

An Update on the Virtual Reconstruction of Synagogues in the City of Vienna

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Abstract—This paper describes the reconstruction work in progress on Viennese Synagogues. The related project activities started in 1998, and all major temples have been reconstructed since then. The paper outlines the utilization of this research work in the form of a city guide, thus potentially reaching a wider audience. Furthermore, the idea to present the information in such a context led to a specific processing and delivery format.

Key Words—Virtual reconstruction, cultural heritage, synagogue, city guide, Jewish sacred buildings.

I. INTRODUCTION

In 1998, the virtual reconstruction of the synagogue in the Viennese Neudeggasse represented the groundbreaking step for a project that turned out to be much more comprehensive than expected. The interim results have been published at CAAD-related conferences [1]-[3]. It has already been reported, how the modeling procedures were set out and also the peculiarities concerning the available data stemming from building plans and photographic recorded information. Though the buildings themselves were destroyed, it is remarkable to note that the approved building plans are still archived. Though photography existed already during the erection of the buildings, the information depicted on photographs only covers a part of the building in most cases (Fig. 1). Especially (detailed) interior views are often missing as well as ubiquitous information on colors and materials used. In such cases, the gap of information is closed by a plausible interpretation, which also reflects the possibilities of handling a building construction around 1900.

The synagogues have been in existence for some decades as physical building. Although the building itself is not “alive”,

bits and pieces can be assembled to enhance the level of plausibility.

The final outcome (renderings, animations, rapid prototyped models etc.) makes it possible to form a mental picture of the structures.



Fig. 1. Courtyard situation – Synagogue in Schmalzhofgasse.

The same or similar working procedures are also used to explore unbuilt architecture [4] or buildings which are not open to the public any more [5].

The City of Vienna granted financial support to individual reconstruction efforts. In addition, reconstruction work was handled in the context of diploma theses, with a changing focus on topics of interest. Nevertheless, the way of reconstructing the building followed the already developed pattern of systematics: in order to achieve a sustainable collection of data, a unified procedure for the 3D modeling was set up. Adherence to these systematics intends to make the model itself “traceable” for future use and eventual enriching extension. Building parts are basically grouped into construction layers, i.e. interior wall elements, roof elements etc. The self-explanatory names given to the layers are predominantly designed to help future users, who are likely to be different from the current users.

It is a widely known phenomenon that CAAD-software updates occur roughly ever 15-18 months and may require model upgrades. In the current project, unifying model data upgrades to the current ArchiCAD-version 11 were performed (version 12 has already been released in the meantime!). Especially knowledge of the handling of the library elements is needed here, as these display a crucial position within the virtual building model.

The 3D-models display a high level of detail, thus making it possible to create interesting physical models (completely or in parts) by means of *rapid prototyping*. As these fabrications can be delivered in multiple ways, they can be distributed to, e.g., museums and other interested institutions. The modeling activities are not to be regarded as an aim in itself, but as a first step towards the creation of (physical) “output” [6]. Section cuts, for instance, make it possible to visualize the connection between the exterior and the interior in a non-destructive way.

70 years after the pogrom nights, a paperback city guide is planned to be published in 2009 to encourage readers to visit the 19 reconstructed sites. Three-dimensional documentation will rebuild the architectural spectrum of the no-longer-existing built heritage in the City of Vienna. It will be painful, however, to acknowledge the cultural values that have been lost.

Section 2 of this paper presents the concept of a city guide and provides an insight into the working procedures. However, the starting point is the availability of a detailed 3D-model, which defines the basis for the creation of the representations (section 3). The focus lies on catering to a wide audience and facilitating “easy interpretation” of the rendering. Especially the local settings in the urban context receive a high amount of attention. As this is work in progress, section 4 also delivers an outlook on forthcoming stages of development.

II. THE CONCEPT OF A CITY GUIDE

The idea of a city guide relates to a touristic activity, i.e. the reader would (virtually) visit a certain location and be served with a certain amount of information. The intention is not to cater solely to “handpicked architecture aficionados”, but to attract a wider audience. There are only very few inhabitants left who might have experienced the local situation with the synagogues still in place. The only thing current inhabitants get to see is a “memorial plaque” – if any – on the facade of the successional building. In other words: visit the location with the city guide in your hands and trace back a piece of building history. What did it look like – form your own visuals – and how would it look like, if the building were still present in the current state of building within the given context. It has to be noted that even if a full physical reconstruction of the synagogue itself could be realized on exactly the same location, its usership would be absent for well-known reasons.



Fig. 2a. Aerial view of Neudeggasse (screenshot from: maps.live.de).

Those who can't make it to Vienna, could resort to services like *Google Earth* and *Maps.live* (Fig. 2a-b). On their pages Vienna is already recorded in detail, thus delivering a more than suitable impression of the respective locations. Currently the remaining distance to the viewpoint is approx. 20 m with correspondingly detailed views.

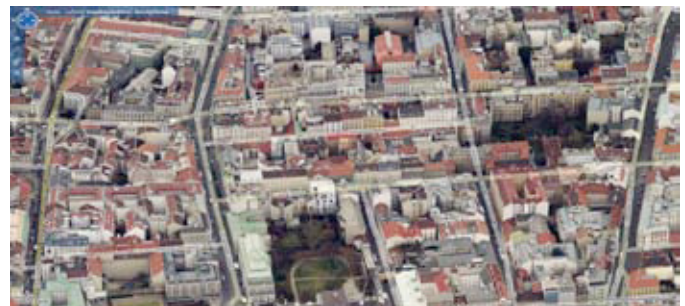


Fig. 2b. Bird's eye view of Neudeggasse – zooming and clockwise position changes are possible (screenshot from: maps.live.de).

The city guide will be the first to present virtual reconstructions of the no-longer-existing synagogues in Vienna to make them “graspable” to the readers. Arranged by district, the guide encourages visitors to take a roundtrip into the past in order to perceive the architectural creations of the past in a present-day context. For better comprehension, basic technical facts of the computer-assisted reconstruction process will be explained and the art-historical aspects of synagogue

buildings addressed. This includes also background information on the building data and the architects in charge and comparable synagogues. Furthermore, a condensed overview on the individual context and changes in ownership of the building plot will be described.

In some cases, a study of the reconstructed synagogues will surprise and amaze, because it brings to mind how many such buildings existed in Vienna. In this process of “re-discovery” it will be interesting to learn how sacred buildings looked at the time and in what parts of the urban fabric they were set. Particularly visualizations of interiors will provide readers with a fascinating impression of those lost buildings and give them an impression of Jewish building culture in Vienna.

It has to be noted, that the Jewish population share was particularly high in the 2nd District (which is still the case nowadays), and therefore five locations can be found in the immediate neighborhood only a couple of minutes’ walk from each other.

The locations themselves are as such not extremely prominent in the sense of attractive lines of sight and/or visual appeal, etc. It can be observed that the architects in charge were struggling with the situation. Synagogues had to be positioned in the east-direction, for instance, but not every piece of ground would allow that, and sometimes ground floor plans had to be turned (mirrored), making direct access difficult. This can be observed very clearly in the case of Müllnergasse (entrance via a side street). In the case of Schmalzhofgasse the temple was located in a narrow courtyard (Fig. 7), hardly visible from the street side. Still, the original architectural representation raised the impression, that the Schmalzhof-temple was unsurrounded by buildings (Fig. 9).

Indeed the surrounding “cramped road conditions” led to a certain repertoire of solutions to overcome these shortcomings. Possibilities for an unobtrusive enhancement of character were explored to the full. Tower-elements may be used in a low-profile way to set the synagogue off from neighboring. The architects didn’t have unlimited freedom to do what they wanted.

III. REACHING THE AUDIENCE AND CONTEXT

Since the guide is to appeal to the audience at large, the visualizations need to be geared to this fact. Hence, many of the existing visualizations need to be re-rendered in order to facilitate understanding. For instance, a combination of historical ground plans and “spatialized” representations thereof (e.g. section cuts taken at a height of 1m with shadow effect – see Fig. 3-5) will be used.

Furthermore, the building’s location in the urban fabric is usually significant, since the sacred building was embedded into a rather closed street front in order not to “stick out”. Examples of these visual representations in Vienna are in line with this principle and are presented here in order to show the range of solutions (Fig. 6-7 and 11-12).

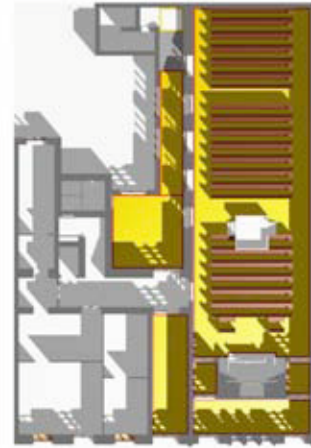


Fig. 3. “Spatialized” ground plan (Synagogue in the Storchengasse).

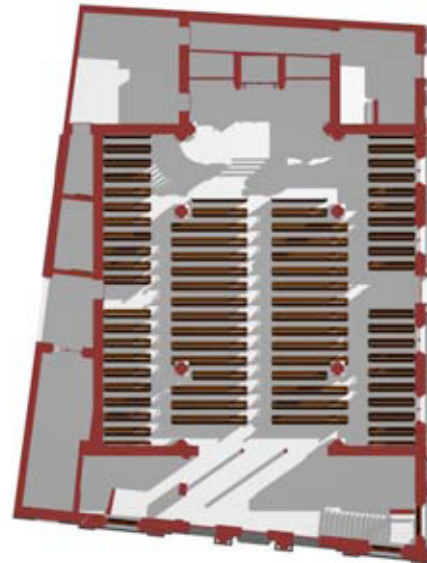


Fig. 4. Ground plan of the Synagogue in Humboldtgasse.

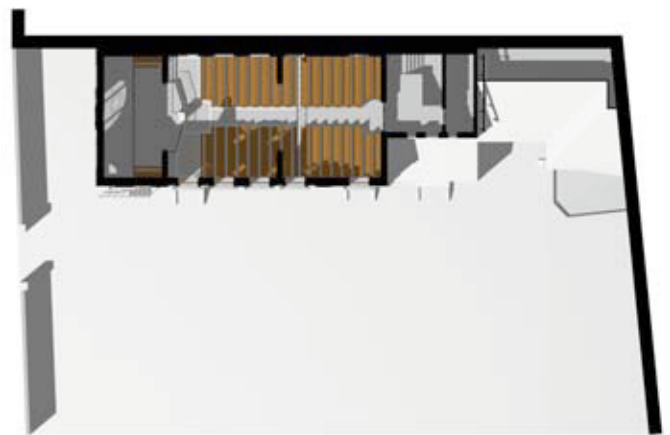


Fig. 5. Synagogue in Dollinergasse with courtyard.

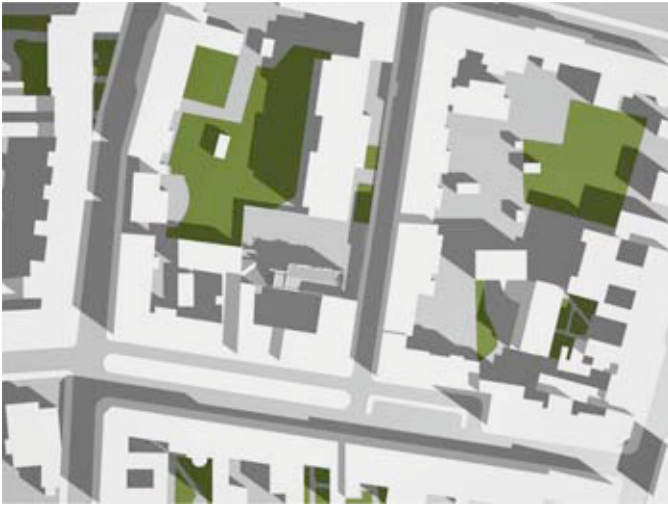


Fig. 6a. Synagogue in Dollnergasse – Ortho view.



Fig. 7a. Synagogue in Schmalzhofgasse – Ortho view.



Fig. 6b. Synagogue in Dollnergasse – Bird's eye view.



Fig. 7b. Synagogue in Schmalzhofgasse – Bird's eye view.

To be understandable for laypersons, the representations need to be provided within a larger urban context. The cutout makes it possible to embed the synagogue and does not produce a mock-isolated view of a freestanding building. Exceptions from the standard procedure of the closed street front do exist in Vienna, as for example in Dollnergasse (Fig. 6). The amount of attention it draws is still not enormous. On the other end of the scale is the synagogue in “Seitenstettengasse”. It is completely hidden and the only one whose structure has been preserved, though parts of it were destroyed.



Fig. 8. Synagogue in Seitenstettengasse – nothing indicates its presence on the street side (screenshot from: maps.live.de).

There is no architectural indication of it in this narrow street in the 1st District, although the building is still in use in its original function as a synagogue (Fig. 8). In Pazmanitengasse, for instance, the synagogue's presence was adequate but not overwhelming as shown in the montage (Fig. 10). A direct comparison may prove useful.



Fig. 9. Schmalzhofgasse: Denial of the narrow courtyard situation.



Fig. 10a. Former synagogue location in Pazmanitengasse (2003).



Fig. 10b. Pazmanitengasse with synagogue (photo-montage).



Fig. 11a. Synagogue in Leopoldsgasse – Ortho view.

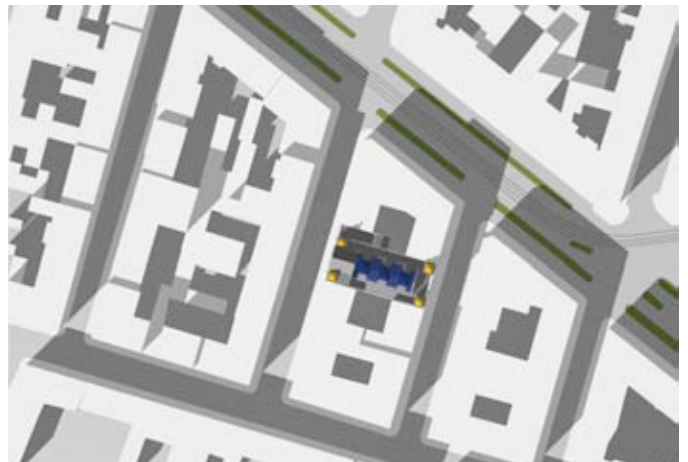


Fig. 12a. Synagogue in Pazmanitengasse – Ortho view.



Fig. 11b. Synagogue in Leopoldsgasse – Bird's eye view.



Fig. 12b. Synagogue in Pazmanitengasse – Bird's eye view.



Fig. 13. Demonstration of a “non-destructive cut” in the 3D-Model of the Synagogue in Humboldtgasse.



Fig. 14. Demonstration of an opened 3D-Model of the Synagogue in Eitelberggasse.

IV. FUTURE WORK AND CONCLUSION

It is intended to work out further rapid prototyped models that are easy and fast to understand and are therefore particularly appropriate for laymen as auxiliary material. The specific location within a cityscape remains an interesting factum and could be “rapid-prototyped” as well. As a matter of principle, digital models enable “non-destructive” cuts (Fig. 13-14), thus illustrating interrelations between interior and exterior.

The wider context of synagogue buildings in Austria needs to be developed; valuable information has already been made available at www.synagogen.info. Originally, this repository contained only temples in Germany, but has been extended to include Austrian locations. In neighboring countries (Czech Republic, Slovakia, Hungary, etc., synagogues – at that time constituent parts of the Habsburg Monarchy) - were also

erected. They represent interesting material for comparison and in a significant number of cases had architects who also worked on Viennese synagogues. Although outside of larger cities these buildings were rarely not fully destroyed, only very few of them are still in use in the original function. Here, too, their users left and did not return. Some of the remaining buildings were used for other purposes or, at best, converted to museums or exhibition areas.

A documentation encompassing the above-mentioned computer-assisted representations and accompanying information can help to make something “graspable” that has been irretrievably lost a long time ago. At any rate, the reconstruction of historical building stock ensures that at least a visual memory of the chronology of decay or change will survive.

ACKNOWLEDGMENTS

The authors would like to thank Herbert Peter, who has been a committed and hard-working co-worker in this project since 2000, as well as Roland Müller, who worked on the reconstruction of Eitelberggasse in the framework of his diploma thesis at the Vienna University of Technology.

REFERENCES

- [1] B. Martens, M. Uhl, W.-M. Tschuppik, and A. Voigt, Andreas, “Synagogue Neudegggasse: A Virtual Reconstruction in Vienna”, in *Constructing the Digital Space [Proceedings IVth Sigradi-Conference Rio de Janeiro, 2000]*, pp. 165-170.
- [2] B. Martens, and H. Peter, “Developing Systematics Regarding Virtual Reconstruction of Synagogues”, in *ACADIA 2002 Conference Proceedings, Pomona (USA)*, pp. 349-356.
- [3] B. Martens, and M. Stellingwerff, “Creating Physical Models Using Virtual Reconstructions: Mixed CAM-techniques for a Viennese Synagogue Scale-model”, in *SiGraDi 2005 Conference Proceedings, Lima (Peru)*, pp. 108-113.
- [4] B.J. Novitski, *Rendering Real and Imagined Buildings : The Art of Computer Modeling from the Palace of Kublai Khan to Le Corbusier's Villas*. Seattle: Rockport Publishers, 1999, pp. 34-39.
- [5] T. Maver, and J. Petric, “Virtual Heritage: Is There a Future for the Past?”, in *III Congreso Iberoamericano de Grafico Digital [SIGRADI Conference Proceedings 1999]*, pp. 482-487.
- [6] A. Geva, and A. Mukherji, “The Holy Darkness: A Study of Light in Brihadeshvara Hindu Temple, in Tanjore, Tamilnadu, India (1010 AD)”, in *SiGraDi 2006 - [Proceedings of the 10th Iberoamerican Congress of Digital Graphics]*, pp. 425-428.



committee) led to well-established contacts with CAAD-associations and individual researchers.

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