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Multi-story Attached Houses in Zagreb between 1850 and 1927
Original Scientific Paper
UDC 728.1 (497.5 Zagreb)“18/19”
Fig. 1. a) Bronze model of the Lower Town area, displayed at the corner of Bakaceva and Cesareva St, in the vicinity of Ban Josip Jelacic Sq, Zagreb; b) Attached buildings of Lower Town area built from 1848 to 1918

Sl. 1. a) Brončani model Donjega grada postavljen na uglu Bakaceve i Cesareve ulice, u blizini Trga bana Josipa Jelacica, Zagreb; b) Ugrađene zgrade na području Donjega grada izgrađene u razdoblju između 1848. i 1918.
Multi-story Attached Houses in Zagreb between 1850 and 1927

Višekatne ugrađene kuće u Zagrebu između 1850. i 1927.

Three-and-more story attached houses in Zagreb emerged sequentially after the unification of Gradec and Kaptol in 1850, according to the first modern Building code after its enforcement in 1857 and according to the new Building renewal and improvement plan of 1888 after the devastating earthquake in 1880. From 1892 to the beginning of the First World War a few new types of attached houses finally shaped the Lower Town, an area of rectangular building blocks between the railway lines, planned barracks areas and the northern slopes of the city.

Dvokatne i višekatne ugrađene kuće pojavile su se u Zagrebu odmah nakon ujedinjenja Kaptola i Gradeca 1850. godine, prema novom Građevinskom redu nakon njegova stupanja na snagu 1857. godine, odnosno prema planu obnove starih i gradnje novih zgrada iz 1888. poslije razornog potresa 1880. godine. Između 1892. i početka Prvoga svjetskog rata nekoliko je novih tipova ugrađenih kuća konačno uobličilo Donji grad, područje pravokutnih građevnih blokova između željezničkih pruga, planiranih sklopoa kasarni i sjevernih gradskih obronaka.
INTRODUCTION

Virtually rectangular area of building blocks in the center of Zagreb, colloquially known as the Lower Town (Fig. 1), has recently been confirmed as a balanced ensemble worth admiring. However, typologies of contained buildings remained somewhat obscure, in spite of a few excellent research projects carried out in this century. To span this gap, a research project was undertaken in the City Archives in Zagreb, where almost all the legal documentation concerning private building entrepreneurship has been preserved.

Average Continental European town house is analogous to the English terraced house in terms of its position and the relative orientation of its circumferential walls. They both have a street façade (front), a yard façade, and two sides adjacent to the neighboring houses. The important difference is the shape of the corresponding city block: whereas English city blocks are rows of houses closed with two opposite semidetached members, their Continental European counterparts have a more rectangular shape, flanked on edges with corner houses having two fronts in crossed streets. Therefore the term terraced house cannot be used when referring to a common Continental European town house. Instead, the term attached house is appropriate. It is linguistically coherent with a respective term semidetached house, where for the third member (a detached house) the synonym – a free standing house is in frequent use today. Consequently, in this article the term attached house will be used for a common Continental European town house and subsequently for its Zagreb derivative in the second half of 19th century. For consistency reasons the American definition of a story and its way of counting is used hereinafter.

LITERATURE

Contemporary nineteenth century literature on the subject started to flourish in professional publications, mostly with articles where particular architects and builders shared their views with other colleagues. In the English speaking world, dictionaries or thesauruses on the subject were issued and reissued frequently. A prominent one was A Dictionary of Architecture and Building: Biographical, Historical and Descriptive, a three volume set edited by Russell Sturgis. Articles on apartment house and tenement house were written by George Hill.

Contemporaneous German approach differentiated in making more conversant monographs, leveled by proficiency of the intended public. Ludwig Klasen’s so called Grundrissvorbilder were designated mainly for craftsmen (builders, carpenters, masons), with plain descriptive text approach, provided with plates. Their first volume was Wohn- u. Geschäftshäuser. More elaborated was Albert Geul’s twofold monograph, Die Anlage der Wohngebäude & Die Äußere der Wohngebäude, again with text (in Fraktur) and plates. Since the author was a professor at the Technische Hochschule in Munich from its founding in 1868, his text incorporated academic writings with analytical approach.

1 In memory of Architect Aleksander Laslo (1950-2014).
2 I wish to thank the reviewers of this article and other editorial staff for their meticulous work on the improvement of this article, making it more pleasant for the reader. I also wish to thank Prof. Zlatko Juric, PhD, for his continuous encouragements during the long and sometime exhaustive research in the City Archives in Zagreb. Special thank goes to Prof. Dragan Damjanovic, PhD, for supplying me with unique Herman Bolle’s plan of its own apartment house in 6 Žerjavica Street, a valuable asset for future comparisons. Finally, an overwhelming approach would be unthinkable without generous help of all the members of the Archives staff, headed by the Chairman Prof. Darko Rubic. Last but not least, is my duty to remember late Architect Aleksander Laslo, whose pioneering role in the research of both the Austro-Hungarian and the Kingdom of Yugoslavia periods of architectural history of Zagreb, should be inspiring.
3 Blau, Rupnik, with contributors, 2007
4 Stübben, 1907: 22
5 Klasen, 1880: 69-70
6 Stübben, 1890: 54-61
7 Stübben, 1923: 30
8 Sturgis, 1989
9 Klasen, 1880
10 Geul, 1885; Geul, 1893
The most scientific subject of its time, self-verified during three consecutive editions in more than thirty years, was Joseph Stübben’s first chapter of his seminal handbook Der Städtebau in edition Handbuch der Architektur, simply called Die städtischen Wohnungen. The author succeeded in contextualizing the position of various European and North American dwelling types inside average city blocks of the time by exercising necessary technical knowledge.

Recent insight into history of dwelling types may be demonstrated by three paradigmatic monographs. Stefan Muthesius, a great grandnephew of Herman Muthesius, brilliantly researched and analyzed Great Britain’s most characteristic building type in The English terraced house. A more international comparative study was made by Robert Olsen, where one can find cultural interactions from three most important world metropolises in the middle of the 19th century: London, Paris and Vienna. Richard Plunz examined residential building types from the 19th century New York City in an exhaustive study, carefully displaying many unknown details of design and execution of these edifices.

To my best knowledge, late Aleksander Laslo wrote the first introductory article published in English on the architecture of Zagreb from the second half of the 19th century until the beginning of First World War, as a part of an intercultural art history study of Austro-Hungarian Empire and its immediate successor states. However, a lighthouse of serious interactions into the Zagreb building practices remains the aforementioned Project Zagreb: Transition as Condition, Strategy, Practice, where Eve Blau and Ivan Rupnik with their contributors presented a history of urbanization of the Zagreb area from the Revolution in 1848 until today as a synchronized chain of strategically conditioned events. Such an approach is fully acknowledged when looking at the military or political history of Zagreb.

Recently, Mirela Slukan Altic published an article under the title Morphological and Functional Change in the Zagreb Lower Town (Donji Grad) 1862-1914 Based on Cadastral Sources. In spite of some errant illustrations it succeeded in perceiving morphological alterations of contemporary urban fabrics from cadastral surveys of the Lower Town.

With reference to the literature in Croatian, it might be summarized that there exists a dozen or more formative articles or books, most of them unfortunately not translated into English as a whole. Late Professor Emeritus Ivo Maroević had commenced a scientific revalorization of historic styles in the domestic architecture of the Lower Town in seminal articles About historicism in Zagreb and A proposal for a typology of Zagreb domestic architecture in the second half of the 19th century. Snješka Knežević researched origins and formation of the Green Horseshoe of Zagreb, a U-shaped ensemble in the middle of the Lower Town.

The author published a series of articles about Zagreb apartment houses and their legal conditions: Built-in Apartment Houses in Zagreb between 1928 and 1934; Built-in Apartment Houses in Zagreb between 1935 and 1945; Corner House in Zagreb between 1928 and 1944; Building Code for the City of Zagreb between 1850 and 1918; Building Code for Zagreb between 1919 and 1931 and Law on Building from 1931 and finally Projects and Realizations by Vladimir Šterk in Zagreb between 1923 and 1941.

**DEFINITIONS**

A story (BE: storey) is a primary vertical level unit in a building. Ordinary building is vertically divided by floors, i.e. it has more stories (BE: storeys). Conventionally, a number of stories is given including the ground floor, i.e. four-story building comprises the first story (BE: the ground floor) and three consecutive stories (2nd to 4th story; United Kingdom: 1st to 3rd storey). Therefore, three-and-more storey house would designate a house with at least two equal stories used for dwelling.

A mezzanine is the story with a lower ceiling than a regular story and is usually not counted as such. However, a common practice in Zagreb in those times was to designate a regular story as a mezzanine, to legally erect a building with one story more than prescribed by the Building code.

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11 Today TU Munich
12 Stübben, 1890; Stübben, 1907; Stübben, 1923
13 Bergdoll, 2000: 265–266
14 Bergdoll, 2000: 265–266
15 Muthesius, 1990
16 Olsen, 1986
17 Plunz, 1990
18 Laslo, 1999
19 Slukan Altic, 2006
20 At Figurae 2-10, the Südbahnhof and the corresponding complex of Kronprinz Rudolf barracks appears erroneously diminished and posted some 250 meters in the NE direction from its actual position. [Slukan Altic, 2006: 6-11, 13-15]
21 Maroević, 1977: 123
22 Maroević, 1987: 165
23 Knežević, 1996: 9
27 This practice was disrupted as of 1940, when contemporary Building code stipulated counting mezzanines as regular stories.
standard mezzanine story is counted here as a regular story.

Attic is usually the space immediate below rafters of a double pitched, mansard or flat roof. If it was used for residential purposes as per an occupancy permit, then it is counted here as a regular story.38

A closed type of construction is a spatial organization where houses are usually built side by side: in the United Kingdom, the Netherlands, in the northern parts of Germany and in the United States in rows, whereas in other parts of Europe which were under substantial German influence, in blocks.29

An attached residential building is an edifice built for predominantly residential purposes in blocks, consisting of at least two stories above ground; subtypes might be: attached house: a residential building with a principal residential area, built mostly for the upper classes, that may contain a few minor apartments; attached apartment house: a residential building with some usually equal residential areas to let (apartments) built mostly for the middle or upper middle classes30, they may contain a few minor tenements in the basement or attic, usually for paid housekeepers; and the attached tenement house: a residential building with a lot of equal substandard residential areas to rent (tenements) built for the lower classes.31

Building permit is a license allowing the commencement of a construction of an edifice, usually granted by the City construction office or a City council. Likewise, an occupancy permit is a license allowing the commencement of the use of an edifice. Their data of approval or issuance may enable the synchronization of events in the emergence of a particular building type.

**THE METHODOLOGY OF RESEARCH**

**METODOLOGIJA ISTRAŽIVANJA**

A comprehensive research of legal documentation of attached buildings erected in the period between 1857 and 1927 was conducted at the City Archives in Zagreb, 27 Opatićka Street, from September 2008 until December 2013. Attached residential buildings erected from 1928 to 1945 were researched and published before in articles in periodical "Prostor" in the Croatian language, where termus "built-in" instead of "attached" was used.32

Edifices that were researched were all those with at least two stories above ground33, whether they were of residential or of some other use, originally mostly public. Semidetached buildings were included, but only as closing members of an area of attached buildings. Therefore all eligible semidetached edifices had to have an entrance from the street.34 Buildings with only basement and first story or less were ineligible. Another important condition was that the edifice had to be erected from the beginning, i.e. no edifices built on existing basements or built connected to preserved yard buildings were eligible.35 Unexecuted projects of above described edifices officially submitted for approval were also taken into a research database as an autonomous class. Finally, edifices present and inventoried on the field but whose projects and/or permits were not present at the City Archives made another class. During the process of data mining, a working copy of a database of attached buildings in Microsoft Access® was made.36

Time boundaries were taken according to occurrences which shaped the emerging and flourishing of the types of attached buildings. Consequently, four time spans were created: from unifying of Gradec and Kaptol into Zagreb in 1850 to the earthquake in 1880 (1851-1880), further from the earthquake to doubling the city territory through annexation eastwards of further municipalities in 1900 (1881-1900), then from doubling city territory to the dissolution of Austro-Hungarian Empire in 1918 (1901-1918) and literally as an aftermath, first years of Kingdom of Serbs, Croats and Slovenes until January 1st, 1928 (1919-1927).37 From the typological point of view one can make new, two time spans, according to the ratio of two story attached houses alone taken as one class and three-and-more story attached houses as the other class. In the time span from 1850 to 1891 the ratio is roughly equal, where in the time span from 1892 to 1927 the ratio is roughly four or five to one in favor of the three-and more-story attached houses.

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28 Sturgis, et al., 1989: I, 170
30 Sturgis, et al., 1989: I, 82-89
31 Sturgis, et al., 1989: III, 777-781
33 A building which has a ground and the principal floor, regardless of the existence of the basement.
34 On the other hand, many two stories semidetached or detached residential buildings in the so called the Villenviertel (villa part) of Zagreb possess same floor plans as their attached counterparts in blocks, except that the entrance is opposite to the street, which enables two identical floor plans on the main stories (ground and principal floor), i.e. they were simply derived from attached buildings.
35 Later it was the reason for not including the seminal Klein’s street building in 19 Ilica Street into the database. Contemporary legal documents in German (then the official language of the Agram city officials) mentions the building as an Anbau (En: extension).
36 The completed database will be published as a supplement set of tables to the book "Attached Houses in Zagreb from the Revolutions of 1848 to the Cominform Resolution of 1948: Typologies, Morphologies and Meanings".
37 A time boundary of former research see: Kahle, 2002.
Development of the City of Zagreb Regarding the Railway, Building Code and Areas of Closed Type of Construction

Razvoj Zagreba U Odnosu Na Željeznice, Red Građenja I Zatvoreni Način Izgradnje

Railway projects in the Croatian territory in the first half of 19th century were planned in areas remote from Zagreb. The most elaborated contemporary project amended future railway station about eight kilometers southwards from the cities of Gradec and Kaptol at the opposite bank of the Sava River. Subsequently, German railway enthusiast and the United States citizen Carl Friedrich Zimpel pointed out in 1845 that Zagreb (Agram) with regard to its capital positions is a unique focal point for establishment of water, road and rail communications in Croatia. German architect and a civil engineer Franz Jakob Kreuter proposed in 1848 a railway node in Zagreb with the railway station near the today’s Zagreb Main Railway Station, as a constitutive part of the project for a railway line from Zemun (Semlin) to Rijeka (Fiume).

Centralization and equalization of the Austrian Empire after the Revolutions of 1848 elevated Zagreb to a capital city of the Dominion (Kronland) of Croatia and Slavonia. In 1850, the new Emperor Francis Joseph I (born 1830, ruled from 1848, deceased 1916) consequently ordered unification of former cities Gradec and Kaptol and a few surrounding villages into the State capital Zagreb (Landeshauptstadt Agram). Military success at the Italian battlefield in 1849 and successful mobilization against Prussia in 1850-51 assured the imperial administration to reassign the existing railroad network and its expansion plans to the military needs, with demand on double-track railway lines wherever possible. Zagreb was designated as one of the most important military nodes in Croatian and Hungarian parts of the Empire. A concession was consecutively laid down for Croatian Railways.

In 1852 military authorities demanded from civil administration a comprehensive plan for completion of the railroad network in the Monarchy, which was technically carried on by Carl Ritter von Ghega and completed next year. Prioritizing the Vienna-Trieste double-track railway line, he projected a connecting double-track line from Zidani Most (Steinbrück) to Sisak (Sissek), with branch lines to Karlovac (Carlstadt) and Nagykami (Kanisza) respectively. Therefore the new Zagreb railway station (Bahnhof Agram, today Zagreb West Railway Station) was finally positioned more westwards, to the embarrassment of contemporary citizens. Still, the upcoming railway to Zagreb meant two important things. First, new gauge banks made an ideal defense against permanent floods thus enabling a huge possibility for settlement, and second, the railway transport soon enabled the use of new structural materials like steel beams or decorative front elements like plaster statues or stone slabs, much later Siegwart reinforced concrete beams.
The State government (Landesregierung)\textsuperscript{55} issued a Building Code for the Capital City of Zagreb (Bauordnung für das Landeshauptstadt Agram)\textsuperscript{56}, which was enforced on February 1\textsuperscript{st}, 1857\textsuperscript{57} and was valid until the year 1940. Building code inaugurated principles for laying out rectangular city blocks in a closed type of construction. Two- or more story attached house was put as an element of city regulation. Walls, vaulted cellars, passages and stairways were to be brick made. Floors of upper stories were allowed to be of wooden beams. The first story was to be risen above the pavement for 3/4 m, to enable natural ventilation of the basement. Roofs were prescribed as tiled double-pitched commonly with beaver-tail tile (Biberschwanz) roofing. New regulation plan was also demanded from the City Construction and Fire Council (Bau- und Feuerlösch-Comission).\textsuperscript{58} This building code, together with a future regulation plan were made and enacted under the enormous influence of the military and the railway.

Parallel position of the new four-story government building (today the Seat of the University of Zagreb), erected from 1856 to 1859\textsuperscript{59} with the new railway station, built from 1861 to 1862, may indicate the existence of the oldest part of Lower Zagreb regulation plan at least in the year 1856, as mutually arranged with the construction authorities. It was a simple rectangular plan with two new longitudinal streets, today Dezelicev Prilaz and Klaiceva Street\textsuperscript{60}, perpendicular to five new transversal streets, today partially rectified Meduliceva, Kaciceva, Primorska, Kraljiska and Reljkoviceva Streets (the last one as a chaussee-like connection with Ilica Street and new Railway Station Square). However, the military reserved a vast area in the close northeastern vicinity of railway station (today Dr. Franjo Tudman Square) to place future barracks. The final version of this area in the new regulation plan disrupted Prilaz from Reljkoviceva Street and added a new connector street from Ilica Street to the railway station at the east border of the designated military area (today Republike Austrije Street).

At the middle of the 19\textsuperscript{th} century world markets became obsessed with investments in railways, in the United States as pure market speculations after the Mexican-American War in 1846-48, but in the Neo-absolutist Austrian Empire as an administration-driven military enterprise. In 1857 the American market shock soon became the "Railway crash" and flooded all the markets in Northern America and Europe, and finally Vienna as well.\textsuperscript{61} The crash slowed expansion plans, but did not halt them. Consequently, the railway line from Zidani Most to Sisak was finished in 1862 with simple steel Howe truss bridge across the river Sava. One of the first detached apartment houses in Zagreb was the Südbahn house, finished together with the railway station in 1862 and placed in its close northeastern proximity as one of two flanked residential buildings to the station, thus making an emerging railway square. A branch line from south embankment of the Sava River to the important military fortress Karlovac was opened in 1865. In the same year a new regulation plan was confirmed\textsuperscript{62} at the Croatian Court Chancellery (Die kroatische Hofkanzlei)\textsuperscript{63} as an amalgam of more rectangular
blocks from the railway station, to Frankopanska Street / Savska Street and more adjusted blocks to existing street pattern from the government building (today the Seat of the University building) to the Draskovicova Street (Fig. 1). The railway station and the government building were flanked with squares (aforementioned railway square as today the French Republic Square resp. government square as today Marshall Tito Square).

Due to the turbulent political and war affairs in the Austrian Empire which were reconciled by the Austro-Hungarian Compromise in 1867, main decisions concerning town planning and railway networking were resolved as political compromises. Such one was the branch railway line to Nagykanisza, which was supposed to be built as soon as traffic volumes on other Südbahn lines in close neighborhood would allow that. The aforementioned regulation plan contained at least six variant solutions of this line in the Zagreb area, whereas the most favorable solution regarding the future settlement area was built in 1870. In 1868, the Dominion of Croatia and Slavonia was submerged into the Hungarian part of the Habsburg Monarchy as an internally self-governed dominion called the Triune Kingdom of Croatia, Slavonia and Dalmatia, enlarged by the annexation of the Croatian and Slavonian parts of the former Military Frontier in 1881. Another reserved land area northeast of the projected main railway station became visible in the second Regulation plan from 1888. The New Hungarian State railway station (today’s Zagreb Main Railway Station) was finished in 1892.

**ANALYSIS**

**ANALIZA**

Two-story attached residential buildings – The main reason for including two story attached buildings into the research was the fact that certain parts of the Lower Town were erected with this class of apparently smaller buildings, especially Deželiæev Prilaz, parts of Dalmatinska, Meduliceva, Kaçiceva, Primorska and Klaiceva Streets in the western part, parts of Gajeva, Masarykova, Preradoviæeva, Gunduliceva and Hebrangova Streets in the central part, as well as many streets that were at that time periphery (Podolje, Slovenska, Savska Streets etc.). Reasons were twofold: two story apartment houses were cheaper to build, easier to manage and later simpler to intersect into a reasonably great number of tenements, which would occur permanently after the turn of the century, especially in the consecutively arranged quadrant northeastern of Maksimirska and Domjaniæeva Streets (Kuhaæeva, Eisenhutova, Fijanova, Padovèeva Streets etc.). Second, immediately after the earthquake in 1880 many new landlords erected two story houses as their homes, principally in blocks around Hebrangova, Preradoviceva, Berislaviceva and Gunduliceva Streets, but notably fewer in Deželiæev Prilaz and its surroundings.

It has to be stated that some residential arrangements were pioneered in this class of houses. Examples are: an unexecuted project from 1873 for a two story tenement building in 8 Meduliceva Street, made by the master builder Luigi Gagliardi, with a gallery where one can enter into the kitchen from the gal-

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63 The Chancellor (Hofkanzler) was at the time Ivan Mažuranic, later Viceroy from 1873 to 1880. [Willoweit, Lemberg, 2006: 393]
64 By making Austria-Hungary, formally known as the Kingdoms and Lands Represented in the Imperial Council (Cisleithania) and the Lands of the Holy Hungarian Crown of Saint Stephen (Transleithania).
65 *** 1868: 63
66 A title “Triune Kingdom of Croatia, Slavonia and Dalmatia” was only nominal because in the Austrian part of the Empire the Kingdom of Dalmatia with its capital city Zara, today Zadar existed, from 1867 to 1918.
67 Hrv.: Kolodvor Drzavnih željeznica [Galjær, 2000: 162]
buildings had been built, another 47 buildings of the same class were detected on the field but without any legal documentation in the City Archives. Finally, in the same institution another 93 files with submitted projects of unexecuted buildings of the class are stored as well.

Typologies of three-and-more story attached residential buildings – After conditioning the issuance of a building permit with explanatory drawings (i.e. project), according to the 1857 Building code, first executed three-and-more story attached residential building was four-story attached apartment house Vrbančić at former address 27 Ilica Street in 1859 (Fig. 4).72 The approved project was ambiguous and partly against the building regulations.74 There was only one apartment per floor, indeed a lavish one. It contained four rooms (Zimmer), a salon, a wardrobe (Garderobe), a sleeping alcove (Alkoven) and an anteroom (Vorzimmer). Serving parts of the apartment (a kitchen, a room and two chambers) were physically separated from the living parts through a stairway landing (Vorplatz). A stairwell was semicircular, probably supported with one or two cast iron columns.75 Cast iron semicircular stairwells were built until the earthquake in 1880. However, the majority of houses at this time had a vaulted staircase with one semicircular or two parallel flights, whose vanishing was obviously conditioned as a consequence of the earthquake. Vaulted staircases remained in two-story houses until the turn of the century, probably because of their relative cheapness as compared to the new steel supported staircases with two parallel flights, which in higher buildings became standard until the 1930s. A minor part of three-and-more residential buildings in this time had spatial organization of four apartments per floor, derived from contemporary ordinary Vienna apartment house.

Interestingly enough, there were attempts to apply a new design, not only of fronts (Fig. 5, 6) but of floor plans too. In 1872 Franz Klein & Janko Nikola Grahor senior transformed the aforementioned scheme into two apartments per floor with serving parts separated and

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68 This arrangement was immensely popular in the 1920s with the so called „houses without approval“, which were built at Trnje and Tresnjevka, southern from the Zapresic-Dugo Selo railway.
69 Mennekes, 2005
70 22 Meduljeva Street, today Italian Embassy in Croatia. He also, together with his partner Julio Deutsch, designed first Zagreb Jugendstil front in the year 1896 (Fig. 3), but unfortunately the landlord changed it to a neo-baroque.
71 It was marked on the approval drawings simply as Tloris englezkih Closeta sa spravom na vodu (Plan of the English Closets provided with water, i.e. WC).
72 It was torn down together with its wall-shared neighbor at 25 Ilica Street in 1906.
placed into yard wings (Fig. 7). This scheme is probably a forerunner of schemes with two parallel yard wings. In 1868 Janko Jambršak invented clean rectangle scheme of two apartments per floor with entrance galleries (Fig. 8), later in 1877 Johann Plochberger senior converts it to a regular rectangle scheme (Fig. 9). Finally in 1879 Johann Schnuparek and Ferdo Stejskal divided living and serving parts with an L-shaped corridor (Fig. 10). They also cut its own scheme in half for accommodating one apartment per floor at narrow lots. Two apartments per floor will remain the majority spatial organization of Zagreb attached apartment house until the end of the Second World War. On the other hand, a number of dwellings or apartments whose parts were not closed, i.e. the ensembles of usually two rooms were connected with adjoining kitchens only through a common corridor, in which common dry closets were placed as well, was exceptionally high. First scheme emerged in 1878 (Vetsera attached dwelling house, 61 Tkalčiceva Street) but the complete tenement scheme of this kind was used in 1896 (139 Ilica Street, 3 Slovenska Street and surprisingly, a first tenement house with a flat Holzze-ment roof, 29 Nova Ves Street, designed by Hinko Rieszner).

Derivatives of two apartments per floor became usual after the earthquake, when in year the 1887 Jambršak applied separate bathroom with the cast iron elliptical bath, oriented to a maid room, i.e. bathroom was ventilated with fresh air via the maid room. This conception was used to the end of Second World War. In the year 1893 architect Grahor junior utilized a water closet with the ventilation arrangement through a common window with pantry (Fig. 12), or both had a common light well (airshaft). Both these arrangements were immensely popular in spite of the attempts of forbidding them by City Construction Office. In the matter of fact, light wells were used from the beginning, but only in year 1893 young architect Martin Pilar made two arrangement schemes which after the First World War became more prominent in the Zagreb residential architecture (Fig. 11). He soon made a partner enterprise called Pilar, Mally & Bauda. This architectural office and the building firm became popular for trailblazing buildings with flat roofs and innovative housing schemes designed by Pilar. Together they erected 10 such houses, almost a half of 25 attached buildings with a flat Holzze-ment roof from the year 1893 to 1927. The seminal one was the Mally apart-

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73 Preserved files include floor plan of fourth story (III. Stock) and section and elevation for a three-story (Zwei-stockiges) building.

74 Building code stipulated that every new building must have its own circumference walls adjacent to the neighbor buildings, where according to approved plans, the Vrbančić house had a common wall with its left neighbor (25 Ilica Street), i.e. it was an extension (Anbau) to its left neighbor. Such model was quite usual in the 1870s, obviously tolerated by the city officials.

75 The stairwell of same sort can be seen today in the three-story apartment house Pelles at 9 Tomićeva Street, erected in the year 1868 (Fig. 7).

76 Juric, 1994: 153

77 Juric, 1996.a: 105
Fig. 13. Janko Holjac, a licensed civil architect: Three-story apartment house Maruzzi, 4 Vodnikova St, 1901, elevation, section and second-/third-story floor plan

Sl. 13. Janko Holjac, ovlasteni civilni arhitekt: Dvokatna ugradena najamna kuca Maruzzi, Vodnikova 4, 1901., procelje, presijek i tlocrt prvoga/drugoga kata

Fig. 14. Building firm Pilar, Mally & Bauda, signed by Julius (Julio) Mally: Three-story apartment house Mally, 28 Mihanoviceva St, 1898


ment house at 28 Mihanoviceva Street of 1898, with the coal burning steam central heating system, steel supporting staircase as a light well, covered with a glass canopy for natural ventilation (Fig. 14). However, the majority decided not to apply the Holzzement in whole, but only on yard-oriented parts of the roof. Other architectural offices equally implemented similar devices. The architectural firm of Leo (Lav) Hönigsberg and Julius (Julio) Deutsch was famous for their advanced front designs and their young apprentices such as Alois (Vjekoslav) Bastl or Otto (Oton) Goldscheider. The firm was also known as an early bird in design, calculation and application of steel and/or reinforced concrete elements. The first elevator in Zagreb was probably built in 1907 in the four-story corner apartment house Poppovic, 4 Ban Josip Jelačić Square, by Benedik & Baranyai. Another pioneer in residential architecture of the time was Janko Holjac. Probably inspired by the Hellmer & Fellner solution for the Croatian Discount Bank (Hr: Hrvatska Eskomptna banka) in 3 Ilica Street in 1899, with a semi-pitched mansard roof to the street and a flat roof to the yard, in 1901 he invented a similar section for a common three-story attached apartment building, where residential areas were also yard-oriented, the ground-level-in-yard parts of a basement was used for housekeepers and the yard-oriented and flat-roofed parts of attic were used as studio apartments – in fact all of its five stories were habitable. He also invented a standard rectangular two-apartment per floor scheme with side light wells at same building (Maruzzi apartment house, 4 Vodnikova Street; Fig. 13). This scheme was in wide use for the first Modern attached residential buildings in the 1930s and remained in use until the 1950s. It can be argued that in a less than forty years’ time span, from the earthquake to the end of First World War Zagreb grew up exponentially, taking shape as an aesthetically pleasant city built in closed blocks. Front designs were milder than expected, blending the old design procedures with newly emerged architectural styles. Additionally, in the 1900s attached tenement houses were erected in Trnjanska and Paromlinska Streets for migrants from other parts of Croatia, who found their employment in emerging industries at the city periphery.

After the emergence of the Kingdom of Serbs, Croats and Slovenes at the end of the First World War, when the stipulated money conversion became a threat to the old capital institutions, the City construction office simply took the unapproved regulations for the area east from Draskovicova Street and let the private investors build a lot of attached apartment houses, to save the investments from devaluation. Being designed in a hurry, those attached houses mostly repeated floor plans and façade patterns from their pre-war counterparts.

CONCLUSION

ZAKLJUČAK

This article is completion of a research started fifteen years ago covering the attached apartment house in the period between the World Wars and perpetuated with articles in Croatian in the periodical "Prostor". It became appa-
ent that the traces of the origin of this building type should be searched for within the period from the end of the Revolution in 1848 and beyond the end of the First World War in 1918, with living ties to the beginning of the Modern Movement in Zagreb. In their seminal book “Project Zagreb” Eve Blau and Ivan Rupnik tackled only briefly the development of the housing types so it seemed that some additional research should be made.

The research was conducted at the State Archives in Zagreb from 2008 to the end of 2013, where practically all legal documentation is preserved, i.e. building and occupancy permits, approved drawings tied to these permits, etc. Therefore it was possible to build a comprehensive database in the electronic form of this particular type, containing chronologically ordered data of owners, builders, plans, fronts, etc. After more than nine tenths of the houses have been researched, one can make an X-ray image through the city structure of the time: chronological diagrams of the city development, structural diagrams of the façade designs tied to a certain architect, typological diagrams of the styles used in front developments etc.

The emphasized attached apartment houses in this article are substantial in emergence of new or deriving old floor plan schemes, vertical organizations of buildings according to the valid building code, or front compositions, to establish a few prominent examples worth to follow.

Rapid expansion of attached apartment houses in Zagreb after the earthquake in 1880 until the end of the Second World War and beyond was possible due to the combination of political interactions in the Habsburg Empire and in the Kingdom of Serbs, Croats and Slovenes as one of its successor states. Landlords, master builders and architects of various notably Jewish minority origins made a significant contribution. Hence the evolution of this building type converged gradually but inevitably to the Modern Architecture.

Bibliography

5. Geul, A. (1885, Frakt.), Die Anlage der Wohngebäude (The plan of a residential building), Gebhardt, Leipzig, De
13. Kahle, D. (2004a), Zagrebačka uglavnom u razdoblju od 1928. do 1944. godine (Corner House...
mestic architecture in the second half of 19th cen-

Railway in Habsburg Monarchy between 1825-
Habsburgermonarchie 1825-1859 (Military and

Kahle, D.

Zagreb

between 1928 and 1944),

Kahle, D.

(2 /28/): 203-215, Zagreb

Kahle, D.

(2006),

Zagreb

1850 and 1918),

Kahle, D.

12 (1 /27/): 77-85, Zagreb

Kreuter, F.

"Prostor",

In Zagreb between 1928 and 1945),

Kreuter, F.

u Zagrebu, diss. doc., Zagreb

Laslo, A.

De,En,

Mennekes, R.

123-144, Zagreb

Muthesius, S.

(1909a, 1982a), Das Englische
Reihenhaus (The English terraced house), in
dition Die blauen Bücher; Karl Robert Lan-
gewiesche, Königstein im Taunus, De

Olsen, R.

The city as a work of art: Lon-
don, Paris, Vienna, Yale, New Haven, CT

Plunz, R.

190, A history of housing in New
York City, Columbia University Press, New

Prostor, 12 (1 /27/): 77-85, Zagreb

14.

Kahle, D. (2004b), Gradjevinski propisi grada
Zagreba u razdoblju od 1850. do 1918. godine
(Building Code for the City of Zagreb between
1850 and 1918), "Prostor", 12 (2 /28/): 203-215, Zagreb

15.

Kahle, D. (2006), Gradjevinski propisi za grad
Zagreb u razdoblju od 1919. do 1931. godine
i Gradjevinski zakon iz 1931. godine (Building
Code for Zagreb between 1919 and 1931 and
Law on Building from 1931), "Prostor", 14 (1
2 /31/): 117-129, Zagreb

16.

Kahle, D. (2007), Stambene kuce Novog gra-
denja u sjevernim dijelovima Zagreba u raz-
doblju od 1828. do 1845. godine (Modern Res-
sidential Buildings in the Northern Parts of
Zagreb in the Period from 1828 to 1945), Sveučilište
u Zagrebu, diss. doc., Zagreb

17.

Kahle, D. (2008), Potpisani projekti i realizacije
Vladimira Sterka u Zagrebu od 1923. do 1941.
(Projects and Realizations by Vladimir Sterk in
Zagreb between 1923 and 1941), "Prostor", 16
(2 /36/): 193-209, Zagreb

18.

Klase, L. (1880), Grundrissvorbilder
(Plan patterns), Abth. I: Wohn- und Geschäftshäuser
(Residential and Office houses), Baummärter
Leipzig, De

19.

Knezević, S. (1996), Zagrebacka zelena potkova
(Zagreb's Green horseshoe System of Parks),
Skolska knjiga, Zagreb

20.

Köster, B. (1999), Militär und Eisenbahn in der
Habsburgermonarchie 1825-1859 (Military and
Railway in Habsburg Monarchy between 1825-
1859), R. Oldenbourg Verlag, München, De

21.

Kreuter, F. (1848), Die Verbindung der untern Da-
nau mit dem Adriaischen Meer durch eine
eisenbahn von Semlin nach Fiume
Connection of

Gerold, Wien, http:

books.google.hr/books?id=BJw_AAAAcAAJ&printsec=frontcover

22.

Laslo, A. (1999a, b), Zagreb 1880-1918: Moder-
ne Architektur und Städtebau in Zagreb
(Modern Architectural Town Planning in Zagreb), in:
Blau, Platzer: Mythos Großstadt: Architektur
und Stadtbaukunst in Zentraleuropa 1890-1937
(Shaping the Great City: Modern Architecture in
Central Europe, 1890-1937) 136-139, Preslet,
München, De

23.

Marojević, I. (1977), O historizmu u Zagrebu
(about historicism in Zagreb), "Peristil", 20:
123-144, Zagreb

24.

Marojević, I. (1987), Prijedlog za tipologiju stam-
bene arhitekture u Zagrebu u drugoj polovici 19.
stoljeća (A proposal for a typology of Zagreb do-
mestic architecture in the second half of 19th cen-
tury), "Radovi Instituta za povijest umjetnosti,
11: 165-185, Zagreb

25.

Menexes, R. (2005), Die Renaissance der deu-
tischen Renaissance (The Renaissance of a Ger-
man Renaissance), Michael Imhof Verlag,
Petersberg, De

26.

Muthesius, S. (1909a, 1982a), Das Englische
Reihenhaus (The English terraced house), in
dition Die blauen Bücher; Karl Robert Lan-
gewiesche, Königstein im Taunus, De

27.

Olsen, R. (1986), The city as a work of art: Lon-
don, Paris, Vienna, Yale, New Haven, CT

28.

Plunz, R. (1990), A history of housing in New
York City, Columbia University Press, New

29.

Slukan Altić, M. (2006), Morphological and
Functional Change in Zagreb Lower Town (Donji
grad) 1862-1914, Based on Cadastral Sources,
"Prostor", 14 (1 /31/): 3-19, Zagreb

30.

Stulli, B. (1972), Prijedlozi i projekt jezičnich
pruga u Hrvatskoj 1825.-1863. (Proposals and
projects of railways in Croatia between 1825
and 1863), II. Sveučilište u Zagrebu

31.

Sturgis, R. et al. (1908a of 1901-02), Sturgis' illus-
trated Dictionary of Architecture and Build-
ing, three volumes, Dover, Mineola, NY

32.

Stübben, J. (1890), Die städtischen Wohnun-
gen (The city dwellings), first chapter from the
book: Der Städtebau (Building of cities), in edi-
tion: Handbuch der Architektur (A handbook of
architecture), Bergsträßer, Darmstadt, De

33.

Stübben, J. (1907), Die städtischen Wohnun-
gen (The city dwellings), first chapter from the
book: Der Städtebau (Building of cities), in edi-
tion: Handbuch der Architektur (A handbook of
architecture), Kröner, Stuttgart, De

34.

Stübben, J. (1923), Die städtischen Wohnun-
gen (The city dwellings), first chapter from the
book: Der Städtebau (Building of cities), in edi-
tion: Handbuch der Architektur (A handbook of
architecture), Gebhardt, Leipzig, De

35.

Timet, T. (1961), Stambena izgradnja Zagreba
do 1954. godine: ekonomsko-historijska analiza
(Residential building construction of the City
of Zagreb until 1954: An economical and histori-
al analysis), JAZU, Zagreb

36.

Territorien in Ostmitteleuropa: historische Be-
ziehungen und politische Herrschaftslegitima-
tion (States and Territories in the East-middle
Europe: Historical Relationships and Political
Legitimation to Power), Oldenbourg Verlag,
München, De

37.

(1868), Sammlung aller die Concession und
die Constitution der k.k. priv. Südbahn-Gesell-
schaft betreffenden Urkunden (A Collection of
certificates relevant to the concession and con-
stitution of the k.k. priv. Südbahn-Gesell-
schaft), General-Direktion der k.k. priv. Südbahn-Gesellschaft, Wien im Selbstverlag der
Gesellschaft

38.

(1914), Gradjevinski propisi za Slob. i kr. glavni
grad Zagreb (Building Code for Free and Royal
Capital City of Zagreb), Tiskara i litografija C.
Albrecht, Zagreb

39.

(2014), The slumps that shaped modern fi-
tance, The Economist, Print edition, Apr 12th,
archive/2014/04/special-focus-
finance-not-merely-prone-cris-
es-it-shaped-them-five-historical-crises-show-
how-aspects-today-s-fina

Abbreviations and Symbols

xxxxDe,En a fully bilingual edition

xxxxR of xxxxn reprinted edition of edition

AmE American English

Anon. Anonimous

At Austria

BE British English

CT Connecticut

Če Czech

De German, Germany

En English

Fr French

Hrv. Croatian

Hu Hungarian (Magyar)

It Italian

Mkav Magyar KirályiÁllamvasutak

NY New York (US State)

prob. probably

@ registered mark or brand

Sp Spain
Ovaj članak predstavlja završetak istraživanja koje je počelo prije petnaest godina i obuhvatilo ugrađene najamne kuće od početka 1928. godine do kraja Drugoga svjetskog rata, a objavljeno je u nekoliko autorovih članaka u ovomu znanstvenom časopisu. Poslije objave navedenih članaka postalo je jasno da treba proširiti istraživanje istoga tipa kuće na cijelo razdoblje – pocevši od revolucije 1848. godine, ujedinjenja prethodnih naselja u moderni Zagreb 1850. godine, donošenja Reda građenja 1855. godine, koji propisuje ugrađenu zgradu kao osnovni element izgradnje, pa sve do nakon Prvoga svjetskog rata, odnosno do kraja 1927. godine. Detaljna obrada ovoga građevinskog tipa i objava rezultata istraživanja slijedi u autorovoj knjizi Ugrađene zgrade u Zagrebu od revolucije iz 1848. do rekonstrukcije Zagreba iz 1948. godine: tipologije, morfologije i značenja. Istraživanje je provedeno u Državnom arhivu u Zagrebu od sredine 2008. godine do kraja 2013. godine, gdje je pohranjena praktički sva dokumentacija upravnog postupka povezanog s izgradnjom ugrađenih zgrada, odnosno građevne dozvole, dozvole za uporabu, odluke o odobrenju nacrta promjene, odobreni nacrti povezani s upravo navedenim odlukama, žalbe, službeno dopisivanje i drugo. Time je omogućena izrada sveobuhvatne baze podataka ugrađenih zgrada u elektronskom obliku, koja sadrži kronološki poređane podatke vlasnika, arhitekata, graditelja, poduzetnika, tlocrtnih rješenja, konstrukтивnih sustava, pročelja i drugih relevantnih podataka tijekom razdoblja. Tek nakon više od 90% istraženih zgrada, pretraživanjem ove baze podataka moguće je identificirati gradsku strukturu Zagreba tokom tog razdoblja: kronološke dijagrame razvoja grada, strukturne dijagrame tlocrtnih rješenja ugrađenih zgrada vezanih za pojedinog arhitekta ili graditelja, tipološke dijagrame razvoja stilova koji su bili korisni na pročeljima i drugo.

Najavom dolaska željeznice u Zagreb, poslije revolucije 1848. godine pokrenuti su procesi modernizacije, među kojima su za nastanak ugrađene zgrade presudna dva: donošenja i implementacija Reda građenja 1855. odnosno 1857. godine, koji je najmanje jednokatnu ugrađenu zgradu – dakle zgradu s barem dva puna kata iznad tla – normirao kao prevladavajući građevinski tip, te koloplet političkih i ekonomskih odluka koje su dovela do prolaska prvih željezničkih pruga gradskim područjem 1862. i 1870. godine, a time je uspostavljen sustav naselja. Ipak, ubrzana urbanizacija počinje tek nakon potresa 1880. godine.

Nadalje, brza ekspanzija ugrađenih najamnih kuća u Zagrebu poslije potresa 1880. godine, koja je trajala sve do početka Drugoga svjetskog rata, a nastavila se odmah nakon toga rata i praktično trajala sve do početka prvih željezničkih pruga gradskim područjem, a potom se trajno trajala sve do početka Drugoga svjetskog rata 1941. godine, bila je moguća zahvaljujući političkim interakcijama u Habsburškoj Monarhiji i Kraljevstvu Srba, Hrvata i Slovenaca kao jednoj od država nasljednica. Kućevlasnici, graditelji i arhitekti pripadnici manjina, a posebno židovske, srpske i njeomske manjine, dali su značajan doprinos. Stoga je razvoj toga građevinskog tipa postupno, ali neizbježno, doveo do – modernije arhitekture.

DARKO KAHLE