HOW TO CREATE A BUILDING TYPOLOGY?
Typological matrix for mapping 19th century synagogues

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Summary: Based on a research that comprised 500 synagogues, this paper is the first attempt to create a comprehensive building typology of synagogue architecture. This typology is the first that takes into consideration interior arrangement (plan and section), architectural language of the interior, bearing structure, architectural language (decoration) of the exterior, exterior mass composition, size and urban context – the relationship of the synagogue building towards the neighbouring buildings and towards the urban context in general. This typology has been developed on Ashkenazi synagogues of 19th century Habsburg Empire, but it can be applied to other building types and other territories in the 18th and 19th centuries, up to the onset of modernism in the 1920s and 1930s.

The methodology if this research maybe applied particularly well for Orthodox and Protestant churches in Vojvodina, where the state religion has been Catholicism and confessional minorities faced some restrictions. These restrictions and the common architectural context make their religious buildings in typological sense similar.

Keywords: Building typology, 19th century architecture, Ashkenazi synagogues, Habsburg Empire

1. INTRODUCTION

Creating building typologies has been a preoccupation of architects, architectural- and art historians as well as theoreticians of architecture since at least the Enlightenment, but certain roots go back to the Renaissance and the beginning of conscious building activities in Greek and Roman antiquity as well the ancient Middle East. Non-western societies also furnished typologies, often not on a theoretical level, but in practical construction. For instance, Japanese edifices were constructed to a building code based on diverse considerations. Generally, building typologies may be functional, technical, aesthetic, etc., all of which aim to establish a logical framework to architectural design and construction activities. Some building types are easier to typify and some others seemingly defy such an endeavour. 19th century synagogues in Austria-Hungary certainly belong to this second group. During the nineteenth century, by opening up Jewish communities to the outside world, synagogues ceased to be a closed, well-defined package and a codified system of form, and became a relatively free assemblage of

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stylistic, compositional elements, use of different structural materials and systems, size, placement, response to the neighbouring Jewish community buildings and the Gentile architectural milieu and heritage, etc. Each and every synagogue building in the nineteenth century is a voluntary/arbitrary combination of the abovementioned elements. This open ended approach explains the extraordinary formal richness of the genre. Any relevant typology may be based only on recognition of these elements and created along each of them: typology after the floor plan, typology according to the composition of masses, and so on.

The study of synagogue architecture is a discipline, which started some hundred years ago, based on the traditional stylistic approach and furnished good results in the research of medieval2 and early modern synagogues3 up to the Baroque period.4 The best authors succeeded to go beyond mere architectural features and successfully linked some building features to Judaism.5 However, for the 19th century this methodology was less fruitful, as from the 1830s the style of synagogue in the traditional sense of the term disappeared and a number of independent stylistic idioms, architectural languages have surfaced, often mixed together: neo-Gothic, neo-Romanesque and most importantly ne-Moresque, which became the lead in synagogue construction, but usually mixed with other neo-styles. This phenomenon was prompted by two agents: historicism and braking up the traditional, closed Jewish community. Historicism made available architectural history in the form of a ‘buffet lunch’ and Jewish communities gradually opening up to the gentile society enjoyed not only newly acquired political freedom, but also the richness of the aforementioned buffet. Theoretically completely autonomous and practically also more or less so, these communities lacked the coherence of Christian churches and their umbrella organizations regarding synagogue construction not only due to changing social position and milieu, but also due to the indifference of rabbis and Jewish religious establishment in general to connect spiritual to the architectural, which originates from the image ban of Judaism. Only few tenets regulated synagogue architecture during history, such as eastern orientation, gender separation, the existence of Ark and bimah, as well as the eternal light, entering the building via two doors and the avoidance of non-Judaic religious symbols, mainly the cross and the crescent. All aforementioned factors contributed to the apparent split-off of the synagogue as a coherent genre in the 19th century and exacerbated the implementation of the stylistic approach for their research.

In this paper, the traditional idea of synagogue style is replaced by a matrix of formal/functional elements that constitute a synagogue. With that the main obstacle for creating a typology, the supposed ‘stylistic impurity’ of synagogue architecture, has been put aside, and the subject and method of analysis harmonized for investigation.6

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3 Alfred Grotte, Deutsche, böhmische und polnische Synagogentypen vom XI. bis Anfang des XIX. Jahrhunderts, Berlin 1915
6 The empirical foundation of this paper is based in the research of synagogues in the Habsburg Empire carried out by the author from the 1990s and published in his book Zsinagógák Magyarországon 1782-1918/Synagogues in Hungary 1782-1918, Terc, Budapest, 2011.
2. METHODOLOGY OF CLASSIFICATION

The method which uses a system of different criteria for classifying synagogues will be called the matrix method. The matrix method takes into account the ‘buffet lunch character’ of post-emancipation synagogue architecture – free picking and combination of elements – vis-à-vis the more traditional ‘culinary course’ of period Gentile sacred architecture. Jewish communities were free to make their own choices, to create a cocktail that reflected their preferences, aspirations and economic might, bearing in mind the tolerance and expectations of the Gentile population. Similarly to the building typology, urban location is also thoroughly studied in terms of the immediate surroundings of the synagogue – its relation to the street, neighbouring buildings – and the wider urban context, ranging up to the land-marking function of the synagogue. Both in terms of synagogue element (plan, structure, architectural language, composition of masses) and environmental combinations the paper deals with the most common combinations and ramifications from the standard solution.

3. THE SAMPLE

Typologies become more accurate with a larger number of entries. The large number of entries is particularly important in the case of highly varied genres, such as the 19th century synagogue architecture in the Habsburg Empire. This research is based on 500 synagogues from the territory of Habsburg Hungary, i.e. present day Hungary, Slovakia, Croatia as a whole and parts of neighbouring countries such as, Transylvania (part of present Romania), Vojvodina (part of present Serbia) and the Zakarpatie (part of present Ukraine). While 19th century synagogues of Austria proper, Bohemia, Moravia, Silesia and Galicia were not involved into the sample, almost all conclusions, types, genealogical trends apply to the Habsburg Empire as a whole.

4. CRITERIA FOR TYPOLOGIES

The complex or matrix method of typifying nineteenth-century synagogues is based on eight key criteria with which it is possible to classify over 90% of the synagogues: 
(A) exterior mass composition; (B) interior space—proportions, articulation, limitation, foci (number and placement), scale; (C) architectural language (decoration) of the interior; (D) architectural language (decoration) of the exterior; (E) bearing structure and building materials in general; (F) size (number of seats); (G) location of the synagogue in the context of its immediate surroundings; (H) location of the synagogue in the context of the town. Each and every synagogue is a specific and relatively free combination of the aforementioned factors, icons on the scheme.

For instance, a burgher house type synagogue (A2) may have an undivided elongated rectangle plan (B1) or a nine-bay arrangement (B2); it may have on the exterior Baroque (C1), Neo-classical (C2), Rundbogenstil (C3), or sometimes Neo-gothic (C4) decoration; it may have on the exterior Baroque (D1), Neo-classical (D2), Rundbogenstil (D3), Oriental (D5) stylistic elements; it may be built of brick/stone walls with a timber ceiling (E3), rarely timber-frame walls, timber ceiling (E2), or brick/stone walls with vaulted
ceiling (E4); it may have a capacity of 50-100 seats (F2) or 100-200 seats (F3) or sometimes even 200-400 seats (F3); it may be located in the centre of a Jewish courtyard (G1) or on its street-side (G2) or frontally (G3); it may be located on the outskirts of a major town (H1) or in the central area of a smaller settlement (H3). However, about 5–10% of the synagogues do not fit into the framework created by this method. Even though it is theoretically possible to introduce more categories or subcategories, a certain percentage will always remain beyond any system. Yet if too many criteria and categories are introduced one loses the overview of so many parameters. Therefore in the following paragraphs the eight criteria and their categories are listed.

![Image 1. The Matrix of Synagogue Typology](image)

(A) **Exterior mass composition** (first column in the matrix)

Composition of volumes/masses is the most important feature of nineteenth and early twentieth-century synagogues from an urban point of view, and at the same time the most appropriate in regard to classification. In this regard synagogues could be categorized into eight basic types: (A1) peasant cottage type, (A2) burgher house type, (A3) Protestant church type, (A4) Solomon’s Temple type, (A5) factory hall with minarets type, (A6) palace type, (A7) Catholic church type, (A8) Byzantine church type. In terms of composition synagogue exteriors underwent little change up until the 1848 revolution. They remained compact and their decoration merely mutated from a restrained Baroque to a solemn Neo-classicist style. The synagogues’ compactness
reflected the compactness of Jewish communities, but both began to undergo rapid changes after the revolutions in 1848. Until then, few synagogues surpassed the unwritten code, which included types A1-A2-A3. The choice depended on the size and financial standing of the community.

After the revolution, types A4-A5-A6-A7-A8, as free-choice templates for the community and its leadership. With this, one-channel evolution ended and a pluralistic development set in. The choice depended on numerous considerations, starting with the available location, micro- and macro positioning of the synagogue in its urban context as well as its land-marking function, cost, etc.

*Image 2. The example of burgheer’s house type synagogues: options of floor plan, style (interior, exterior), and urban micro location*

**(B) Interior Space – proportions, articulation, limitation, number and placement of foci (second column in the matrix)**

The following types characterised the period from the late eighteenth century to the early twentieth century: (B1) undivided – usually with cage bimah, Western gallery (Szabadzállás, Tarcal, Albertirsa, Várpalota), (B2) nine-bay – structurally anchored bimah (Bonyhád, Mád, Stupava, Hust) (B3) three-naved – free Bimah, vault of nave and aisles bound together, interrupted U-plan gallery (Liptovsky Mikuláš first version, Óbuda current version, Baja); (B4) three-naved – free bimah, ceiling of the nave and aisles is independent, continuous U-plan gallery, two western staircases (Vác, Tokaj); (B5) three-naved – free bimah, ceiling of the nave and aisles is independent, discontinuous U-plan gallery, four staircases (Miskolc, Pécs); (B6) Central Octagonal –
free Bimah, continuous ring gallery, emphasized central dome (Győr); (B7) Central, (nearly) square plan, emphasized central dome, four staircases (Szeged, Subotica, Novi Sad); (B8) Proto-modern – explicit structure, (almost) square plan, free Bimah, freely flowing, united interior space.

Image 3. Floor plan types of 19th century synagogues

The two most frequent floor plan types during the early nineteenth century were inherited from the past: the undivided, slightly elongated space (B1) and the similarly
slightly elongated nine-bay arrangement (B2), the latter for the major and more prominent synagogues in such larger Jewish centres as Bonyhád, 1795; Apostag, 1768, 1822; Mód, 1789; Stupava, 1803; Trenčín, 1804; Huncovce, 1821; Bardejov, 1836; Hust all probably mid-nineteenth century. The nine-bay arrangement survived some three centuries, spanning stylistic periods of Renaissance, Baroque, Neo-classicism and in part Romanticism, as in the case of Hust, which clearly demonstrates that European stylistic periods can hardly substantiate synagogues in terms of space conception and plan in general.

The nineteenth century produced the most dramatic changes in interior arrangement (floor plans) — it terminated the spatial duality of synagogues. Three stages can be distinguished: (1) In the traditional nine-bay arrangement (B2) both in space conception and bearing the structure of synagogues emphasized the *bimah*, with the proportion of the sides varying between 1:1—1:1.7, roughly until the 1820s. (2) In the transitional form of synagogue interior from the central to the longitudinal layout between the 1820s and mid-nineteenth century, the structure flanking the *bimah* was removed (the *bimah* itself still remained in the centre for a while), as in Óbuda (version 1820). In the 1840s, however, the architecturally freed *bimah* was moved in front of the ark, as in Baja (B3), creating a pompous altar-like structure, called *mizrah*, meaning east. Thus, the interior became elongated and focused to the east. A bilateral or U-shaped women’s gallery was added and the cross section gradually became basilical. In the longitudinal, basilical synagogue interior, used in the second half of the nineteenth century, the *bimah* sometimes remained in the centre but the spatial impact was unanimously longitudinal (B4-B5). (3) Finally, central arrangement returned with a *bimah* remaining in its new position, in the eastern part of the synagogue, and large central dome (B7) constructed over the empty centre, usually prompted by urban considerations, from the late 1880s on to around 1914. However, numerous synagogues were constructed with a longitudinal arrangement until the twentieth century, mainly for smaller or more conservative communities. In the case of Proto-modernist and the few modernist synagogues centrality continued to prevail (B8). During the nineteenth century and early twentieth century the undivided interior survived in the case of small synagogues, either with a central or eastern *bimah* (B1).

(C) Architectural language (decoration) of the interior (third column in the matrix)

Bearing in mind that synagogues seldom feature pure style, the following categories may be distinguished:

(1) Late Baroque, called Zopf (C1); (2) Neo classical (C2); (3) Romantic *Rundbogenstil* (C3); (4) Neo-gothic, a relatively rare version in its pure form, though it often appears in combination with some other stylistic variants (C4); (5) predominantly Oriental (C5); (6) Eclectic or Free Style, culminating in Lipót Baumhorn’s Great Synagogue in Szeged (C6); (7) Art Nouveau – usually restrained, as in Subotica (C7); (8) Protomodernist with some elements of late Art Nouveau or Wiener Werkstätte as the Kazinczy Street synagogue in Budapest or the new synagogue in Trenčín (C8). In any case, these stylistic terms are only partially applicable to synagogues and do not correspond directly to their Gentile counterparts. Romanticism, for instance, lasted much longer in synagogue architecture than in Christian churches or secular buildings, exemplified by the Oriental style and its derivatives.
(D) Architectural language of the exterior (fourth column in the matrix)

The architectural language of the exterior shows similar styles as the interior: (1) Late Baroque, called Zopf (D1); (2) Neo-classical (D2); (3) Neo-romanesque/Rundbogenstil (D3), (4) Neo-gothic (D4), (5) Oriental-Arabic (D5), (6) Eclectic or Free Style (D6), (7) Secession (D7), (8) Wiener Werkstätte, Proto-modern (D8). Architectural language (decoration) of the exterior is not necessarily completely identical to the architectural language of the interior. Often the interior was considered to be more of a private issue of a given Jewish community, while the exterior had to meet the expectations of a wider public, the Gentile population. Usually the interiors were more elaborate, especially during the first and middle part of the nineteenth century. Moreover, the interiors usually displayed more Oriental elements than the exteriors, which corresponded with the supposed Oriental identity of the Jews (see later). From the 1860s exteriors also became very elaborate. The stylistic gap between interior and exterior narrowed down in the late nineteenth century and Art Nouveau period.

(E) Bearing structure and building materials (fifth column in the matrix)

The bearing structure of the nineteenth century varied significantly. The following typical cases can be distinguished: (1) puddle wall, timber ceiling (E1); (2) timber-frame walls, timber ceiling (E2); (3) brick/stone walls, timber ceiling (E3); (4) brick/stone walls, vaulted ceiling for undivided space, nine-bay structure, three-naved structure (E4); (5) brick/stone walls, cast iron/steel columns, timber/steel ceiling (E5); (6) metal/timber completely (E6); (7) brick walls, concrete ceiling (E7); (8) (visible) concrete skeleton, light fill-in (E8). Massive brick and/or stone synagogues were practically the only options until 1848, excluding peasant house (A1) type synagogues, regardless of their size, which until then was rather modest. Predominantly massive synagogues sometimes used timber ceilings, but this circumstance did not change their general appearance and thus these buildings will not be considered as hybrids. Communities which could not afford barrel or cross vaults mimicked barrel vaults with timber, as was the case in Hуст, which imitates nine-bay cross-vaulting with timber. Totally light metal/timber synagogues are relatively rare. The hybrid structure began to emerge with the Dohány Street synagogue in Pest (1854–59) designed by the Viennese architect Ludwig Förster, a pioneer of modern technology. Almost all larger synagogues followed this pattern during the second half of the nineteenth century: Perimeter walls were made of brick, columns were made of cast iron, later steel, and ceilings, including the roof, used both metal and timber.

Around 1900, self-supporting shell-constructions started to emerge, replacing the suspended Rabitz structure, as was the case with the ceiling in Subotica. And yet several Protomodern synagogues with reinforced ribbed ceilings, like the Kazinczy Street synagogue in Budapest, for instance, built in 1912, which had a suspended Rabitz structure, resembling a barrel vault over its nave. In this period only the synagogue in Trenčín was built using reinforced concrete for its ceilings and domes too, showing bluntly structural elements. As structure influenced the interior space – scale and articulation – as well as the exterior look, the appearance of reinforced concrete structures started to change established nineteenth century types. However, due to the relative conservatism of the architectural profession and Jewish establishment after World War I in most of East-Central Europe, synagogues did not change as much as they
could have, nor as radically as they changed in Germany, for instance, until the Nazis came to power.

Image 4. The outer massive walls and the internal steel and lightweight shell structure of the synagogue in Subotica, 1901-1903, architects Dezső Jakab and Marcell Komor

(F) Size – number of seats (sixth column in the matrix)

Although the actual size of a synagogue is not strictly related to the number of seats, for practical purposes the number of seats may be taken as an adequate representative of its size. There are many ways to define types according to size, here the following method will be adopted: (1) 50≤ (F1); (2) 50-100 (F2); (3) 100-200 (F3); (4) 200-400 (F4); (5) 400-800 (F5); (6) 800-1500 (F6); (7) 1500-3000 (F7); (8) 3000≤ (F8). Interestingly, the size of the synagogue does not necessarily correspond to its exterior appearance. Some compositional types are almost completely unrelated to their size: the Solomon’s Temple type (A4), for instance, may have 200 seats (little synagogue), or 1,000 seats (large synagogue). Some other types are less size neutral, so the Byzantine church type synagogues (A8) are seldom below 800 seats.

(G) The relationship of the synagogue vis-à-vis its immediate surroundings – urban micro context (seventh column in the matrix)

The question of micro and macro context of nineteenth-century synagogues is underrepresented in all major publications, due mainly to the profile of researchers, who are more inclined to art and architectural history than to urban morphology and its social aspects. The problem of location can be subdivided into two major categories: (1) the synagogue in its micro-context — the location within its immediate surroundings; (2) the synagogue in its macro-context — the location inside the town or city. Furthermore, due to topographic circumstances, such as mountains and valleys, the synagogue may play a significant role as part of the townscape. The synagogue in its micro-context—the immediate surroundings including the buildings of the Jewish community—faced the following typical situations: (1)
rural/urban synagogue hidden in a courtyard in the middle of the plot, usually free standing, sometimes built within the ensemble — often the solution in pre-emancipation times or for small synagogues within the framework of a Jewish institution (G1); (2) rural/urban synagogue turned with its longer side to the street, either on the street-line or recessed, loosely integrated into the urban fabric (G2); (3) rural/urban/suburban synagogue in the courtyard, visible from the street or near the street, but detached from the neighbouring houses (the synagogue stands alongside community buildings built into the street-facade) (G3); (4) urban/metropolitan synagogue composed with auxiliary buildings into an impressive ensemble detached or integrated/surrounded by community buildings (G4); (5) clearly visible urban/metropolitan synagogue on a corner plot, in the axis or off-centred, detached, usually surrounded by vegetation (G5); (6) major urban/metropolitan synagogue on its own plot surrounded by streets or as closing façade of a major public square (G6); (7) an urban/metropolitan synagogue on a riverbank, usually one lateral side turned to the embankment, the other one to a major street, with or without a public square in front of the western entrance G7; (8) metropolitan synagogue in the courtyard of an apartment block, occupying the complete ground floor or ground floor and mezzanine, either detached from the apartment blocks, or built in G8.

(H) The relationship of the synagogue vis-à-vis it’s the whole village/town – urban macro context (eighth column in the matrix)

This aspect has also hardly been investigated and not yet classified, although some partial research has been done on case studies, which furnish only general conclusions. The location of the synagogue depends on the location of the Jewish quarter or places where Jews used to live, scattered among the Gentile population. This classification is based on information about Jewish topography (generally from the shtetl to the capital city) and includes different settlement types or different types of urban fabric within the settlements, ranging from market towns historically without a town wall (some parts of Poland and Croatia, Southern Hungary, Vojvodina in Serbia) to walled towns in Slovakia, Transylvania, and Western Hungary.

The synagogue’s macro-context, location in the town or city may be summed up into the following typical cases: (1) outside the continuous urban fabric of the settlement: Jews often counted on urban expansion during the second half of the nineteenth century and purchased cheaper locations further from the centre of town (H1); sometimes their synagogues remained forever outside the urban settlement if they miscalculated urban growth; (2) somewhere halfway between external perimeter and the main square, on the outer side of the city wall in the case of walled towns (H2); (3) closer than halfway between the external perimeter and the main square, on the inner side of the city wall in the case of walled towns (H3); (4) somewhere halfway between the periphery and the town centre or on the perimeter of the densely built central areas of village towns (either at an insignificant location or at an exposed location) (H4); (5) on the perimeter of dense central parts of village towns (usually at an exposed spot, but without direct visual contact with the main square area) there is also a former synagogue close to the periphery on the scheme (H5); (6) smaller synagogues in the older part of a small town; there is also a large synagogue on a street branching from the elongated main square (H6); (7) synagogue(s) between two urban settlements in the case of towns with two nuclei (H7); (8) synagogues in each agglomeration in the case of towns with an old centre and newer satellites (H8).
5. CONCLUSION AND OUTLOOK

The matrix method for typology of 19th century synagogues proved to be efficient for the classification of some 90-95% of synagogues in the Habsburg Empire. It is more efficient in the central regions of the empire and a bit less on the fringes, where foreign influences – either from the German Reich or from the east, the Russian Empire or the Pale of Settlement, or the south, the Balkans (The Ottoman Empire) – played a major role. In some regions some combinations are more frequent than others. For instance, the Solomon’s Temple type synagogue in Austria proper and in Hungary used to have a longitudinal plan without a dome (Tempelgasse synagogue in Vienna, 1853-57, the synagogue in Vác, 1863) and in Bohemia this type may be built on a central plan topped by a dome (The Spanish Synagogue in Prague, 1867). There may be even combinations between different types. Again, some combinations are more frequent than others depending on the region and the period.

While created for the typology of synagogues, the matrix method can be used for other building types too, mainly the ones that served other confessional minorities, which plaid a similar subordinated role vis-à-vis churches of the state religion, Catholicism in the case of the Habsburg Empire.7

On a theoretical level the matrix method may shed light on the elements that create architecture, on the genesis of architectural styles in the historic sense of the word. The matrix method may be also advantageous for comparative analyses of buildings or building types or genres which are rooted in different cultures and periods.

REFERENCES


7 Dubravka Dukanović has proved that Orthodox churches in the Province of Vojvodina have developed along similar lines as synagogues as explained by the matrix method (Смесе правоославних храма XVIII и XIX века у Бачкој, Дубравка Вукановић, Саопштежња XLIII- 2010 (Communications, XLIII- 2010, Нови Сад 2009.)
КАКО ДА НАПРАВИТЕ ТИПОЛОГИЈУ ЗГРАДА?
Типолошка матрица за мапирање синагогама 19. века

Резиме: На бази истраживања које обухвата 500 синагога, овај рад је први покушај да се создр тврди свеобухватна типологии синагогалне архитектуре. Ова је прва типологија која узима у обзир уређење ентеријера (основа и пресек), језик архитектуре ентеријера, ношењу конструкције, архитектонски језик (декорацију) ентеријера, обликовања маса објекта у екстеријеру, величину, и на крају улогу урбаног контекста – непосредног, односно према зградама око синагога, и ширег урбаног контекста. Ове је типологија развијена за класификацију ашкеназских синагога у Хабсбуршки царевини, али ју је могуће применити и на друге жанрове и територије, грађене у осамнаестом и деветнаестом веку те у двадесетом веку све до појаве модерне архитектуре 1920-тих и 1930-тих година. Ова се методолошку може нарочито успешно примењивати на православне и протестантске цркве у Војводини, где је државна религија била католичким и конфесионалне мањине су биле ограничене у градњи својих богослова. Ова ограничења и општи архитектонски контекст може да чини њихова сакралне објекте сложени у типолошким погледу.

Кључне речи: Грађевина, архитектура типологии 19. века, Ашкенази синагоге, Хабсбуршка царевина

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