toate acestea, la clasa de importanță dată în normativ de tabelul 4.3., apare o precizare surprinzătoare: „clădirile din patrimoniul național” se încadrează în clasa de importanță II, cu factorul de importanță $\gamma_1 = 1,2$.

Se naște o întrebare firească: Dacă intervențiile la monumente *se proiectează pe baza unui cod specific*, de ce se precizează în normativul-proiect clasa de importanță a clădirilor de patrimoniu? Și întrebarea fundamentală este: De ce toate construcțiile de patrimoniu trebuie asigurate mai mult decât construcțiile noi – mai ales că puține dintre ele *adăpostesc* peste 400 de persoane, sunt spitale sau instituții medicale cu peste 150 de persoane, penitenciare, azile de bătrâni, săli de spectacole etc.? Se poate lesne observa că Lista Monumentelor Istorice din România (LMI) cuprinde cu precădere construcții curente, ce *adăpostesc* puține persoane. Și atunci, de ce un monument istoric trebuie asigurat suplimentar, luând în calcul o sarcină seismică majorată cu 20%? Să fie oare faptul că aceste construcții au „mare valoare” ceea ce a determinat o asemenea decizie? Posibil să fi existat o logică de acest fel, dar de aici decurge un paradox: încadrarea într-o clasă de importanță „mare” conduce în final la intervenții supradimensionate care distrug tocmai ceea ce era de conservat: substanța materială autentică, condiție *sine qua non* a valorii construcției istorice!

De fapt, ce urmări (negândite sau voite?) are *exceptarea monumentelor de la aplicarea normativului*, dar includerea lor într-o clasă de importanță „ridicată”?

În formă finală, proiectul Codului de proiectare antiseismică P100-1/2004 a devenit Normativul P100-1/2006 care, la capitolul „Generalități” *omite* atât noțiunea de „monument istoric și de arhitectură”, cât și referirea la „construcțiile care *constituie* sau *adăpostesc* valori istorice culturale sau artistice de mare valoare”, construcții care, conform proiectului (P100-1/2004), ar fi urmat a fi proiectate pe baza unui cod specific; în schimb, în tabelul 4.2., factorul de importanță din proiectul normativului se menține, respectiv rămâne $\gamma_1 = 1,2$.

Situația „se clarifică” odată cu apariția Normativului P100-3/2008, care la Capitolul 1 „Aspecte generale”, aliniatul 1.1. „Obiect și domeniu de aplicare”, punctul 3, precizează: „Prevederile P100-3/2008 *pot* [s.n.] fi aplicate și pentru evaluarea seismică a monumentelor și clădirilor istorice în cazul în care acestea nu contravin conceptelor, abordărilor și procedurilor specifice cuprinse în documente normative în vigoare în acest domeniu.”

Se observă în textul citat mai sus renunțarea la formularea lungă și complicată din proiect – „construcțiile care *constituie* sau *adăpostesc* valori istorice culturale sau artistice de mare valoare” - și revenirea la vechea expresie „monumente și clădiri istorice”; în schimb, cuvântul „pot” (fi aplicate) naște diverse întrebări și interpretări posibile: e vorba despre o opțiune liberă (dacă vreau, *pot* să aplic normativul la monumente?) sau despre o obligație indirectă (*trebuie* să pot – pentru că „documente norma-

real value. For this purpose, the legislation concerning the seismic protection of buildings and the way it is implemented should take into consideration the specific issue of the historic architectural heritage as compared to the new buildings. Structural interventions on historic buildings should not elude the obligation to pass on this heritage to future generations, including the demystified message residing in its authentic physical consistency, i.e. materials, labour, conception, location, which all represent the essence of the value to be preserved. However, practice reveals a different situation, including various current cases that make us think of B. FEILDEN's words: “The greatest danger to historic buildings comes from engineers who are unaware of their unique values and apply the Codes literally, or who are unwilling to accept responsibility for making judgments. It can be said with some justice, that many historic buildings have the options of being destroyed by the Codes or by the next earthquake.”⁴ Is this really true? What happens in Romania with the buildings confronted with the antiseismic design Codes? Are there any regulations specific to historic buildings in Romania or is the engineer intervening on historic buildings “guided” step by step to apply the regulations designed for new buildings? The answer results from a careful analysis of the normative progress on seismic design, in particular concerning the historic buildings.

Normative Act P100/92 specifies in Chapter 1 “General Considerations”, paragraph 1.2., that “the following categories of buildings: [...] historic and architectural buildings [...] *shall be designed according to specific instructions* [italics mine].” Concerning the building importance category, the normative act's table 5.1. makes no reference to historic and architectural buildings, but only to buildings *containing* remarkable artistic, historic, scientific values.

However time flies, things change and the concept of “historic and architectural buildings” becomes “buildings that *consist of* or contain remarkable historic values of cultural or artistic nature” in the following versions of the normative act. Thus, the draft P100-1/2004⁵, in Chapter 1 “General Considerations”, par. 1.1.4., specifies that “the buildings that *consist of or contain remarkable historic, cultural or artistic values shall be designed according to a specific code*” [italics mine]. However, under the importance category mentioned in table 4.3., a surprising note is made: “the buildings belonging to national heritage” are included in importance category II, having an importance factor $\gamma_1 = 1.2$.

⁴ Bernard M. Feilden, *Conservation of Historic Buildings*, Architectural Press, Oxford 1996, p. 123.

⁵ Draft of the Code on Seismic Design P100 Part I (developed by UTCB – Technical and Construction University of Bucharest), called P100-1/2004 „Prevederi de Proiectare pentru Clădiri” (*Design Provisions for Buildings*), 4th draft.

⁵ Proiectul Codului de proiectare seismică P100 partea I (elaborat de UTCB), denumit P100-1/2004 „Prevederi de Proiectare pentru Clădiri”, redactarea a IV-a.

A natural question arises: If the interventions on historic buildings *must be designed on the basis of a specific code*, why does the draft rule specify the importance category of the heritage buildings? And the fundamental question is: Why all heritage buildings must be secured more than the new buildings – especially that few of these buildings have an occupancy of more than 400 people, are hospitals or health establishments with an occupancy of more than 150 people, are prisons, nursing homes, theatres, etc.? It can be easily noticed that the List of Historic Buildings (LMI)⁶ mainly contains common buildings, with an occupancy of few people. And then, why should a historic building be complementarily secured, considering a seismic load increased by 20%? Could it be that the “high value” of these buildings determined such a decision? This logic is likely, but it generates a paradox, namely the classification in a “high” importance category leading eventually to oversized interventions that destroy precisely what was to be preserved, i.e. the authentic material substance, which is a *sine qua non* condition of the historic building value!

Actually, what are the consequences (unanticipated or intentional?) of *exempting the historic buildings from applying the normative act*, while including them in a “high” importance category?

The final version of the draft Code for Seismic Design P100-1/2004 is Normative Act P100-1/2006, which, in Chapter “General Considerations” *overlooks* both the concept of “historic and architectural building” and the reference to “buildings that consist of or contain remarkable historic values of cultural or artistic nature”, which are buildings that would have had to be designed on the basis of a specific code according to the draft (P100-1/2004); instead, the importance factor provided for in the draft normative is maintained in table 4.2., i.e. $\gamma_1 = 1.2$.

The situation becomes “clearer” with the publication of Normative Act P 100-3/2008, where Chapter 1 “General Considerations”, paragraph 1.1. “Subject and Scope”, point 3 specifies that “*the provisions of P 100-3/2008 may [italics mine] also apply to the seismic assessment of listed or non-listed historic buildings when these buildings are compliant with the conceptions, approaches and procedures provided for in the rules in force in this area.*”

It can be noted in the text quoted above that the long and complicated phrasing in the draft was abandoned – “the buildings that consist of or contain remarkable historic values of cultural or artistic nature” – and replaced with the old phrasing “historic and architectural buildings”; instead, the word “may” (be applied) brings about various questions and possible interpretations: is it about a free option (if I want, I may apply the normative to buildings?) or



■ Foto 1. „Casa bunicului”: o construcție cu o vechime de câteva secole, bine conformată, făcută cu materiale și manoperă de bună calitate, aflată și astăzi într-o stare bună de conservare evidentă – exterior

■ Photo 1. Grandfather’s house”: as object of our analysis, which is a several century old building, with a good conformation, well made of high quality materials, in an obviously good state of preservation even today - exterior

tive în vigoare în acest domeniu” NU EXISTĂ! Oare cei care au întocmit normativul nu știu acest lucru sau îl ignoră cu bună știință)? Recitești de mai multe ori paragraful și înțelegi că de fapt nu ai de ales: *trebuie* (să poți) să aplici normativul și la monumente!

Ce efecte are în practică formularea „*pot fi aplicate și pentru evaluarea seismică a monumentelor și clădirilor istorice*”? Respectiv ce consecințe are aplicarea normativului la evaluarea gradului de siguranță al unei clădiri istorice? Pentru a înțelege, am ales ca obiect al analizei „casa bunicului”: o construcție cu o vechime de câteva secole, bine conformată, făcută cu materiale și manoperă de bună calitate, aflată și astăzi într-o stare bună de conservare evidentă (foto 1 și 2).

Conform normativului de proiectare antiseismică, această casă ar trebui să poată prelua o forță seismică direct proporțională cu greutatea ei, multiplicată cu un coeficient seismic compus din mai mulți factori. Să analizăm doar doi dintre acești factori: factorul de importanță și valoarea de vârf a accelerației terenului. Factorul de importanță indicat de normativ este $\gamma_1 = 1,2$ nu din rațiuni de protecție a vieților umane (clădirea nu adăpostește un număr mare de persoane, nu are o funcțiune esențială pentru gestionarea unor situații de criză și avarierea ei nu reprezintă o amenințare a siguranței publice), ci pur și simplu din cauza includerii „casei bunicului” în LMI. Acest factor de multiplicare 1,2 înseamnă în fapt că forța seismică orizontală calculată este cu 20% mai mare față de forța calculată pentru o construcție nouă, numai pentru că ea, casa, are statut de monument. Și aceasta nu este tot: intervalul mediu de recurență (IMR) luat în considerare și valoarea de vârf a accelerației terenului au avut o evoluție semnificativă din 1992 și până astăzi. Clădirea analizată – „casa bunicului” – este amplasată în București. Dacă Normativul P100/92 indica pentru un IMR de 50 de ani o valoare de vârf a accelerației terenului de 0,20 g, Normativul P100-1/2006 indică pentru un IMR de 100 de ani o

⁶ Lista Monumentelor Istorice din România (LMI), meaning List of Historic Buildings [ed. note]

valoare de vârf a accelerației terenului de 0,24 g. Raportarea evaluării la un IMR de 475 de ani – așa cum se prefigurează în prezent – ar conduce la luarea în calcul a unei valori de vârf a accelerației terenului de 0,36 g. Această evoluție a valorii de vârf a accelerației terenului de la 0,2 g (în 1992) la 0,36 g (în viitorul apropiat) înseamnă o creștere cu 80% a forței orizontale pe care construcția (istorică) trebuie „să o suporte” în cadrul evaluării analitice.

Oare mai rezistă „casa bunicului”? Arată bine, nu se vede nicio fisură... dar poate materialele au îmbătrânit? Am putea face evaluări *in situ* ale calităților materialelor (zidăriilor) puse în operă. Sau, se pot face încercări de laborator pe probe de materiale prelevate (cărămizi și mortare), apoi, pe baza datelor astfel obținute, tabelele (cu valori bazate pe numeroase determinări experimentale) ne dau rezistența medie la compresiune a zidăriei. Dar... conform Normativului P100-3/2008, valoarea „rezistenței de proiectare” se determină prin împărțirea rezistenței medii la 3 (un coeficient parțial „de siguranță” pentru material), apoi la 1,35, reprezentând un „factor de încredere” (sau mai curând de „neîncredere”). Astfel, evaluarea analitică ia de fapt în calcul materiale cu o „rezistență de proiectare” egală cu 0,25 (1/4) din valoarea rezistenței medii la compresiune determinată experimental.

Să recapitulăm:

- vechea „casă a bunicului” trebuie să reziste la o sarcină seismică cu 20% mai mare decât o casă nouă similară, doar pentru că este „monument istoric”;
- vechea „casă a bunicului” trebuie să reziste la un spor de forță seismică cu 80% mai mare față de 1992, așa, „pentru siguranță”, deși casa s-a comportat foarte bine la testarea *in situ* pe parcursul a câtorva sute de ani;
- materialele din care este făcută casa nu prezintă încredere: nu se văd degradări și nici încercările de laborator nu au dat motive de îngrijorare, dar pur și simplu sunt considerate cu 75% mai puțin rezistente decât a rezultat din determinările experimentale.

Cu „datele de intrare” rezultate din aplicarea Normativului P100-3/2008 în corelare cu CR6/2006, marea majoritate a clădirilor istorice – similare cu „casa bunicului” și analizate de subsemnatul în ultimii ani – se situează cu mult sub valoarea limită a gradului de asigurare seismică cerut, chiar dacă au trecut cu succes printr-o lungă perioadă de testare *in situ* și au avut o comportare remarcabilă la cutremurele prin care au trecut. Aceste rezultate ale calculelor bazate pe valori statistice care ignoră evidența, conduc în practică la intervenții de consolidare inutile supradimensionate, care alterează substanța materială autentică a monumentelor istorice, reducându-le valoarea – adică afectează exact ceea ce era de conservat. Și iată cum Codurile care se doresc a fi „protectoare” de fapt distrug monumentele.

Oare n-ar fi mai bine ca bunicul să-și construiască o casă nouă? Ce-i trebuie lui un „monument istoric”? Consolidarea ar costa o mulțime de bani. Iar în final casa nu ar mai fi nici măcar un monument istoric, ci doar o copie fără valoare. Dar cine are nevoie de monumente cu „substanță” autentică? N-ar fi mai simplu (și mai ieftin) să păstrăm doar fotografiile, machete, modelări virtuale... adunate într-un muzeu? Da, poate este mai bine ca bunicul să vândă casa pentru teren: se poate construi pe el un bloc.

Dar ce mai lasă bunicul moștenire generației următoare?

Post Scriptum

■ La Radio Erevan, un ascultător întreabă:

- Se pot aplica normele pentru construcții noi la monumente istorice? Radio Erevan răspunde:
- Da. Dar ar fi păcat.

it is an indirect obligation (I may because I *have to* – since there are NO “rules in force in this area”! Do the lawmakers really not know this or they willingly ignore it)? After going through the paragraph several times you understand that actually there is no choice: you *have to* apply the normative *also* to historic buildings!

What are the consequences of the phrasing “may [italics mine] *also apply* to the seismic assessment of listed or non-listed historic buildings” in practice? Namely, what are the consequences of applying the normative when assessing the safety level of a historic building? In order to better understand, we chose “Grandfather’s house” as object of our analysis, which is a several century old building, with a good conformation, well made of high quality materials, in an obviously good state of preservation even today (Photo 1 and 2).

According to the Seismic Design Code, this house should be able to take over a seismic force directly proportional to its weight multiplied by a seismic coefficient made of several factors. Let’s analyse only two of these factors, i.e. the importance factor and the peak ground acceleration. The importance factor specified by the rule is $\gamma_I=1.2$ not for human life protection reasons (the building does not have a high occupancy, it does not have a critical function for the management of emergency situations and its damaging is not endangering the public safety), but simply because “Grandfather’s house” is included on the LMI. This 1.2 multiplication factor actually means that the calculated horizontal seismic force is 20% higher than the force calculated for a new building, and this is only because the house has the status of a historic building.

And this is not all! The mean recurrence interval (MRI) considered and the peak ground acceleration have been progressing significantly since 1992. The building under analysis – “Grandfather’s House” – is situated in Bucharest. While Normative Act P100/92 indicated a peak ground acceleration of 0.20 g for a 50 year MRI, Normative Act P100-1/2006 indicates a peak ground acceleration of 0.24 g for a 100 year MRI. In this case, for a 475 year MRI – as provided for currently – a peak ground acceleration of 0.36 g should be considered. This evolution of the peak ground acceleration from 0.2 g (in 1992) to 0.36 g (in the near future) means an increase by 80% of the horizontal force the (historic) building must “support” within the analytical assessment.

Is “Grandfather’s House” still standing? It looks good, no visible crack... but maybe the materials grew old? The quality of the materials brought in (masonry) could be assessed *in situ* or laboratory tests can be made on material samples (bricks and mortars) and then, on the basis of the data thus obtained, the average compressive strength of the masonry can be found in the tables (with values based on numerous experimental determinations). But... according to Normative Act P100-3/2008, the value

of the “design strength” is determined by *dividing* the average strength to 3 (a partial “safety” coefficient for the material), then to 1.35, which is a “trust factor” (or rather “distrust factor”). Consequently, the analytical assessment actually considers the materials with a “design strength” equal to 0.25 (1/4) of the average compressive strength determined experimentally.

In summary:

- The old “Grandfather’s House” must resist to a seismic load 20% higher than a similar new house only because it is a “historic building”;
- The old “Grandfather’s House” must resist to a seismic force increment 80% higher than in 1992 just like that, for “safety” reasons, although the house has very good results at the *in situ* testing for several hundred years;
- The materials of which the house is made are not trustful: there is no visible damage, the laboratory tests generated no concerns, but for no reason they are considered to be 75% less resistant than indicated by the experimental determinations.

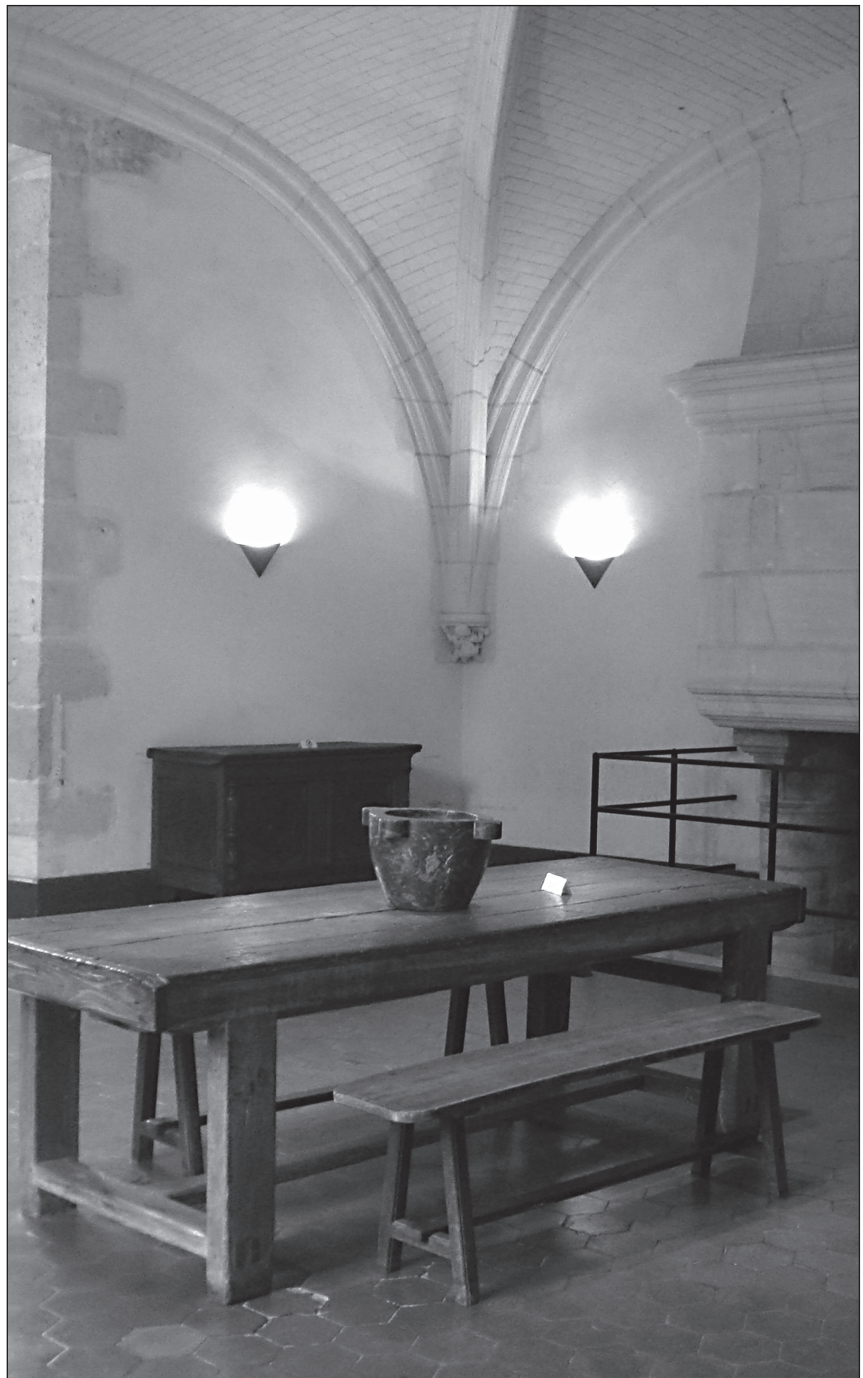
According to the “input” resulted from the application of Normative Act P100-3/2008 in correlation with CR6/2006, most of the historic buildings – similar to “Grandfather’s House” and analysed by the author of this article in recent years – are situated much below the threshold value of the required seismic security, although they successfully went through a long period of *in situ* testing and had a remarkable behaviour during the earthquakes they experienced. These results of the calculations based on statistical values that ignore the obvious lead in practice to consolidation interventions that are uselessly oversized, and which impair the authentic material substance of the historic buildings, reducing their value – in other words they affect precisely what was to be preserved. This is how the rules that want to be “protective” actually destroy the historic buildings.

Wouldn’t it be better for Grandfather to build a new house? Why would he need a “historic building”? Consolidation would cost a lot of money. And finally the house would not even be a historic building anymore, but only a fake without value. But who needs historic buildings with authentic “substance”? Wouldn’t it be easier (and less expensive) to only keep photos, replicas, virtual modelling... collected in a museum? Indeed, it might be better for Grandfather to sell the house for the land, as a whole block of flats could be built on it.

And then what will Grandfather pass on to the next generation?

Post Scriptum

- The Radio Erevan was asked:
 - May the rules concerning new buildings be applied to the historic buildings?
 The Radio Erevan answers:
 - Yes, but it would be a shame.



■ **Foto 2.** „Casa bunicului”: o construcție cu o vechime de câteva secole, bine conformată, făcută cu materiale și manoperă de bună calitate, aflată și astăzi într-o stare bună de conservare evidentă – interior

■ **Photo 2.** Grandfather’s house”: as object of our analysis, which is a several century old building, with a good conformation, well made of high quality materials, in an obviously good state of preservation even today - interior

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■ Andreea MILEA¹

Parcul castelului Károlyi din Carei, județul Satu Mare

DATE ISTORICE ȘI CONTEMPORANE² (PARTEA I)

■ **Rezumat:** Articolul prezintă câteva repere din istoria construcțiilor și amenajărilor parcului castelului Károlyi din Carei (județul Satu Mare), parc dendrologic de secolele XVIII-XIX, cu urme de amenajări în stil peisager, clasat ca atare drept monument istoric în Listele Monumentelor Istorice 2004, respectiv 2010. Evoluând dintr-o grădină geometrică de factură barocă (mijlocul secolului al XVIII-lea) într-un parc peisager romantic (sfârșitul secolului al XVIII-lea, începutul secolului al XIX-lea) al cărui apogeu îl reprezintă reamenajarea de sfârșit de secol XIX, amenajarea supraviețuiește în prezent îndeosebi prin exemplarele numeroase și valoroase de arbori. Articolul descrie principalele elemente construite și amenajate ale ansamblului, relațiile dintre ele și relațiile lor cu așezarea, așa cum au fost ele observate de către autoare în primăvara anului 2013, în încercarea de a schița un inventar sumar al situației actuale a amenajării.

■ **Cuvinte cheie:** grădină istorică, reședință nobiliară, amenajare geometrică, amenajare peisageră, secolul XVIII, secolul XIX

■ Castelul Károlyi din Carei³ își are originile într-o casă fortificată, construită în 1482 de László KÁROLYI, completată în 1592 – pentru a face față atacurilor turcești – de Mihály KÁROLYI și reconstruită în sistem Vauban, între 1661-1666, de către Ádám KÁROLYI (iar după moartea acestuia de către fratele său, László), cu ziduri puternice prevăzute cu bastioane și cu

Károlyi Castle Park in Carei, Satu Mare County

HISTORICAL AND CONTEMPORARY DATA² (PART I)

■ **Abstract:** This article presents a few highlights from the history of the buildings and landscape design elements of the Károlyi Castle Park in Carei (Satu Mare County), an 18-19th century dendrological park, with traces of landscaped style elements, listed as such as historic monument on the 2004 and 2010 Historic Buildings List. Evolving from a Baroque geometrical style garden (at the middle of the 18th century) into a Romantic landscaped style park (at the end of the 18th century and the beginning of the 19th), the apogee of which is represented by the redesign at the end of the 19th century, the park has survived, especially through the many valuable tree specimens. The article describes the main built and landscape design elements and their relationship with the settlement, as they were observed by the author in the spring of 2013, in an essay to sketch a brief summary of the park's current state.

■ **Keywords:** historical garden, aristocratic residence, geometric style design, landscaped style design, 18th century, 19th century

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2 Urmând structura metodologică descrisă în articolul de debut al rubricii *Grădini Istorică*, prezentarea parcului castelului Károlyi din Carei abordează următoarele aspecte, relevante pentru o analiză sistematică a grădinilor istorice rezidențiale (sau inițial rezidențiale, cum este cazul de față) transilvănene: date generale despre „proprietari, etape de construcție, stil arhitectural, constructori”; peisaj („formațiuni principale de relief, cursuri de apă, prezența unor elemente dominante”); amplasament („localizare în cadrul așezării, forma generală a sitului, caracterul limitelor”); relief local și dispunerea elementelor majore („topografia sitului, localizarea elementelor majore pe sit: zona de acces, reședința, parcul, alte elemente naturale sau construite”); amenajările de acces („localizarea acceselor – pe proprietate și în reședință – și descrierea amenajărilor aferente”); castelul și relația lui cu amenajările exterioare („descrierea volumelor principale” ale castelului și a „dispozitivelor de legătură cu exteriorul”); respectiv, amenajarea exterioară propriu-zisă („compoziție, dispunerea vegetației, elemente de vegetație, paviment, obiecte ornamentale, construcții ornamentale”). Pentru descrierea detaliată a metodologiei, a se vedea MILEA, Andreea: „Grădini istorice din Transilvania: primi pași pentru o cercetare sistematică”, în *Transsylvania Nostra* nr. 24 (4/2012), pp. 48-60.

3 Ansamblul castelului Károlyi (SM-II-a-A-05280) 1794: castelul Károlyi (SM-II-m-A-05280.01) sec. XVIII; parc dendrologic (SM-II-s-A-05280.02) sec. XVIII; conform Listei Monumentelor Istorice 2004, respectiv 2010 (Ministerul Culturii și Patrimoniului Național, Institutul Național al Patrimoniului). Carei / Careii Mari / Carăi (ro.), Nagykaroly / Károly (magh.), Gross-Karol / Karol (germ.); conform SZABÓ, M. Attila, „Dicționar de localități din Transilvania”, accesat ultima dată în iunie 2013, la URL: <http://dictionar.referinte.transindex.ro/index.php?action=betu&betu=c&kezd=120&co=roman>.

1 Architect, PhD, Technical University of Cluj-Napoca, Romania.

2 Following the methodological structure described in the first article of the *Historical Gardens* column, the presentation of the Károlyi Castle Park in Carei approaches the following aspects, relevant for a systematic analysis of the Transylvanian historical residential gardens (or initially residential, as is the case here): general information regarding “the owners, stages of construction, architectural style, contractors”; landscape (“main landforms, watercourses, the presence of dominating elements”); placement (“location within the settlement, general shape of the site, limit characteristics”); local relief and the placement of major elements (“site topography, location of the main elements on site: access area, the residence, the park, other natural or built elements”); access and the elements related to it (“access placement – to the property and to the residence – and the description of related elements”); the castle and its relationship with the exterior designs (“description of the castle's main volumes and the devices for the connexion with the exterior”); the actual landscape design (composition, placement of vegetation, vegetation elements, pavement, ornamental objects, ornamental constructions). For a detailed description of the methodology, see MILEA, Andreea: „Historical Gardens in Transilvania: First Steps Towards a Systematic research”, in *Transsylvania Nostra* 4 (2012): 48-60.



■ **Foto 1.** Vedere dinspre est a castelului, la începutul secolului al XIX-lea. © e-castellum

■ **Photo 1.** View of the castle from the east, at the beginning of the 19th century. © e-castellum



■ **Foto 2.** Vedere dinspre sud a castelului, la începutul secolului al XIX-lea. © e-castellum

■ **Photo 2.** View of the castle from the south, at the beginning of the 19th century. © e-castellum

■ The Károlyi Castle in Carei³ has its origins in a fortified house, built in 1482 by László KÁROLYI, completed in 1592 – in order to resist the Turkish attacks – by Mihály KÁROLYI and rebuilt according to the Vauban system, between 1661 and 1666 by Ádám KÁROLYI (and, after his death, by his brother László), with strong walls that had bastions and an outer moat reinforced with palisades, which was crossed by a suspended bridge.⁴ All along the 17th century, the castle plays an important part in the frontier's defence, its importance continuing during the wars waged by Prince Ferenc RÁKÓCZI II against the Habsburgs (1703-1711).⁵ At the end of the 17th century, the castle was modified by Sándor KÁROLYI (1669-1743), aiming this time to fulfil comfort criteria.⁶

At the end of the 18th century, József KÁROLYI orders the demolition of the defence walls and the filling of the moats.⁷ A late Baroque, quadrilateral castle, with a rectangular shape, inner courtyard and a single

un șanț exterior întărit cu palisade, peste care trecea un pod suspendat.⁴ Pe parcursul sec. al XVII-lea, castelul joacă un rol important în apărarea frontierei, iar importanța sa continuă și în timpul războaielor duse de principele Ferenc RÁKÓCZI al II-lea împotriva habsburgilor (1703-1711).⁵ La sfârșitul sec. al XVII-lea, castelul a fost modificat de către Sándor KÁROLYI (1669-1743), urmărind, de data aceasta, criteriile de confort.⁶

La sfârșitul sec. al XVIII-lea, József KÁROLYI (1768-1803) dispune demolarea zidurilor de apărare și astuparea șanțurilor.⁷ Un castel patrulater în stil baroc târziu, cu formă dreptunghiulară, curte interioară și un singur etaj, este construit începând cu 1792, pe baza proiectului lui József BITTNEUSER, păstrând fundația și unele ziduri din vechea structură; lucrările sunt încheiate în 1794 (foto 1, 2).⁸ Tot acum se construiește, nu departe de castel, înspre vest, o clădire alungită, pe un singur nivel, folosită drept manej, grajd și șoproan.⁹

Cutremurul din 1832 dă rămă mare parte din castel, iar în 1847, Miklós YBL se ocupă cu refacerea lui.¹⁰ Reconstrucția propriu-zisă va avea loc

3 Károlyi Castle ensemble (SM-II-a-A-05280) 1794; Károlyi Castle (SM-II-m-A-05280.01) 18th century; dendrology park (SM-II-s-A-05280.02) 18th century; according to the 2004 and 2010 Historic Building List (Ministry of Culture and National Heritage, National Heritage Institute), Carei / Careii Mari / Carăi (ro.), Nagykároly / Károly (magh.), Gross-Karol / Karol (germ.); according to M. Attila SZABÓ, „Dicționar de localități din Transilvania”, accessed on: <http://dictionar.referinte.transindex.ro/index.php?action=betu&betu=c&kezd=120&co=roman>.

4 Vasile CUCU, Marian ȘTEFAN, *România. Ghid atlas al monumentelor istorice* (București, Editura Sport-Turism, 1979), p. 396. Ion Horațiu CRIȘAN, *Itinerare arheologice transilvănene* (București, Editura Sport-Turism, 1982), pp. 197-198. WEISZ Attila, *Száz erdélyi műemlék* (Koložsvár, Utilitas Kiadó, 2007), p. 158. ERDEI Ibolya, „Ansamblul castelului Károlyi, Carei”, referinte.transindex.ro, accesat ultima dată în iunie 2013, la URL: <http://referinte.transindex.ro/enciclopedie/monument.php?id=259>.

5 Ion Horațiu CRIȘAN, *Itinerare arheologice transilvănene* (București, Editura Sport-Turism, 1982), pp. 197-198. Ionuț JULEAN, „Influențele romantismului în arhitectura castelului transilvănene”, in *logiA* 8 (2005): 76-85. SISA József, *Kastélyépítészet és kastélykultúra Magyarországon. A historizmus kora* (Budapest, Vince Kiadó, 2007) p. 241.

6 WEISZ Attila, *Száz erdélyi műemlék* (Koložsvár, Utilitas Kiadó, 2007), pp. 158, 160.

7 Vasile CUCU, Marian ȘTEFAN, *România. Ghid atlas al monumentelor istorice* (București, Editura Sport-Turism, 1979), p. 396.

4 CUCU, Vasile, ȘTEFAN, Marian, *România. Ghid atlas al monumentelor istorice*, București, Editura Sport-Turism, 1979, p. 396. CRIȘAN Ion Horațiu, *Itinerare arheologice transilvănene* (Editura Sport-Turism, București, 1982), pp. 197-198. WEISZ Attila, *Száz erdélyi műemlék* (Utilitas Kiadó, Koložsvár, 2007), p. 158. ERDEI Ibolya, „Ansamblul castelului Károlyi, Carei”, referinte.transindex.ro, accesat ultima dată în iunie 2013, la URL: <http://referinte.transindex.ro/enciclopedie/monument.php?id=259>.

5 Ion Horațiu CRIȘAN, *Itinerare arheologice transilvănene* (Editura Sport-Turism, București, 1982), pp. 197-198. Ionuț JULEAN, „Influențele romantismului în arhitectura castelului transilvănene”, in *logiA* nr. 8/2005 (Editura U.T. Press, Cluj-Napoca), pp. 76-85. SISA József, *Kastélyépítészet és kastélykultúra Magyarországon. A historizmus kora* (Vince Kiadó, Budapest, 2007) p. 241.

6 WEISZ Attila, *Száz erdélyi műemlék* (Utilitas Kiadó, Koložsvár, 2007), pp. 158, 160.

7 Vasile CUCU, Marian ȘTEFAN, *România. Ghid atlas al monumentelor istorice* (Editura Sport-Turism, București, 1979), p. 396.

8 CUCU, Vasile, ȘTEFAN, Marian, *România. Ghid atlas al monumentelor istorice*, București, Editura Sport-Turism, 1979, p. 396. ION, Narcis Dorin, *Castele, palate și conace din România*, București, Editura Fundației Culturale Române, 2002, pp. 10-11. SISA, József, *Kastélyépítészet és kastélykultúra Magyarországon. A historizmus kora*, Budapest, Vince Kiadó, 2007, p. 241. WEISZ, Attila, *Száz erdélyi műemlék*, Koložsvár, Utilitas Kiadó, 2007, p. 160. ERDEI, Ibolya, „Ansamblul castelului Károlyi, Carei”, referinte.transindex.ro, accesat ultima dată în iunie 2013, la URL: <http://referinte.transindex.ro/enciclopedie/monument.php?id=259>.

9 SISA, József, *Kastélyépítészet és kastélykultúra Magyarországon. A historizmus kora*, Budapest, Vince Kiadó, 2007, p. 243.

10 WEISZ, Attila, *Száz erdélyi műemlék*, Koložsvár, Utilitas Kiadó, 2007, p. 160. ERDEI, Ibolya, „Ansamblul castelului Károlyi, Carei”, referinte.transindex.ro, accesat ultima dată în iunie 2013, la URL: <http://referinte.transindex.ro/enciclopedie/monument.php?id=259>.



■ **Foto 3.** Ortofotografia orașului Carei (2010). Conturul alb reprezintă limita actuală, aproximativă, a parcului castelului Károlyi. © 2013 DigitalGlobe, GoogleEarth

■ **Photo 3.** The orthophotography of the town of Carei (2010). White contours represent the current, approximate limit of the Károlyi Castle Park. © 2013 DigitalGlobe, GoogleEarth

abia între 1894-1896,¹¹ când István KÁROLYI (1845-1907)¹² îl va aduce pe arhitectul Arthur MEINIG¹³ pentru a reface castelul în stil neogotic (fig. 1, 2).¹⁴ Cu această ocazie a fost adăugat încă un nivel, au fost construite turnuri, iar curtea interioară, cu arcade pe două niveluri, a fost acoperită. Aripa vestică a castelului a fost demolată, în locul său fiind construit peretele cu vitraje ample pentru iluminatul curții interioare acoperite. Pentru întregirea iluziei medievale, în jurul castelului au fost amenajate șanțuri, al căror rol, de data aceasta, era exclusiv decorativ.¹⁵

11 CUCU, Vasile, ȘTEFAN, Marian, *România. Ghid atlas al monumentelor istorice*, București, Editura Sport-Turism, 1979, p. 396. SISA, József, *Kastélyépítészet és kastélykultúra Magyarországon. A historizmus kora*, Budapest, Vince Kiadó, 2007, p. 242.

12 Contele István KÁROLYI, al patrulea fiu al contelui György KÁROLYI a preluat în 1867 domeniul din Carei. SISA József, *Kastélyépítészet és kastélykultúra Magyarországon. A historizmus kora*, Budapest, Vince Kiadó, 2007, p. 241.

13 În literatura de specialitate, numele arhitectului este menționat sub diverse forme: Mering, Meining, Meinig. Am păstrat ultima variantă, inscripționată pe piatra funerară a arhitectului în cimitirul Kerepesi din Budapesta (48/4-1-19): „MEINIG ARTHUR / ÉPÍTŐ MŰVÉSZ / 1853-1904”.

14 ION, Narcis Dorin, *Castele, palate și conace din România*, București, Editura Fundației Culturale Române, 2002 pp. 10-11. SISA, József, *Kastélyépítészet és kastélykultúra Magyarországon. A historizmus kora*, Budapest, Vince Kiadó, 2007, p. 241. ERDEI, Ibolya, „Ansamblul castelului Károlyi, Carei”, referinte.transindex.ro, accesat ultima dată în iunie 2013, la URL: <http://referinte.transindex.ro/enciclopedie/monument.php?id=259>.

15 SISA, József, *Kastélyépítészet és kastélykultúra Magyarországon. A historizmus kora*, Budapest, Vince Kiadó, 2007, p. 242. ERDEI, Ibolya, „Ansamblul castelului Károlyi, Carei”, referinte.transindex.ro, accesat ultima dată în iunie 2013, la URL: <http://referinte.transindex.ro/enciclopedie/monument.php?id=259>.

storey, is built starting from 1792, based on József BITTHER's plans, preserving from the old structure the foundation and several walls; the works are finished in 1794 (Photo 1, 2).⁸ At this time, an elongated building, with a single storey, used as manège, stables and barn, is built not far from the castle, to the west.⁹

The 1832 earthquake demolishes a large part of the castle, and in 1847, Miklós YBL takes charge of its repair.¹⁰ The reconstruction

8 Vasile CUCU, Marian ȘTEFAN, *România. Ghid atlas al monumentelor istorice* (București, Editura Sport-Turism, 1979), p. 396. Narcis Dorin ION, *Castele, palate și conace din România* (București, Editura Fundației Culturale Române, 2002) pp. 10-11. SISA József, *Kastélyépítészet és kastélykultúra Magyarországon. A historizmus kora* (Budapest, Vince Kiadó, 2007) p. 241. WEISZ Attila, *Száz erdélyi műemlék* (Kolozsvár, Utilitas Kiadó, 2007), p. 160. ERDEI Ibolya, „Ansamblul castelului Károlyi, Carei”, referinte.transindex.ro, last accessed in June 2013, at: <http://referinte.transindex.ro/enciclopedie/monument.php?id=259>.

9 SISA József, *Kastélyépítészet és kastélykultúra Magyarországon. A historizmus kora* (Budapest, Vince Kiadó, 2007) p. 243.

10 WEISZ Attila, *Száz erdélyi műemlék* (Kolozsvár, Utilitas Kiadó, 2007), p. 160. ERDEI Ibolya, „Ansamblul castelului Károlyi, Carei”, accessed on <http://referinte.transindex.ro/enciclopedie/monument.php?id=259>

itself will take place only between 1894 and 1896,¹¹ when István KÁROLYI (1845-1907)¹² brings architect Arthur MEINIG¹³ to rebuild the castle in a Neo-Gothic style (Figures 1, 2).¹⁴ With this occasion a new storey was added, towers were built, and the inner courtyard, with arcades on two levels, was covered. The western wing of the castle was demolished and its place was taken by the wall with large glass panels for the illumination of the covered courtyard. In order to complete the mediaeval illusion, moats were dug around

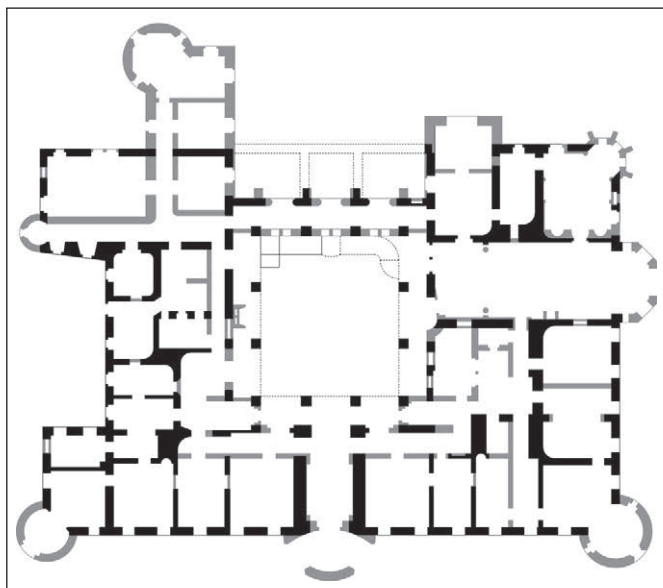
În a doua jumătate a sec. al XVIII-lea exista deja, în apropierea castelului, o grădină geometrică de factură barocă (fig. 3).¹⁶ În anii 1790, în jurul castelului refăcut este amenajată o grădină engleză, care avea și o seră cu plante exotice. Această grădină este reamenajată sub forma unui parc peisager, la sfârșitul sec. al XIX-lea, pe baza proiectului lui Vilmos JÁMBOR.¹⁷ Cu această ocazie, specii valoroase de arbori au fost aduse în completarea celor existente, rondouri cu flori au fost amenajate și o fântână medievală sculptată, provenind din Italia, a fost amplasată în parc.¹⁸ La marginea parcului, de-a lungul laturii sudice, au fost dispuse locuințele servitorilor, iar în colțul sud-vestic al parcului a fost ridicat turnul de apă.¹⁹

După moartea lui István KÁROLYI (1907), membrii familiei părăsesc Careiul. În perioada interbelică, cu acordul familiei, în castel funcționează un sanatoriu și un cazinou, iar în timpul celui de-al Doilea Război Mondial, o școală militară, transformată, în 1944, în spital militar.²⁰

Din 1968, castelul Károlyi din Carei adăpostește Muzeul Municipal Carei (înființat în 1958), secție a Muzeului Județean Satu Mare.²¹ „Expoziția permanentă a Muzeului din Carei ocupa 10 săli amplasate la etajul I al castelului, cuprinzând două module expoziționale: arheologie și științele naturii”.²²

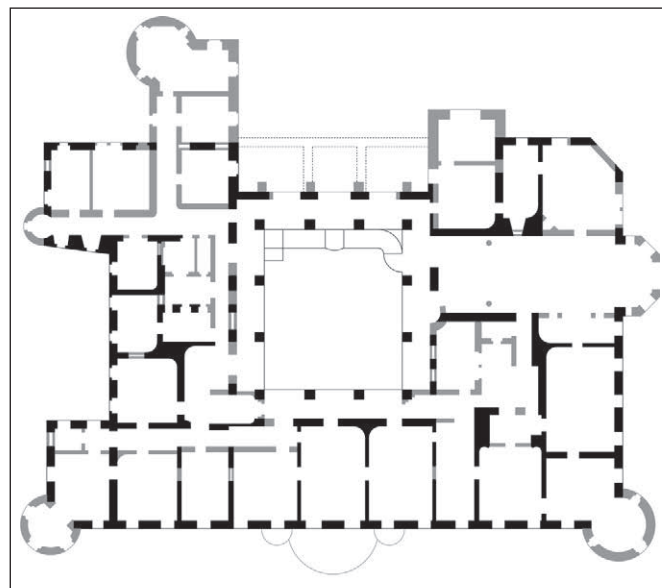
- 11 Vasile CUCU, Marian ȘTEFAN, *România. Ghid atlas al monumentelor istorice* (București, Editura Sport-Turism, 1979), p. 396. SISA József, *Kastélyépítészet és kastélykultúra Magyarországon. A historizmus kora* (Budapest, Vince Kiadó, 2007) p. 242.
- 12 Count KÁROLYI István, the fourth son of count KÁROLYI György took over the estate in Carei in 1867. SISA József, *Kastélyépítészet és kastélykultúra Magyarországon. A historizmus kora* (Budapest, Vince Kiadó, 2007) p. 241.
- 13 In the speciality literature, the architect's name is mentioned in different versions: Mering, Meinig, Meinig. We have preserved the last version, inscribed on the architect's tombstone, in Kerepesi Cemetery in Budapest (48/4-1-19): „MEINIG ARTHUR / ÉPÍTŐ MŰVÉSZ / 1853-1904”.
- 14 Narcis Dorin ION, *Castele, palate și conace din România* (București, Editura Fundației Culturale Române, 2002) pp. 10-11. SISA József, *Kastélyépítészet és kastélykultúra Magyarországon. A historizmus kora* (Budapest, Vince Kiadó, 2007) p. 241. ERDEI Ibolya, „Ansamblul castelului Károlyi, Carei accessed on <http://referinte.transindex.ro/enciclopedie/monument.php?id=259>.”

- 16 Harta Iosefină a Regatului Ungariei (Theil des Szathmarer Comitat, Coll: XXVIII. Sectio XIV, 1782-1785) atestă, în anii 1782-1785, prezența grădinii geometrice de factură barocă.
- 17 SISA, József, *Kastélyépítészet és kastélykultúra Magyarországon. A historizmus kora*, Budapest, Vince Kiadó, 2007, p. 243.
- 18 Ibidem.
- 19 Ibidem.
- 20 <http://www.e-castellum.eu/url/CASTEUL-KAROLYI-DIN-CAREI> (Castelul Károlyi din Carei, accesat iunie 2013)
- 21 CUCU, Vasile, ȘTEFAN, Marian, *România. Ghid atlas al monumentelor istorice*, București, Editura Sport-Turism, 1979, p. 396. <http://www.muzeusm.ro/carei/> (Muzeul Județean Satu Mare, Muzeul Municipal Carei, accesat iunie 2013)
- 22 <http://www.muzeusm.ro/carei/> (Muzeul Județean Satu Mare, Muzeul Municipal Carei, accesat iunie 2013)



■ Fig. 1. Planul nivelului parter al castelului, precizând principalele modificări propuse de Arthur MEINIG la reconstrucția din anii 1894-1896 (gri), față de situația preexistentă (negru); cu linie punctată (negru) este reprezentată latura vestică, demolată, a castelului baroc (redesenată de autoare, după planul, considerabil mai detaliat, prezentat în expoziția permanentă a Muzeului Municipal Carei). © Andreea MILEA

■ Figure 1. Layout of the castle's ground floor, showing the main modification proposed by Arthur Meinig for the 1894-1896 reconstruction (grey), compared with the pre-existing situation (black); the black dotted line represents the demolished west side of the Baroque castle (redrawn by the author, following the plan displayed in the permanent exhibition of the Carei Municipal Museum, significantly more detailed). © Andreea MILEA



■ Fig. 2. Planul nivelului etaj al castelului, precizând principalele modificări propuse de Arthur MEINIG la reconstrucția din anii 1894-1896 (gri), față de situația preexistentă (negru); cu linie punctată (negru) este reprezentată latura vestică, demolată, a castelului baroc (redesenată de autoare, după planul, considerabil mai detaliat, prezentat în expoziția permanentă a Muzeului Municipal Carei). © Andreea MILEA

■ Figure 2. Layout of the castle's first floor, showing the main modification proposed by Arthur Meinig for the 1894-1896 reconstruction (grey), compared with the pre-existing situation (black); the black dotted line represents the demolished west side of the Baroque castle (redrawn by the author, following the plan displayed in the permanent exhibition of the Carei Municipal Museum, significantly more detailed). © Andreea MILEA



■ **Fig. 3.** Reprezentarea orașului Carei în Harta Iosefină (1782-1785). Castelul, de formă patrulateră, cuprinzând înăuntrul său o curte interioară și având turnuri la cele patru colțuri, este clar lizibil în partea sudică a așezării. Un șanț cu apă îl înconjoară, traversat fiind de două poduri ce asigură accesul în castel, pe laturile vestică și estică ale acestuia. Grădina geometrică barocă se desfășoară la nord-vest de castel. La contactul grădinii cu castelul, șanțul cu apă pare să fie întrerupt.

■ **Figure 3.** The representation of the town of Carei in the Josephine Map (1782-1785). The castle, with a quadrilateral layout, with an inner courtyard and four corner towers, is clearly legible in the southern side of the settlement. A moat surrounds it, traversed by the two bridges allowing access to the castle, on its western and southern sides. The Baroque geometric garden is placed to the north-west of the castle. Where the garden comes into contact with the castle, the moat seems to be interrupted.

Biblioteca orașului era și ea adăpostită în castel. Datorită speciilor rare conținute, în anul 1982 parcul a fost declarat parc dendrologic ocrotit.

„În anul 2008, Primăria municipiului Carei, în parteneriat cu Primăria Orașului Arad a inițiat proiectul intitulat «Circuitul târgurilor medievale din Transilvania de Nord - Castelul Károlyi din Carei, castelul (cetatea) Károlyi din Arad»”, vizând restaurarea monumentelor semnificative ale celor două localități. „Odată cu începerea lucrărilor de restaurare la castelul din Carei, expoziția permanentă a fost desființată, iar instituțiile care funcționau aici, inclusiv cea muzeală, au fost mutate într-o altă locație pe perioada restaurării.” Expoziția permanentă reorganizată cuprinde în prezent două module expoziționale: interioare istorice (ocupând 10 săli la etajul I al clădirii) și istorie locală (ocupând trei săli, împreună cu coridorul de serviciu, la parterul castelului).²³

Peisaj. Municipiul Carei este situat într-un peisaj de câmpie, Câmpia Careilor, lipsit fiind de cursuri importante de apă care să-l străbată.

Amplasament. Centrul de greutate al așezării Carei s-a deplasat de-a lungul timpului. Harta Iosefină a Regatului Ungariei (Theil des Szathmarer Comit, Coll: XXVIII. Sectio XIV, 1782-1785) (fig. 3) prezintă o așezare în a cărei rețea de drumuri se remarcă două trasee principale. Cel dintâi, în jumătatea nordică a așezării, asigura traversarea acesteia pe direcția vest-est. În zona mediană a acestui drum se dezvoltă o piață dominată de instituții religioase (ambele de factură barocă): mănăstirea piaristă (1724) și Biserica Romano-Catolică (1769). Din această piață pornea, spre sud, cel de-al doilea traseu important al așezării, conducând spre o suprafață mare liberă (posibil locul de desfășurare a târgurilor), dezvoltată în jumătatea sudică a așezării și delimitată, pe un fragment al laturii sale nordice,

23 Ibidem.

the castle, this time with a solely decorative purpose.¹⁵

A geometric style, Baroque garden had already existed in the second half of the 18th century, near the castle (Figure 3).¹⁶ In the 1790s, around the rebuilt castle an English garden is designed, with a conservatory for exotic plants. This garden is redesigned as a landscaped style park at the end of the 19th century, based on Vilmos JÁMBOR's project¹⁷. On this occasion, valuable tree species were brought in to complete the existing ones, flowerbeds were planted and a carved mediaeval fountain, from Italy, was placed in the park.¹⁸ The servants' quarters were placed at the edge of the park, along the southern side, and the water tower was built in the southwest corner.¹⁹

After the death of István KÁROLYI (1907), the family members leave Carei. Between the two World Wars, with the family's consent, a sanatorium and a casino function in the castle, and a military school during World War II, converted, in 1944, in a military hospital.²⁰

Since 1968, Károlyi Castle in Carei houses the Carei Municipal Museum (established in 1958), a part of the Satu Mare County Museum.²¹ “The permanent exhibition of the Carei Museum took 10 rooms at the castle's first floor, with two exhibition modules: archaeology and natural sciences”.²² The town's library was also housed in the castle. Owing to the rare species sheltered, in 1982 the park was declared protected dendrological park.

“In 2008, Carei Town Hall, in a partnership with Arad Town Hall, initiated the project «Mediaeval Fairs Circuit in Northern Transylvania – Károlyi Castle in Carei, Károlyi Castle in Arad»”, aiming at the restoration of the two localities' historic buildings. “With the beginning of the restoration works at Carei Castle, the permanent exhibition was dismantled and the institutions that functioned here, including the museum, were moved to another location for the duration of the restoration works.” The reorganised permanent exhibition includes at present two exhibition modules: historical interiors (with 10 rooms on the building's first floor) and local history (with three rooms, along with the corridor, on the castle's ground floor).²³

15 SISA József, *Kastélyépítészet és kastélykultúra Magyarországon. A historizmus kora* (Budapest, Vince Kiadó, 2007) p. 242. ERDEI Ibolya, „Ansamblul castelului Károlyi, Carei”, accessed on <http://referinte.transindex.ro/enciclopedie/monument.php?id=259>.

16 The Josephine Map of the Kingdom of Hungary (Theil des Szathmarer Comit, Coll: XXVIII. Sectio XIV, 1782-1785) show, in 1782-1785, the presence of the Baroque geometric style garden.

17 SISA József, *Kastélyépítészet és kastélykultúra Magyarországon. A historizmus kora* (Budapest, Vince Kiadó, 2007) p. 243.

18 Ibidem.

19 Ibidem.

20 Károlyi Castle in Carei, accessed on <http://www.e-castellum.eu/url/CASTEUL-KAROLYI-DIN-CAREI>

21 Vasile CUCU, Marian ȘTEFAN, *România. Ghid atlas al monumentelor istorice* (București, Editura Sport-Turism, 1979), p. 396. <http://www.muzeism.ro/carei/> (Satu Mare County Museum, Carei Municipal Museum)

22 <http://www.muzeism.ro/carei/> (Satu Mare County Museum, Carei Municipal Museum)

23 Ibidem.



■ **Fig. 4.** Încadrarea ansamblului castelului Károlyi în localitate și dispunerea elementelor majore ale ansamblului și din vecinătate: 1 – acces în incinta parcului castelului, 2 – poarta neogotică, 3 – castelul Károlyi, 4 – grajd-manej, 5 – teren de sport, 6 – anexe (ruinele fostelor case pentru personal), 7 – terasă de parc amenajată în ruinele unei foste construcții anexe, 8 – turn de apă, 9 – sere, 10 – fântână arteziană, 11 – biserica ortodoxă, 12 – Monumentul Eroilor Români din cel de-al Doilea Război Mondial (VIDA Géza, Anton DĂMBOIANU, 1964), 13 – biserica catolică (reconstituirea autoarei, suprapusă unei ortofotografii: GoogleEarth 2010; scala grafică reprezentată este estimativă). © Andreea MILEA

■ **Figure 4.** The placement of Károlyi Castle compound within the settlement and of the major elements of the compound and of those in its vicinity: 1 – access to the castle park premises, 2 – Neo-Gothic gate, 3 – Károlyi Castle, 4 – stables-manege, 5 – sports field, 6 – annexes (the ruins of the former servants' quarters), 7 – park terrace within the ruins of a former annex building, 8 – water tower, 9 – greenhouse, 10 – fountain, 11 – Orthodox church, 12 – Monument of the Romanian Heroes of the Second World War (VIDA Géza, Anton DĂMBOIANU, 1964), 13 – Catholic church (author's reconstruction, superposed over an orthophotography: GoogleEarth 2010; the represented graphic scale is estimative) © Andreea MILEA

Landscape. Carei is situated in a plains landscape, Câmpia Careilor, without any important watercourse crossing it.

Placement. The centre of the settlement of Carei has moved over time. The Josephine Map of the Hungarian Kingdom (Theil des Szathmarer Comitat, Coll: XXVIII. Sectio XIV, 1782-1785) (Figure 3) presents a settlement with the road network having two main routes. The first one, in the settlement's northern half, ensured the crossing on the west-east direction. In the median area of this road was a square dominated by religious institutions (both in a Baroque style): the Piarist monastery (1724) and the Roman-Catholic church (1769). The settlement's second important route started from this square, towards the south, leading to a large free area (possibly where the fairs took place) in the southern half of the town,

de castelul familiei KÁROLYI. Astfel, cel puțin în penultimul deceniu al sec. al XVIII-lea, așezarea pare să fi avut doi poli de interes, materializați fiecare printr-o piață, cea nordică dominată de mănăstire și de biserică, iar cea sudică dominată de castel.

În această fază, castelul apare înconjurat de un șanț cu apă, iar grădina de factură geometrică se desfășoară la nord-vest de castel, limitată fiind, la est, de drumul de legătură cu piața nordică, iar la nord, vest și sud de parcele, posibil cu construcții, și de anexe ale castelului (la sud, între castel și grădină). Reprezentarea nu particularizează o incintă propriu-zisă a grădinii, dar este plauzibil ca o astfel de incintă să fi existat.²⁴

De la sfârșitul sec. al XVIII-lea până în prezent, prin evoluția urbanistică a așezării, ansamblul castelului a dobândit o poziție cvasi-centrală în

²⁴ Grădina geometrică este percepută prin contrast față de peisajul înconjurător: este un mediu ordonat, ținut sub control, iar conturul său geometric este subliniat prin împrejmuiri din gard viu sau zidărie. Acest fapt se poate încă experimenta în cadrul parcului palatului Brukenthal din Avrig. Pentru caracteristicile grădinilor geometrice (renascentiste și baroce), a se vedea ILIESCU, Ana-Felicia, *Arhitectură peisageră*, București, Editura Ceres, 2003, pp. 43-52.

cadrul acesteia (fig. 3). Suprafața parcului peisager romantic nu s-a suprapus suprafeței grădinii geometrice baroce. Dacă grădina geometrică apare ca o anexă a castelului, alăturată acestuia, parcul peisager înconjoară castelul, creându-i un cadru care îi valorifică imaginea: parcul și castelul reprezintă, de data aceasta, un tot unitar. Astfel, parcul peisager ocupă o suprafață mult mai mare, obținută atât prin devierea rețelei anterioare de drumuri (în special cele de la est și sud, care, până atunci, treceau pe lângă castel) cât și, probabil, prin încorporarea unora dintre parcelele construite învecinate (la nord și vest).

În prezent, parcul este delimitat prin căi de circulație pe toate laturile sale (Pța Avram Iancu și drumul național 1F pe latura estică, str. Zefirului pe latura nordică, Bd. 25 Octombrie pe latura sudică, str. Garofiței pe latura vestică), cu excepția colțului nord-vestic, delimitat de terenuri cu utilități (turn de apă, sere) (fig. 4). Obiective importante se coagulează în apropierea parcului, sporind semnificația acestui loc: Monumentul Eroilor Români din cel de-al Doilea Război Mondial²⁵ (Bd. 25 Octombrie), biserica ortodoxă (Pța Avram Iancu).

Forma actuală a parcului este neregulată; singura latură ordonată este cea sudică, aliniată Bulevardului 25 Octombrie. Incinta parcului este tratată diferențiat: laturile publice, sudică și estică, dispun de o împrejmuire transparentă, cu soclu scund de piatră și panouri din fier forjat (foto 4); laturile mai retrase, vestică și nordică, dispun de o împrejmuire opacă, din zidărie de cărămidă (foto 5).

Relief local și dispunerea elementelor majore. În incinta parcului, terenul este relativ plat și nu avem motive să considerăm că vreodată a fost altfel. Singura denivelare semnificativă, artificială, a fost creată pentru realizarea șanțului cu apă. Denivelări ne semnificative se disting, în prezent, în zona sud-vestică a parcului.

Este interesantă, totuși, înălțarea nivelului terenului parcului față de drumurile care îl delimitează la est și sud. Această diferență (foto 4), de

delineated, on a fragment of its north side, by the KÁROLYI family castle. Thus, at least in the penultimate decade of the 18th century, the settlement seems to have had two poles of interest, each materialised through a square, the northern one dominated by the monastery and the church, the second one by the castle.

At this stage, the castle is surrounded by a moat, and the geometric style garden is placed to the northwest of the castle, limited to the east by the road to the northern square and to the north, west and south by plots, possibly having buildings on them, and by annexes of the castle (to the south, between the castle and the garden). The representation does not depict an actual enclosure of the garden, but it is possible that such enclosure existed.²⁴

Since the end of the 18th century until now, through the settlement's urban evolution, the castle's ensemble gained a quasi-central position within it (Figure 3). The surface of the landscaped style Romantic park was not superposed over that of the Baroque geometric style garden. If the geometric style garden appears as an annex of the castle, adjacent to it, the landscaped park surrounds the castle, creating a frame that highlights its image: this time, the park and the castle represent a unified whole. Thus, the landscaped style park occupies a much greater surface, obtained

²⁴ The geometric garden is perceived in contrast with the surrounding landscape: it is an ordered environment, kept under control, and its geometric contour is underlined by hedge or masonry enclosures. This fact can still be experimented in the Bruckenthal Palace Park in Avrig. For the characteristics of geometric gardens (Renaissance or Baroque), see Ana-Felicia ILIESCU, *Arhitectură peisageră* (București, Editura Ceres, 2003), pp. 43-52.

²⁵ Géza VIDA, Anton DĂMBOIANU, 1964.



■ **Foto 4.** Detaliu al împrejurii parcului, pe laturile sudică și estică (soclu din piatră și panouri din fier forjat) (2013). © Andreea MILEA
■ **Photo 4.** Detail of the park's enclosure, on the southern and eastern sides (stone pedestal and wrought iron panels) (2013). © Andreea MILEA



■ **Foto 5.** Detaliu al împrejurii parcului, pe laturile vestică și nordică (zidărie de cărămidă) (2013). © Andreea MILEA
■ **Photo 5.** Detail of the park's enclosure, on the western and northern sides (brick masonry) (2013). © Andreea MILEA



■ **Foto 6.** Manejul-grajd-șopron și terenul de sport, în zona centrală a parcului (2013). © Andreea MILEA
 ■ **Photo 6.** The manege-stables-shed and the sports field, in the park's central area (2013). © Andreea MILEA

both through the deviation of the former road network (especially those to the east and south that, until then, passed next to the castle) and, probably, by incorporating some of the neighbouring built plots (to the north and west).

At present, circulation routes border the park on all its sides (Avram Iancu Square and National Road 1F to the east, Zefirului Street to the north, October 25 Avenue to the south, Garofiței Street to the west), with the exception of the northwest corner, delimited by plots with utilities (water towers, hothouses) (Figure 4). Important sites coagulate near the park, heightening its significance: the Monument of the Romanian Heroes of the Second World War²⁵ (October 25 Avenue), the Orthodox Church (Avram Iancu Square).

The current shape of the park is irregular; the only regular side is the southern one, aligned to October 25 Avenue. The park's enclosure has a differentiated treatment: the public sides, southern and eastern, have a transparent enclosure, with a low stone pedestal and wrought iron panels (Photo 4); the more remote sides, western and northern, have an opaque enclosure, of brick masonry (Photo 5).

Local relief and the placement of major elements. Inside the park, the terrain is relatively flat and we have no reasons to believe it was ever different. The only significant difference of level is, artificial, was created for the moat. Insignificant level differences can be observed, at present, in the park's southwest area.

²⁵ VIDA Géza, Anton DĂMBOIANU, 1964.

cca. 50 cm, preluată lin de-a lungul aleilor de acces, se observă de-a lungul soclului împrejmuirii parcului, nivelul străzii corespunzând părții inferioare a soclului, iar nivelul terenului parcului corespunzând părții superioare a soclului. Presupunem că acest detaliu de amenajare este intenționat, și nu rezultat prin creșterea stratului vegetal în zonele lipsite de alei ale parcului, întrucât se regăsește doar de-a lungul laturilor estică și sudică, unde parcul este expus, vizibil dinspre piață și de pe străzi, având aici împrejmuirea tratată transparent (soclu de piatră și gard de fier forjat). Această rezolvare permite ca soclul să nu obtureze vizual suprafața amenajată a parcului.²⁶

În prezent, în amenajarea și funcționarea parcului nu se diferențiază zone cu caracter clar diferit; aparent doar, părțile sudică și estică ale parcului, dispunând de toate accesele în parc, au un caracter mai public, iar părțile vestică și nordică ale parcului, lipsite de accese și totodată mai ascunse, au un caracter utilitar.

Clădirea castelului și manejul dețin în parc poziții cvasi-centrale (fig. 2): castelul înspre est, manejul înspre vest. Alături de manej, la sud de acesta, este amenajat în prezent un teren de sport (foto 6). Colțul sud-estic al parcului este marcat, proeminent, de poarta neogotică păstrată (foto 7). În zona colțului nordic al parcului regăsim terasa de parc, amenajată în ruinele unei foste anexe (foto 8). Ruinele fostelor case pentru personal se aliniază de-a lungul laturii sudice a parcului (foto 9, 10), iar colțul sud-estic al parcului este marcat proeminent de turnul de apă (foto 11).

²⁶ Amenajările peisagere romantice urmăreau dobândirea unei continuități vizuale între suprafața parcului și împrejurimi, recurgând uneori, pentru aceasta, la îngroparea împrejmuirii într-un șanț anume săpat (așa-numitul *ha-ha*). Rezolvarea de la Carei este doar parțial un *ha-ha*, lipsindu-i șanțul, care ar fi adus suprafața parcului la nivelul împrejurimilor. Pentru caracteristicile grădinilor peisagere, a se vedea ILIESCU, Ana-Felicia, *Arhitectură peisageră*, București, Editura Ceres, 2003, pp. 53-61.



■ Foto 7. Poarta neogotică, păstrată în colțul sud-estic al parcului (2013). © Andreea MILEA

■ Photo 7. The Neo-Gothic gate, preserved in the southeast corner of the park (2013). © Andreea MILEA

Accesul și amenajările de acces

■ Reprezentarea din Harta Iosefină sugerează existența, la vremea respectivă, a trei accese în castel: câte un acces pe fiecare din laturile vestică și estică, traversând, pe câte un pod, șanțul cu apă; și un al treilea acces pe latura nordică, la contactul castelului cu grădina. Configurația aleilor grădinii geometrică sugerează posibilitatea de-a accede direct în grădină din drumul de legătură a celor două piețe ale așezării, de-a lungul uneia din aleile mediane ale amenajării. La zona de contact dintre drum și alee, se conturează o suprafață mai largă, aparent lipsită de plantații, de unde s-ar putea fie avansa în grădină, fie accede direct la castel. Nu se disting amenajări particulare în dreptul acceselor.

Așa cum am mai amintit, grădina geometrică este o anexă a castelului; accesul la castel nu este dirijat prin grădină, ci accesul la grădină este, mai degrabă, dirijat prin castel. Prin contrast, parcul peisager formează un cadru al castelului, valorificând imaginea acestuia; castelul este înconjurat de parc, iar accesul spre castel se face parcurgând parcul. Astfel, odată cu amenajarea parcului peisager și, totodată, prin reconfigurarea clădirii castelului, se produc modificări în ceea ce privește accesele. În forma actuală, parcul este accesibil de pe laturile sale publice: din colțul nordic (ducând spre mica terasă de parc, dar și spre castel) (foto 8), de pe latura estică (ducând la intrările de pe fațadele estică și nordică ale castelului) (foto 12, 13), din colțul sud-estic (ducând la intrarea de pe fațada sudică a castelului) (foto 7) și de pe latura sudică (ducând la maneaj și la ruinele fostelor anexe ale castelului) (foto 11). Singurul acces marcat prominent

Still, the elevation of the park's surface from the level of the roads that delineate it to the east and south is interesting. This difference (Photo 4), of approx. 50 cm, covered smoothly by the access alleys, can be noticed along the pedestal of the park's enclosure, the street level corresponding to the pedestal's inferior side and the park level to its superior one. We suppose that this design detail is intentional and does not result from the raising of the vegetal layer in the areas without alleys, as it is found only along the eastern and southern sides, where the park is exposed, visible from the square and streets, with a transparent enclosure (stone pedestal and wrought iron fence). This solution allows the view to the park's area unimpeded by the pedestal.²⁶

At present, there are no areas with clearly different characteristics in the park's landscape design and functionality; appar-

²⁶ The Romantic landscaped style parks aimed at a visual continuity between the park and the surrounding areas, using sometimes for this purpose the burial of the enclosure in a specifically dug ditch. (the so-called *ha-ha*). The solution in Carei is only partly a *ha-ha*, lacking the ditch, which would have brought the park's surface at the level of the surrounding terrain. For the characteristics of landscaped gardens, see Ana-Felicia ILIESCU, *Arhitectură peisageră* (București, Editura Ceres, 2003), pp. 53-61.

ently only, the southern and eastern areas of the park, where all the accesses are located, have a more public character, the eastern and southern area, lacking accesses and also more hidden, have a utilitarian character.

The castle's building and the manege have quasi-central positions within the park (Figure 2): the castle to the east, the manege to the west. Next to the manege, to the south, there is at present a sports field (Photo 6). The preserved Neo-Gothic gate (Photo 7) prominently marks the park's southwest corner. In the area of the park's northern corner, we find the park terrace, placed in the ruins of a former annex (Photo 8). The ruins of the former servants' houses are aligned along the park's southern side (Photos 9, 10), and the southwest corner is prominently marked by the water tower (Photo 11).

The access and the elements related to it

■ The representation of the Josephine map suggests the existence, at that time, of three ways of access to the castle: one access on

este cel din colțul sud-estic, unde se păstrează poarta neogotică. În plus, în dreptul acestui acces, piața urbană a fost mobilată cu o fântână arteziană. Nu se disting amenajări particulare care să însoțească traseele de acces; dispunerea răsfirată a vegetației arborescente, precum și mixarea speciilor este relativ omogenă în cadrul amenajării parcului.

Cele trei intrări în castel (pe laturile estică, nordică și sudică) sunt diferențiate ierarhic.²⁷ Intrarea principală, pe latura estică a castelului, flancată de două turnuri, este marcată printr-un portic pentru trăsură la parter, susținând la etaj o terasă largă descoperită (foto 14). Accesul spre această intrare este dirijat, în prezent, tangențial, de-a lungul fațadei estice a castelului, pe o alee care se lărgeste mult în dreptul intrării, traversând șanțul care înconjoară clădirea. Intrarea dublă de pe latura nordică a castelului are o prezență volumetrică mai modestă, marcată fiind la parter de două coloane angajate, care susțin, la etaj, o terasă îngustă descoperită (foto 15). Accesul spre această intrare este dirijat, în prezent, tangențial,

27 Datorită atât diferenței de orientare a clădirii castelului, perceptibilă prin compararea Hărții Iosefine și a hărților recente ale orașului, cât și pentru simplificarea exprimării în descrierea ansamblului, am decis a ne referi la latura principală a castelului, cea care adăpostește intrarea principală în castel, ca fiind latura estică (ea, în realitate, având orientare nord-estică) iar de aici, în consecință, toate celelalte laturi ale castelului și-au dobândit orientarea lor convențională: latura nordică (în realitate nord-vestică), latura vestică (în realitate sud-vestică) și latura sudică (în realitate sud-estică).



■ **Foto 8.** Terasa de parc, amenajată în ruinele unei foste clădiri anexe, în colțul nordic al parcului (2013). © Andreea MILEA

■ **Photo 8.** The park terrace, placed within the ruins of a former annex in the northern corner of the park (2013). © Andreea MILEA

■ **Photo 9-10.** The ruins of the former servants' quarters, lined along the park's southern side (2013). © Andreea MILEA

■ **Foto 9-10.** Ruinele fostelor case pentru personal, alinate de-a lungul laturii sudice a parcului (2013). © Andreea MILEA

■ **Foto 11.** Latura sudică a parcului, cu turnul de apă în planul îndepărtat (2013). © Andreea MILEA

■ **Photo 11.** The park's southern side, with the water tower in the background (2013). © Andreea MILEA



■ **Foto 12.** Aleea de acces înspre castel, dinspre latura estică a parcului (2013).
© Andreea MILEA

■ **Photo 12.** The alley of access to the castle, from the eastern side of the park (2013). © Andreea MILEA



■ **Foto 13.** Aleea de acces în parc, pe latura estică a acestuia, și bustul lui Sándor KÁROLYI (2013). © Andreea MILEA

■ **Photo 13.** Alley of access to the park, on its eastern area, and the bust of Sándor KÁROLYI (2013). © Andreea MILEA

de-a lungul fațadei nordice a castelului, pe o alee din care se desprinde un pod pentru traversarea șanțului care înconjoară clădirea. Latura sudică a castelului permite legătura cu parcul, fără a putea fi totuși vorba de o intrare elaborată (foto 15). Pare mai degrabă un dispozitiv de ieșire din castel, decât unul de intrare clar afirmată. Astfel, între proeminențele volumetrice ale acestei laturi a castelului se desfășoară, la parter, o terasă accesibilă atât din castel cât și din parc, printr-un pod pentru traversarea șanțului care înconjoară clădirea. În mod contradictoriu față de importanța mică a acestei intrări, accesul spre terasă este dirijat în prezent, direct, axial, pornind de la poarta neogotică, din colțul sud-estic al parcului.

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each of the western and eastern sides, crossing the moat, each on a bridge; a third access on the northern side, at the point of contact between the castle and the garden. The configuration of the alleys in the geometric garden suggest the possibility to accede directly to the garden from the road connecting the settlement's two squares, along one of the median alleys of the garden. In the area of contact between the road and the alley, there is a larger surface, apparently without plantations, from where one could either advance to the garden or accede directly to the castle. There are no distinguishable design elements near the accesses.

As we have mentioned before, the geometric style garden is an annex of the castle; the access to the castle is not made through the garden, rather the access to the garden is made through the castle. By contrast, the landscaped style park is a frame for the castle, highlighting its image; the castle is surrounded by the park, and the access to the castle is made by crossing the park. Thus, along with the landscaped style park and also with the reconfiguration of the castle, alterations occur regarding the access. In its current shape, the park can be accessed on its public sides: from the northern corner (leading to the small park terrace, but also to the castle) (Photo 8), from the eastern side (leading to the entrances on the castles' eastern and northern elevations) (Photos 12, 13), from the southeast corner (leading to the entrance on the castle's southern elevation) (Photo 7), and from the southern side (leading to the manege and the ruins of the castle's former annexes) (Photo 11). The only prominently highlighted access is the one in the southeast corner, where the Neo-Gothic gate is preserved. Moreover, next to this access, the urban square was furnished with a fountain. No special design elements to accompany the access routes can be distinguished; the sparse disposition of the arborescent vegetation, as well as the mixing of the species, is relatively homogenous within the park's design.

The three entrances to the castle (on the eastern, northern and southern sides) are

hierarchically differentiated.²⁷ The main entrance, on the castle's eastern side, flanked by two towers, is marked by a portico for carriages at the ground floor, supporting a large uncovered terrace on the first floor (Photo 14). The access to this entrance is currently conducted, tangentially, along the castle's eastern elevation, on an alley that is much wider next to the entrance and which crosses the moat surrounding the castle. The double entrance on the castle's northern side has a more modest presence, being highlighted at the ground floor by two engaged columns, which support a narrow uncovered terrace on the first floor (Photo 15). The access to this entrance is at present conducted tangentially along the castle's northern elevation, on an alley from which emerges a bridge that crosses the moat surrounding the building. The castle's southern side permit the connection with the park, without being an elaborate entrance (Photo 15). It rather seems a device for exiting the castle than one of clearly stated entrance. Thus, between the volumetric projections on this side of the castle, a terrace unfolds at ground floor level, which can be accessed both from the castle and from the park, by a bridge that crosses the moat surrounding the building. Contradicting the lesser degree of importance of this entrance, the access to the terrace is conducted at present directly, axially, starting from the Neo-Gothic gate in the park's southeast corner.

Will be continued in the no. 4/2013 of the Transsylvania Nostra Journal.

²⁷ Given the difference in the castle building's orientation, perceptible when comparing the Josephine Map and recent town maps, and also in order to simplify the description of the castle, we decided to refer to the castle's main side, which houses the main entrance to the castle, as the eastern side (actually, it has a northeast orientation) and from here, as a consequence, all other sides of the castle received their conventional orientation: the northern side (actually northwestern), the western side (actually southwestern) and the southern side (actually southeastern).



■ Foto 14. Intrarea principală, pe fațada estică a castelului (2013). © Andreea MILEA
 ■ Photo 14. Main entrance, on the castle's eastern elevation (2013). © Andreea MILEA



■ Foto 15. Intrarea dublă, precedată de pod, pe fațada nordică a castelului (2013). © Andreea MILEA
 ■ Photo 15. Double entrance preceded by the bridge, on the castle's northern elevation (2013). © Andreea MILEA

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Intervenții contemporane în spațiul podului

INFLUENȚE ASUPRA ȘARPANTELOR AVÂND CARACTER ECLECTIC DIN TRANSILVANIA

■ **Rezumat:** Mediul construit este „o entitate vie, care nu încetează să se schimbe pe parcursul existenței.”[3] Supraviețuirea clădirilor istorice depinde într-o mare măsură de adăpostirea unor funcțiuni. Fie că sunt cele pentru care au fost inițial concepute, fie că e vorba despre reconversii funcționale, asistăm la o nevoie din ce în ce mai acută de adaptare la exigențele de confort contemporan. Prezentul articol se concentrează pe analiza comportării mecanice a șarpantelor având caracter eclectic din Transilvania, respectiv a implicațiilor pe care le poate avea o reconversie funcțională / spațială asupra acestor tipuri de structuri. Investițiile se vor efectua pe șarpante tipice, nealterate, deși în practică este posibil ca inginerul să întâlnească adesea particularități specifice de la caz la caz.

■ **Cuvinte cheie:** șarpante cu caracter eclectic, intervenții, refuncționalizări

Introducere

■ Intervențiile în spațiul podului² pot avea drept scop simpla îmbunătățire a confortului ambiental sau pot constitui operațiuni mai complexe de refuncționalizare, de realizare a unor diviziuni spațiale, respectiv de introducere a unor elemente de compartimentare, cum sunt pereții sau planșeele, urmărind în același timp asigurarea unui confort ambiental corespunzător. În funcție de situația existentă, de tipul și amploarea intervenției, pot apărea efecte nedorite asupra structurii șarpantei. În continuare este prezentată o analiză a celor trei tipuri de șarpante având caracter eclectic întâlnite în Transilvania, un studiu al comportării mecanice pentru cazul unor structuri originale, nealterate, cu investigații asupra eforturilor care apar în structurile tipice, a modului de transmitere a încărcărilor către reazeme, respectiv a modului în care anumite elemente sunt influențate de intervențiile necesare transformării spațiului podului.

Pentru fiecare structură se poate, desigur, realiza un studiu care să urmărească diferitele moduri de rezolvare structurală a noilor elemente introduse în spațiul podului, cum sunt planșeele sau tavanele³. Astfel, datorită prezenței corzilor la partea inferioară, respectiv a grinzișoarelor și lonjeroanelor, este necesar ca planșeul nou să se poziționeze peste

Contemporary Interventions in the Attic Space

INFLUENCES ON THE ECLECTIC ROOF STRUCTURES IN TRANSILVANIA

■ **Abstract:** The built environment is “a living entity that does not cease to change throughout its existence.”[3] The survival of historic buildings depends largely on their capacity to fulfil functions. Whether those for which they have been initially conceived, or discussing functional reconversions, we are witnessing an increasingly acute need for them to adapt to the demands of contemporary comfort. This article focuses on the analysis of the mechanical behaviour of Eclectic roof structures in Transylvania and on the implications a functional / spatial reconversion may have on these types of structures. The investigations will be conducted on typical, unaltered structures, although in practice it is often possible for the engineer to meet specific features, varying from case to case.

■ **Keywords:** Eclectic roof structures, interventions, refurbishment

Introduction

■ The interventions in the space of the attic² may aim for the mere improvement of the ambient comfort, or they may represent more complex refurbishment operations, of implementing certain spatial divisions, of introducing partitions, such as walls or slabs, aiming at the same time to ensure an appropriate environmental comfort. Depending on the existing situation, on the type and scale of the intervention, unwelcome effects on the roof structure may appear. The following is an analysis of the three types of Eclectic roof structures recorded in Transylvania, a study of the mechanical behaviour of original, unaltered structures, with studies on the efforts that appear in typical structures, on the loads path to the supports, respectively on the way in which certain elements are influenced by the interventions necessary for the transformation of the attic.

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² attic = the space between the roof and the upper slab of a building [2]

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² pod = spațiul dintre acoperiș și planșeul superior al unei clădiri [2]

³ tavan = structură purtată care asigură închiderea la partea superioară a unei încăperi

Of course, a study that would discuss the various structural solutions of the newly introduced elements of the attic's space, such as slabs or ceilings³, could be conducted on each structure. Thus, due to the presence of the tie-beams at the inner side, of trimmers and header beams, it is necessary that the slab be positioned above them. The solutions may vary from case to case, depending on the constraints posed by the existing structure. There is the option of fully discharging the new slab directly on the tie-beams, of the partial discharge on the tie-beams and walls, or having as supports only the walls on the building's contour. If there is a previous slab, based on its rigidity, it is possible in some cases for the new slab to have intermediary supports.

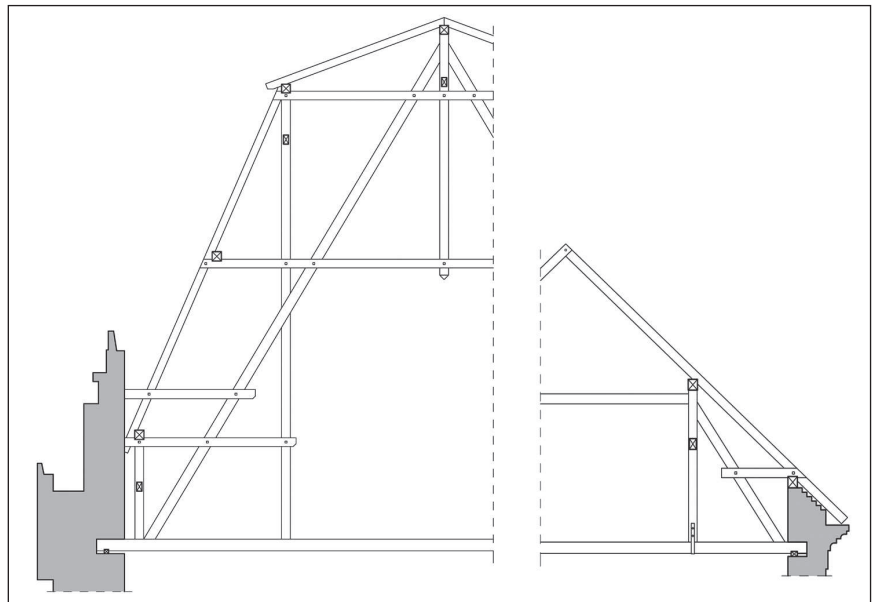
Another important problem is the construction of ceilings (horizontal or slanted). Certain structural elements (such as the tongs or the straining beams) may dictate the height of the future spaces, but they can remain exposed. There are situations when, for the above-mentioned reason, the attic's refunctionalisation becomes impossible without major interventions on the existing structure.

A steep pitch of the rafters or a great height of the attic may lead to the idea of designing new spaces on several levels. The placement of the new slabs may sometimes be considered better to be implemented directly on the upper side of the tongs, but the structural implications must be carefully studied.

Lighting is extremely important in such a space. It is desirable that the new windows be placed between the rafters, without sectioning them.

A situation that should be mentioned is the one presented in Figure 1. It is possible, in many situations, for the specialist to find a type of solution for the upraised eaves area. This represents an advantage, enabling the elimination of the "dead" space that results most times at the extremities.

The current article aims for an analysis of the worst case, the situation where a new slab must be placed directly above the tie-beams of the main trusses. For this purpose, four examples of roof structures were chosen, belonging to secular and ecclesiastic buildings, for which there was no real desire for refurbishment. A survey of the roof structure was conducted in advance, which was then entered in a digital format, forming a spatial model. The modelling of historic structures using a structural calculation program may imply certain supplementary difficulties, because they present a series of unknown factors, such as – for wooden structures – the relative stiffness of the elements or joints. Obtaining conclusive results depends on the way different constructive details are interpreted (the characteristics of the supports, the areas of contact with possible gables) and of the model's degree of simplification [10]. For the study in this article, the structural modelling was conducted in a specialised computational program [1], the analysis being carried on in the elastic domain, using the finite element method. Generally, the joints were



■ Fig. 1. Șarpante având caracter eclectic. Ferme principale. Zonă de streășină cu supraînălțare.
 © Adrian TUDOREANU (stânga) și UTILITAS (dreapta)

■ Figure 1. Eclectic roof structures. Main trusses. Raised eaves area. © Adrian TUDOREANU (left) and UTILITAS (right)

acestea. Soluțiile pot diferi de la caz la caz, în funcție de constrângerile pe care le oferă structura existentă. Există varianta descărcării în totalitate a noului planșeu direct pe corzi, a descărcării parțiale pe corzi și pe pereți, sau având drept reazeme doar pereții de pe conturul clădirii. În cazul existenței unui planșeu realizat anterior, în funcție de rigiditatea acestuia, este posibil ca în unele cazuri planșeul nou să poată avea și alte reazeme intermediare.

O altă problemă importantă o constituie realizarea tavanelor (orizontale sau înclinate). Anumite elemente structurale (cum sunt cleștii sau anetretoazele) pot dicta gabaritul pe înălțime a viitoarelor spații, însă acestea pot să rămână și aparente. Există situații în care, din motivul enunțat mai sus, refuncționalizarea spațiului podului devine imposibilă fără intervenții majore asupra structurii existente.

O pantă accentuată a căpriorilor, respectiv o înălțime mare a podului pot conduce la ideea realizării unor spații noi pe mai multe niveluri. Amplasarea noilor planșee ar putea fi uneori considerat oportun a se face direct la partea superioară a cleștilor, însă implicațiile structurale trebuie studiate cu atenție.

Problema iluminatului este extrem de importantă într-un astfel de spațiu. Este de dorit ca noile ferestre să fie amplasate între căpriori, fără a provoca secționarea acestora.

O situație care ar trebui amintită este cea prezentată în figura 1. Este posibil ca în nenumărate situații, specialistul să întâlnească un tip de rezolvare a zonei de streășină cu supraînălțare. Aceasta reprezintă un avantaj, fiind posibilă astfel eliminarea spațiului „mort” care rezultă de cele mai multe ori la extremități.

Prezentul articol își propune o analiză a cazului celui mai defavorabil, respectiv situația amplasării unui planșeu nou direct peste corzile fermei principale. În acest scop s-au ales patru exemple de șarpante aparținând unor clădiri laice și ecleziastice, pentru care nu a existat în realitate dorința de refuncționalizare. S-a efectuat în prealabil un relevu al structurii de acoperiș, care s-a introdus apoi în format digital, alcătuindu-se un model spațial. Modelarea structurilor istorice într-un program de calcul structural poate implica anumite dificultăți suplimentare, deoarece acestea prezintă o serie de factori necunoscuți, cum sunt – în cazul

³ ceiling = non-bearing structure that ensures the closure at the upper part of a room

structurilor din lemn – rigiditatea relativă a elementelor sau a nodurilor. Obținerea unor rezultate concludente depinde de modul de interpretare a diverselor detalii constructive (caracteristicile reazemelor, zonele de contact cu posibilele frontoane) și de gradul de simplificare a modelului [10]. Pentru studiul din prezentul articol, modelarea structurilor s-a făcut într-un program specializat de calcul [1], analiza fiind urmărită în domeniul elastic, utilizând metoda elementului finit. În general, nodurile s-au considerat articulate, însă în unele zone s-au introdus semiarticulații, fiind luat în considerare modul de realizare a nodurilor prin diverse tipuri de îmbinări dulgherești.

Evaluarea încărcărilor s-a făcut conform Eurocode 1 [4]. Pentru varianta realizării de intervenții noi, s-au luat în considerare valori normate ale încărcării permanente din noul planșeu⁴ de 100 daN/mp, de 35 daN/mp pentru tavane⁵ (incluzând și termoizolația) și 250 daN/mp pentru încărcările utile. S-a urmărit evoluția eforturilor în elemente, o evaluare a acestora conform Eurocode 5 [5], precum și stabilirea gradului de utilizare pentru fiecare element.

Șarpante având caracter eclectic în Transilvania

■ Șarpantele având caracter eclectic au presupus revenirea la un sistem structural care își are originea în șarpantele de coastă, introduse în zona mediteraneană încă din Antichitate de către romani. După Gotic și Baroc – perioade în care structurile de acoperiș au solicitat un consum mare de material, evoluția către varianta eclectică apare oarecum firesc, aceasta fiind mai economică. Din punct de vedere structural, acestea lucrează transmițând acțiunile prin intermediul panelor, spre deosebire de variantele anterioare, care transmiteau încărcările de la căpriori prin traverse. Sunt caracterizate printr-o succesiune de ferme principale și secundare dispuse pe direcție transversală, combinate cu unul sau mai multe sisteme de rigidizare longitudinală.

În Transilvania s-au utilizat pe scară largă din secolul al XIX-lea până în perioada interbelică, fiind utilizate atât în clădiri laice, cât și eclesiastice. În funcție de modul de preluare și transmitere a încărcărilor, putem deosebi trei grupe principale de șarpante având caracter eclectic: 1. Structuri având dispozitive de tensionare – suspendare, 2. Structuri cu unul sau mai multe dispozitive de suspendare, 3. Structuri având popi înclinați. [9]

Șarpante cu dispozitiv de tensionare - suspendare

Această categorie de șarpante se caracterizează prin faptul că transmiterea încărcărilor de la pane către reazeme se face prin intermediul arbaletrierilor comprimați aparținând fermelor principale. Acest lucru este posibil datorită antretoazei – element orizontal comprimat – care tensionează arbaletrierii. Cele două bare de agățare sunt elemente întinse, cu rolul de a susține greutatea corzii (fig. 3). De la caz la caz, în funcție de lungimea și de rigiditatea acesteia, este posibil ca barele de agățare să aibă rol de popi, descărcând pe coardă și fiind solicitate la compresiune. Căpriorii sunt elemente înclinate comprimate excentric, iar corzile sunt solicitate preponderent la întindere excentrică.

4 planșeul s-a considerat alcătuit din grinzi din lemn de brad (clasa C24), cu o secțiune de 15x22 cm, dispuse la 75-80 cm distanță interax, tavan din gipscarton (plăci 12,5 mm) pe schelet metalic, fonoizolație vată minerală (10 cm grosime) cu densitatea 50 kg/mc, podină suport fonoizolație (scândura lemn brad 18 mm), dușumea oarbă dulapi lemn brad (48 mm), pardoseală parchet lemn masiv stejar (22 mm) având densitatea 850 kg/mc

5 tavane realizate din gipscarton (plăci 12,5 mm) pe schelet metalic, termoizolate cu vată minerală (20 cm grosime) având densitatea 50 kg/mc

considered as hinges, but in some areas semi-hinges, taking into account the various types of carpenter's joints used.

The evaluation of loads was conducted in accordance with Eurocode 1 [4]. For the new interventions solution, characteristic values for dead loads of 100 daN/m² for the new slab⁴, of 35 daN/m² for the ceilings⁵ (including thermal insulation), and of 250 daN/m² for the live loads were taken into account. The evolution of the stresses in the elements was aimed at, their evaluation according to Eurocode 5 [5], as well as establishing the degree of usage for each element.

Eclectic roof structures in Transylvania

■ The Eclectic roof structures meant the return to a structural system with its origin in coastal roof structures, introduced in the Mediterranean area since the Antiquity, by the Romans. After the Gothic and Baroque periods when roof structures necessitated a large material consumption, the evolution towards the Eclectic solution seems somewhat natural, being more economical. From a structural point of view, they work by transmitting the loads through purlins, unlike the previous solutions, which transmitted the loads from rafters through collar beams. They are characterised by a succession of transversally placed main and secondary trusses, combined with one or more longitudinal bracing systems.

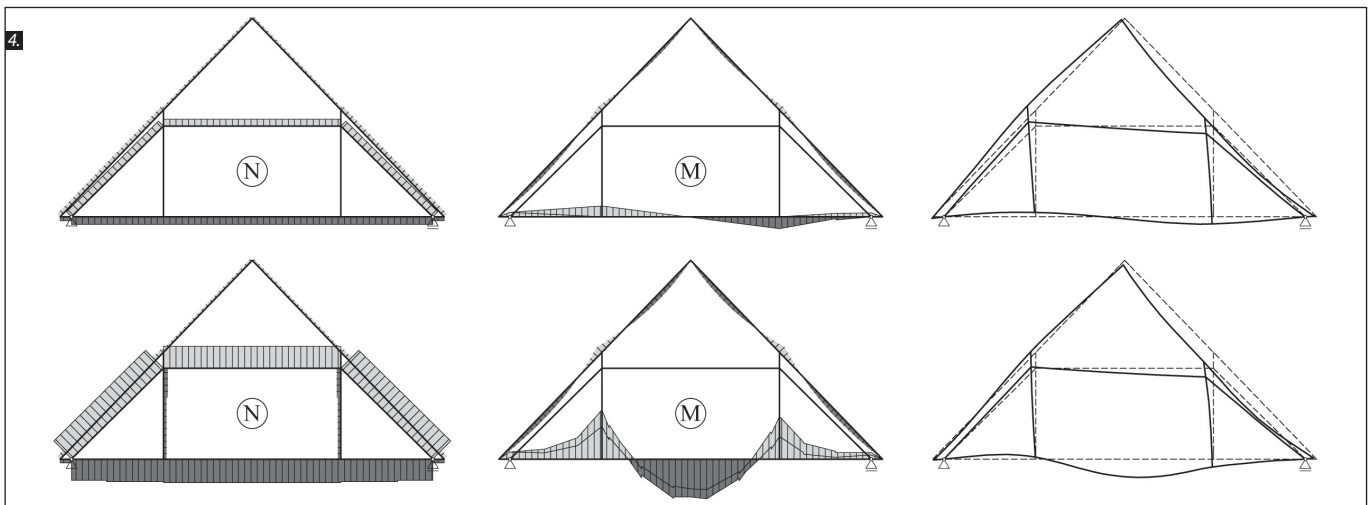
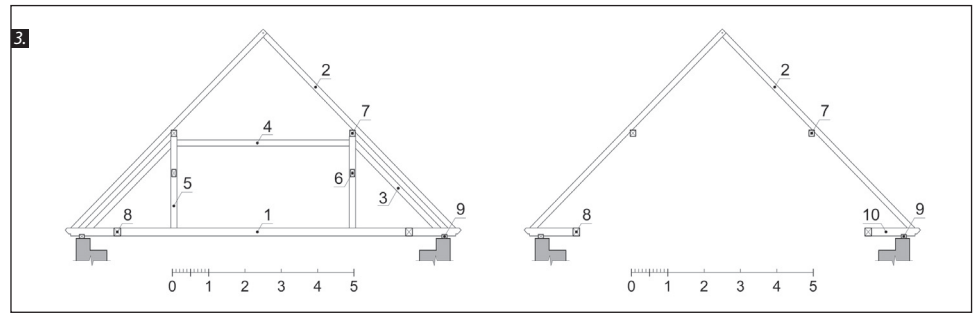
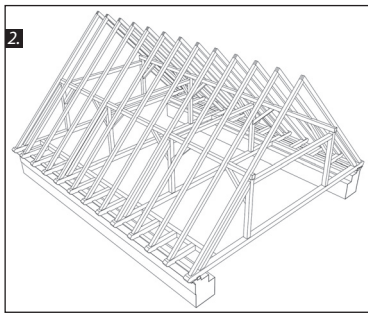
In Transylvania, they were widely used from the 19th century until the interwar period, being used both in secular and ecclesiastical buildings. Based on the way the loads are carried and transmitted, we can distinguish three main groups of Eclectic roof structures: 1. Structures with straining-hanging trusses, 2. Structures with one or more hanging trusses, 3. Structures with angled posts. [9]

Roof structures with straining-hanging trusses

This roof structure category is characterised by the fact that the loads are carried from the purlins to the supports through the compressed compound rafters belonging to the main trusses. This is possible due to the straining beam – a compressed horizontal element – that strains the compound rafters. The two queen posts are strained elements, with the purpose of sustaining the tie-beam's load (Figure 3). From case to case, based on its length and rigidity, it is possible for the queen posts in tension to act as struts, discharging on the tie-beam and thus being under compressive stress. The rafters are slanted elements eccentric

4 The slab was considered as built from fir beams (class C24), with a 15x22 cm cross section, placed at a distance of 75-80 cm, gypsum ceiling (12.5 mm boards) on a metallic frame, mineral wool sound insulation (10 cm thick) with a density of 50 kg/m³, support for the sound insulation (fir board, 18 mm), counter floor made of fir boards (10 cm thick), oak parquet floor (22 mm), with a density of 850 kg/m³

5 gypsum ceiling (12.5 mm boards) on a metallic frame, mineral wool thermal insulation (20 cm thick) with a density of 50 kg/m³



■ **Fig. 2.** Șarpantă având caracter eclectic cu dispozitiv de tensionare - suspendare. Reprezentare tridimensională. © Adrian TUDOREANU
 ■ **Figure 2.** Eclectic roof structure with straining-hanging truss. Three-dimensional representation. © Adrian TUDOREANU
 ■ **Fig. 3.** Șarpantă având caracter eclectic cu dispozitiv de tensionare - suspendare. a) fermă principală, b) fermă secundară (1 – coardă, 2 – căpriori, 3 – arbaletrieri, 4 – antretoază, 5 – bară de agățare, 6 – contrafișă, 7 – pană, 8 – lonjeron, 9 – cosoroabă, 10 – grinzișoară). © Adrian TUDOREANU
 ■ **Figure 3.** Eclectic roof structure with straining-hanging truss. a) Main truss, b) Secondary truss. (1 – tie-beam, 2 – rafters, 3 – compound rafter, 4 – straining beam, 5 – queen post in tension, 6 – counterbrace, 7 – purlin, 8 – header beam, 9 – wall plate, 10 – trimmer) © Adrian TUDOREANU
 ■ **Fig. 4.** Eforturi axiale (a), momente încovoietoare (b) și deformații (c) (înainte și după intervenții) © Adrian TUDOREANU
 ■ **Figure 4.** Axial stresses (a), bending moments (b) and deformations (c) (before and after the intervention) © Adrian TUDOREANU

cally compressed, and the tie-beams are mostly under eccentric straining.

Figure 4 presents the diagram of the axial stresses (a), of bending moments (b) and the deformation of the structure (c), initially (without interventions) and after the introduction of supplementary loads on a new slab, respectively on the rafters.

When introducing an intermediary slab that rests on the main trusses' tie-beams, the stresses in the bars increase sensibly. Thus, in the tie-beam the bending moment increases by 300%, and the shearing stress by 350%. In the straining beam, the value of the axial stress increases by 350%, the compound rafters are under a compressive stress three times larger, and in the queen posts, the axial stress has a value higher by 350%. The axial force in the rafters increases by 50%. Therefore, question marks appear in terms of meeting the resistance conditions for such elements as the posts in tension or the tie-beam. Moreover, the joint between the tie-beam and the king post in tension, which is usually a tenon joint (with or without a wooden peg, or with a metal flat-bar), will need supplementary consolidation.

There are situations when the presence of a slab below the tie-beams (supported by them

Figura 4 prezintă diagrama eforturilor axiale (a), a momentelor încovoietoare (b) și deformarea structurii (c), pentru cazul inițial (fără intervenții), respectiv după introducerea unor încărcări suplimentare pe un planșeu nou și pe căpriori.

În condițiile introducerii unui planșeu intermediar care reazemă pe corzile fermelor principale, eforturile din bare cresc simțitor. Astfel, în coardă momentul încovoietor se mărește cu 300%, forța tăietoare cu 350%. În antretoază, valoarea efortului axial crește cu 350%, arbaletrierii sunt supuși la o compresiune de trei ori mai mare, iar în barele de agățare, efortul axial are o valoare majorată cu 350%. Efortul axial în căpriori crește cu 50%. În consecință, apar semne de întrebare în ceea ce privește satisfacerea condițiilor de rezistență la elemente ca barele de agățare sau coardă. În plus, nodul coardă – bară de agățare, nod care de obicei este realizat prin cepuire (cu sau fără cui din lemn, eventual cu platbandă metalică) va necesita o consolidare suplimentară.

Există situații în care prezența unui planșeu sub nivelul corzilor (susținut sau nu de acestea) poate constitui un reazem suplimentar pentru noul planșeu (aceasta dacă rigiditatea o permite).

Tabelul 1 prezintă gradul de utilizare⁶ a secțiunii pentru fiecare element, în urma introducerii planșeului peste corzi, respectiv a tavanelor și a sistemelor termoizolante.

⁶ se referă la gradul de utilizare exprimat procentual, prin raportarea la capacitatea portantă

■ Tabelul 1. Gradul de utilizare a secțiunii

■ Table 1. The degree of use of the cross section

Element	Secțiune [cm]	Grad de utilizare	
		Înainte de intervenții	După intervenții
Element	Cross section [cm]	Degree of use	
		Before interventions	After interventions
Coardă	20x20	54%	243%
Tie-beam			
Căpriori	12x14	45%	51%
Rafters			
Arbaletrieri	15x15	25%	67%
Compound rafters			
Antretoază	14x16	13%	51%
Straining beam			
Bare de agățare	16x16	30%	104%
Queen posts in tension			

Șarpante cu dispozitiv de suspendare

Această categorie de șarpante se caracterizează prin faptul că transmiterea încărcărilor de la pane se face prin intermediul cleștilor forfecați și a arbaletrierilor comprimați aparținând fermelor principale (fig. 6). În condițiile existenței doar a acțiunilor gravitaționale, bara de agățare este un element solicitat la efort axial (întindere la partea inferioară, compresiune pe zona situată deasupra arbaletrierilor). În cazul introducerii de încărcări negravitaționale, existența unor semiarticulații în nodurile clești - arbaletrieri, respectiv clești - bară de agățare pot conduce la apariția unor momente încovoietoare în elemente, cu atât mai mult cu cât existența unor buloane metalice favorizează transmiterea încărcărilor de la clești către elementele înclinate sau verticale.

Tabelul 2 prezintă gradul de utilizare a secțiunii pentru fiecare element, în urma introducerii planșeului peste corzi, respectiv a tavanelor și a sistemelor termoizolante.

Tot din această categorie fac parte și șarpantele având caracter eclectic cu trei dispozitive de suspendare, două fiind dispuse simetric față de axul de simetrie (fig. 8). Transmiterea încărcărilor se face tot prin clești forfecați și arbaletrieri comprimați.

■ Tabelul 2. Gradul de utilizare a secțiunii

■ Table 2. The degree of use of the cross section

Element	Secțiune [cm]	Grad de utilizare	
		Înainte de intervenții	După intervenții
Element	Cross section [cm]	Degree of use	
		Before interventions	After interventions
Coardă	18x20	36%	403%
Tie-beam			
Căpriori	15x18	48%	53%
Rafters			
Arbaletrieri	16x18	61%	76%
Compound rafters			
Bară de agățare	16x18	85%	160%
King post in tension			
Clești inferiori	2x10x17	31%	39%
Lower tongs			
Clești superiori	2x8x20	40%	50%
Upper tongs			

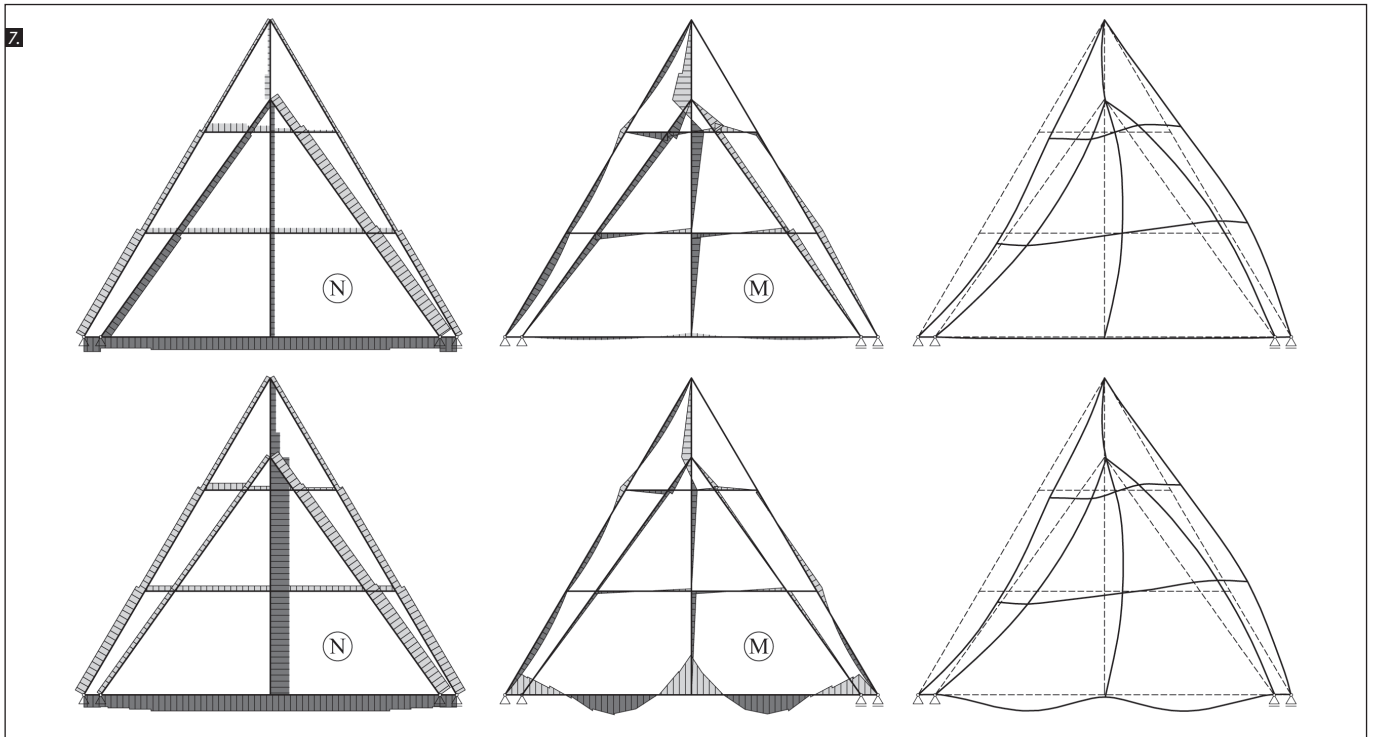
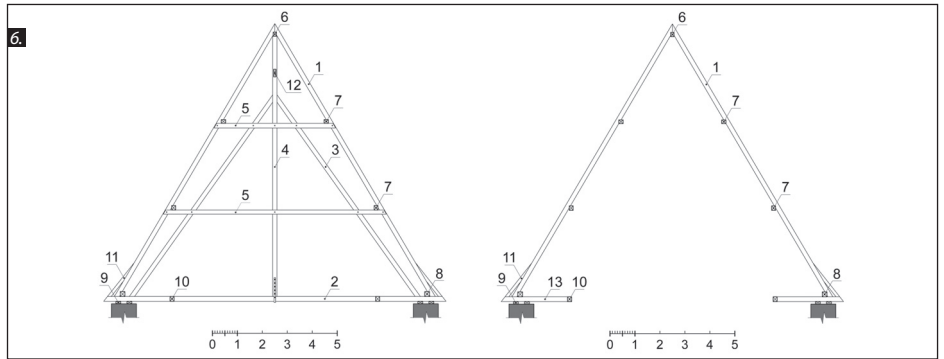
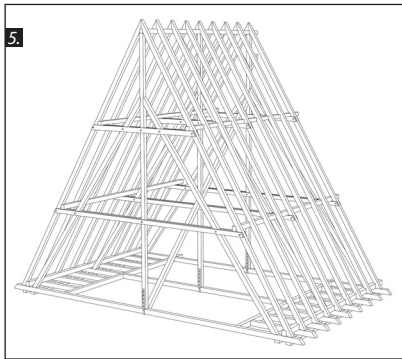
or not) may constitute a supplementary support for the new slab (if its rigidity allows it).

Table 1 presents the degree of use⁶ of the cross section for each element, following the introduction of the slab over the tie-beams, respectively of the ceilings and thermal insulation systems.

Roof structures with a hanging truss

This category of roof structures is characterised by the fact that loads are carried from the purlins through sheared tongs and compressed compound rafters belonging to the main trusses (Figure 6). When only gravitational loads exist, the king post in tension is an element under axial stress (tension on the inferior side, compression in the area above the compound rafters). When non-gravitational loads are introduced, the existence of certain semi-hinges in the joints between the tongs and com-

⁶ The degree of use expressed as a percentage, relative to the load-bearing capacity



■ Fig. 5. Șarpantă având caracter eclectic cu dispozitiv de suspendare. Reprezentare tridimensională. © UTILITAS

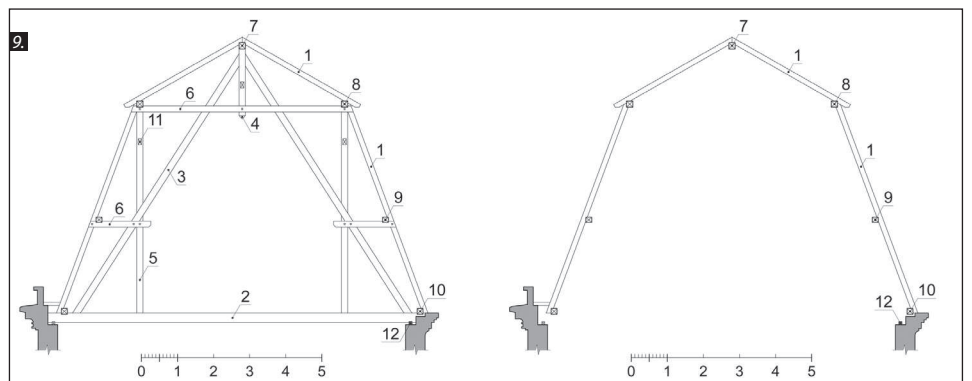
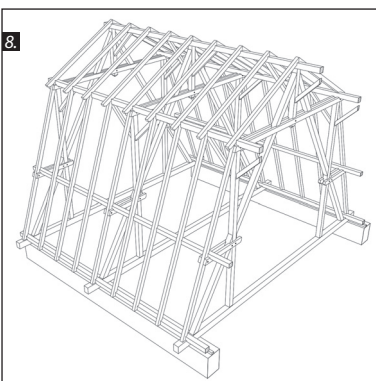
■ Figure 5. Eclectic roof structure with a hanging truss. Three-dimensional representation. © UTILITAS

■ Fig. 6. Șarpantă având caracter eclectic cu dispozitiv de suspendare. a) fermă principală, b) fermă secundară (1 – căpriori, 2 – coardă, 3 – arbaletrieri, 4 – bară de agățare, 5 – clești, 6 – pană de coamă, 7 – pane intermediare, 8 – pană de streășină, 9 – cosoroabe, 10 – lonjeron, 11 – aruncător, 12 – contrafișe, 13 – grinzișoară). © UTILITAS

■ Figure 6. Eclectic roof structure with a hanging truss. a) Main truss, b) Secondary truss. (1 – rafters, 2 – tie-beam, 3 – compound rafters, 4 – king post in tension, 5 – tongs, 6 – ridge purlin, 7 – intermediary purlins, 8 – eaves purlin, 9 – wall plate, 10 – header beam, 11 – sprocket, 12 – counterbrace, 13 – trimmer) © UTILITAS

■ Fig. 7. Eforturi axiale (a), momente încovoietoare (b) și deformații (c) (înainte și după intervenții) © Adrian TUDOREANU

■ Figure 7. Axial stresses (a), bending moments (b) and deformations (c) (before and after interventions) © Adrian TUDOREANU



■ Fig. 8. Șarpantă având caracter eclectic cu dispozitive de suspendare. Reprezentare tridimensională. © Adrian TUDOREANU

■ Figure 8. Eclectic roof structure with hanging trusses. Three-dimensional representation

■ Fig. 9. Șarpantă având caracter eclectic cu dispozitive de suspendare. a) fermă principală, b) fermă secundară. (1 – căpriori, 2 – coardă, 3 – arbaletrieri, 4 – bară de agățare central, 5 – bară de agățare lateral, 6 – clești, 7 – pană de coamă, 8 – pană de muchie, 9 – pană intermediară, 10 – pană de streășină, 11 – contrafișă, 12 – cosoroabă) © Adrian TUDOREANU

■ Figure 9. Eclectic roof structure with hanging trusses. a) Main truss, b) Secondary truss. (1 – rafters, 2 – tie-beam, 3 – compound rafters, 4 – king post in tension, 5 – queen post in tension, 6 – tongs, 7 – ridge purlin, 8 – edge purlin, 9 – intermediary purlin, 10 – eaves purlin, 11 – counterbrace, 12 – wall plate) © Adrian TUDOREANU

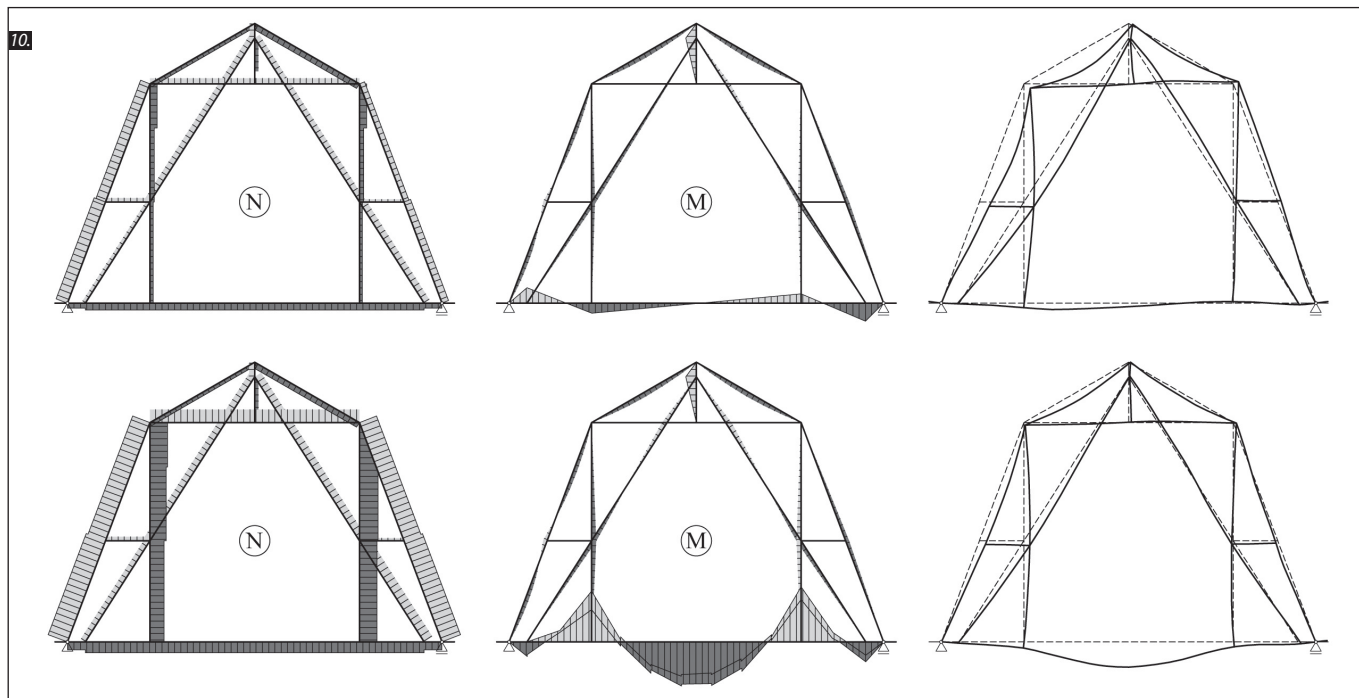


Fig. 10. Eforturi axiale (a), momente încovoietoare (b) și deformații (c) (înainte și după intervenții) © Adrian TUDOREANU

Figure 10. Axial stresses (a), bending moments (b), and deformations (c) (before and after the interventions) © Adrian TUDOREANU

Tabelul 3. Gradul de utilizare a secțiunii

Table 3. The degree of use of the cross section

Element	Secțiune [cm]	Grad de utilizare	
		Înainte de intervenții	După intervenții
Element	Cross section [cm]	Degree of use	
		Before interventions	After interventions
Coardă	18x24	58%	215%
Tie-beam			
Căpriori	10x13	53%	145%
Rafters			
Arbaletrieri	16x17	23%	30%
Compound rafters			
Bare de agățare laterale	16x16	30%	95%
Queen posts in tension			
Bară de agățare centrală	16x16	70%	75%
King post in tension			
Clești inferiori	2x8x15	10%	21%
Lower tongs			
Clești superiori	2x8x15	10%	35%
Upper tongs			

Tabelul 3 prezintă gradul de utilizare a secțiunii pentru fiecare element, în urma introducerii planșeului peste corzi, respectiv a tavanelor și a sistemelor termoizolante.

Șarpante având popi înclinați

Această categorie de șarpante se caracterizează prin faptul că transmiterea încărcărilor de la căpriori se face prin intermediul popilor înclinați comprimați și a barei de agățare întinse (fig. 12).

Tabelul 4 prezintă gradul de utilizare a secțiunii pentru fiecare element, în urma introducerii planșeului peste corzi, respectiv a tavanelor și a sistemelor termoizolante.

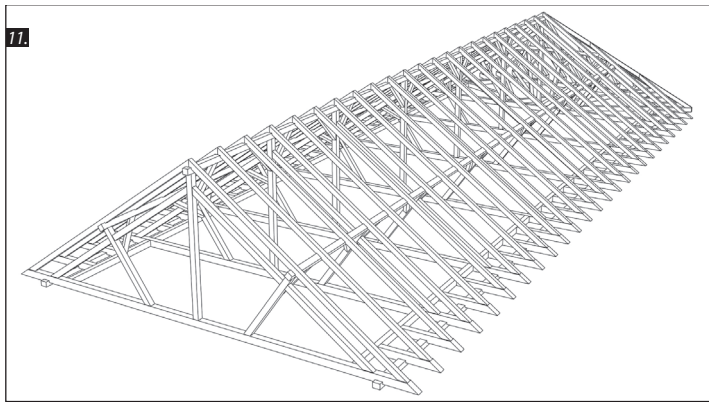
Compound rafters and between the tongs and the king post may lead to the appearance of bending moments in the elements, more so as the existence of metal bolts favours loads being carried from the tongs to the slanted or vertical elements.

Table 2 presents the degree of use of the cross section for each element, following the introduction of the slab over the tie-beams, respectively of the ceilings and thermal insulation systems.

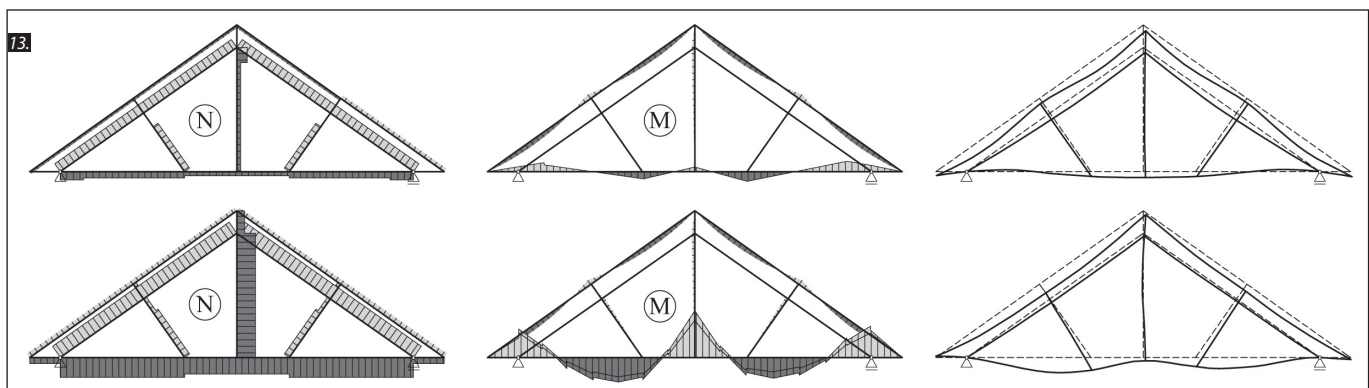
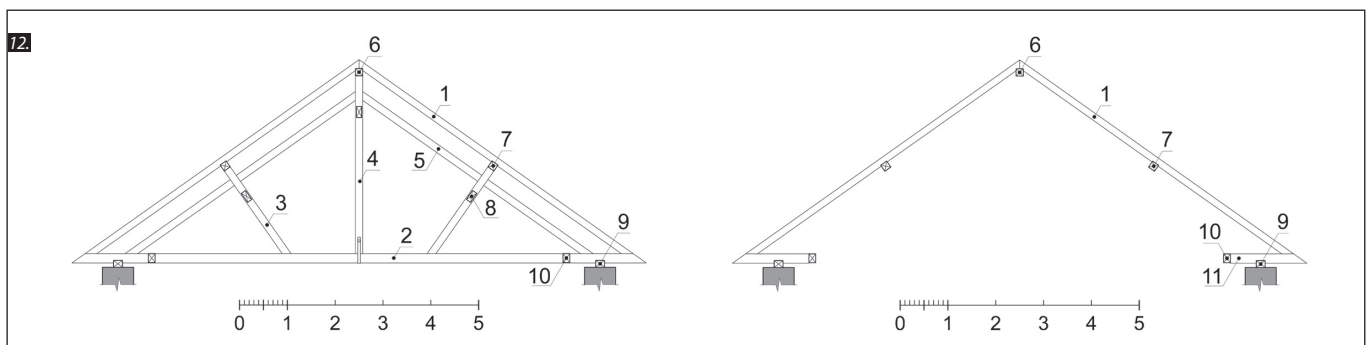
The Eclectic roof structures with three hanging trusses, two being placed symmetrically from the symmetry axis, are part of

■ Tabelul 4. Gradul de utilizare a secțiunii
 ■ Table 4. The degree of use of the cross section

Element	Secțiune [cm]	Grad de utilizare	
		Înainte de intervenții	După intervenții
Element	Cross section [cm]	Degree of use	
		Before interventions	After interventions
Coardă	15x18	90%	195%
Tie-beam			
Căpriori	11x13	61%	62%
Rafters			
Arbaletrieri	12x14	40%	50%
Compound rafters			
Bară de agățare	14x14	78%	100%
King post in tension			
Popi înclinați	14x14	33%	40%
Angled posts			



■ Fig. 11. Șarpantă având caracter eclectic cu popi înclinați.
 Reprezentare tridimensională. © Adrian TUDOREANU
 ■ Figure 11. Eclectic roof structure with angled posts. Three-dimensional representation. © Adrian TUDOREANU



■ Fig. 12. Șarpantă având caracter eclectic cu popi înclinați. a) fermă principală, b) fermă secundară. (1 – căpriori, 2 – coardă, 3 – popi, 4 – bară de agățare, 5 – arbaletrieri, 6 – pană de coamă, 7 – pană intermediară, 8 – contrafișă, 9 – cosoroabă, 10 – lonjeron, 11 – grinzișoară) © Adrian TUDOREANU
 ■ Figure 12. Eclectic roof structure with angled posts. a) Main truss, b) Secondary truss (1 – rafters, 2 – tie-beam, 3 – posts, 4 – king post in tension, 5 – compound rafters, 6 – ridge purlin, 7 – intermediary purlin, 8 – counterbrace, 9 – wall plate, 10 – header beam, 11 – trimmer) © Adrian TUDOREANU
 ■ Fig. 13. Eforturi axiale (a), momente încovoietoare (b) și deformații (c) (înainte și după intervenții) © Adrian TUDOREANU
 ■ Figure 13. Axial stresses (a), bending moments (b) and deformation (c) (before and after the interventions) © Adrian TUDOREANU

Concluzie

■ Nevoia de adaptare a clădirilor istorice la exigențele de confort contemporan constituie un fenomen evolutiv; conceptul de „confort” implică o permanentă asociere de noi niveluri de performanță, o creștere a exigențelor care trebuie însă corelată cu potențialul clădirii [6]. Intervențiile trebuie să fie compatibile cu fondul existent, fără a provoca distrugerii ale materialului valoros. Dorința de a interveni în spațiul podului trebuie să fie temperată. Problemele care se pot ivi sunt din cele mai complexe, iar fără o analiză atentă a tuturor factorilor implicați, intervenția poate cauza pierderi irecuperabile în ceea ce privește patrimoniul.

Din punct de vedere structural, introducerea unui planșeu nou care descarcă direct pe corzi conduce la depășirea capacității portante a acestor elemente; în plus, pot fi afectate considerabil și barele de agățare sau chiar căpriorii. Problema realizării nodurilor este extrem de importantă, acestea nepermițând preluarea noilor forțe tăietoare care apar în îmbinări.

Desigur, pe lângă problemele structurale, mai apar o multitudine de alți factori care ar trebui să influențeze luarea unei decizii în ceea ce privește o eventuală intervenție. Consultarea normativelor conexe (cum este de exemplu *Normativul pentru proiectarea mansardelor la clădirile de locuit* [3]) ar trebui să constituie un prim pas într-un astfel de demers. Însa nu trebuie uitat faptul că o clădire istorică are de cele mai multe ori un caracter de excepție, astfel că specialiștii trebuie să fie pregătiți să formuleze judecăți proprii [7]. Respectul față de valorile trecutului și prezervarea acestora trebuie să reprezinte principalul crez al celor implicați.

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the same category (Figure 8). Gravitational loads are also carried through sheared tongs and compressed compound rafters.

Table 3 presents the degree of use of the cross section for each element, following the introduction of the slab over the tie-beams, respectively of the ceilings and thermal insulation systems.

Roof structures with angled posts

This category of roof structures is characterised by the fact that loads are carried from the rafters is done through the compresses angled posts and the tensed king post (Figure 12).

Table 4 presents the degree of use of the cross section for each element, following the introduction of the slab over the tie-beams, respectively of the ceilings and thermal insulation systems.

Conclusion

■ The need to adapt historic buildings to the demands of contemporary comfort represents an evolutionary phenomenon; the concept of “comfort” implies a permanent association with new performance levels, an increase in demands that has to be correlated with the building’s potential [6]. The interventions must be compatible with the existing fund, without causing the destruction of the valuable material. The wish to intervene in the space of the attic must be tempered. The problems that may arise are most complex, and without a careful analysis of all factors involved, the intervention may cause irreversible losses regarding the heritage.

From a structural point of view, the introduction of a new slab that unloads directly on the tie-beams leads to exceeding the load-bearing capacity of these elements; moreover, the king/queen posts or even the rafters may be considerably affected. The issue of the joints is extremely important, because they do not allow the carrying of the new shear forces that appear.

Of course, besides structural problems, there appear a multitude of other factors that should influence the decision regarding the eventual intervention. The consultation of the related regulations (such as the *Normative for the design of attics in residential buildings* [3]) should be the first step in such an endeavour. However, we must not forget the fact that a historic building usually has an exceptional character, thus the specialists will have to be prepared to formulate their own judgement [7]. The respect for the values of the past and their preservation should represent the main creed of those involved.