

## Stuttgart main station by Paul Bonatz: life of a monument

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**Abstract:** The process of knowledge and protection of a monument building starts from the recognition of its value and is intended to keep it throughout its lifespan. When the feeling of self-identification with it by a whole community is added to its historic and architectural value, so as to turn it into a national symbol, the active conservation of a symbolic place over time becomes a fundamental commitment, and has to be adapted to the needs of contemporary life. This is the case of the Stuttgart main railway station, designed by the German architect Paul Bonatz in the early twentieth-century and consists of transit crossroads which have been in constant transformation, since its construction to the present day. It was the subject of extensive urban and architectural research, until defining a final hypothesis of transformation conscious and respectfulness of its existing use.

**Key words:** reuse, Stuttgart, railway station, infrastructural heritage, drawing, 3D reconstruction.

### La estación principal de Stuttgart por Paul Bonatz: la vida de un monumento

**Resumen:** El proceso de conocimiento y la tutela de un edificio-monumento procede del reconocimiento de su valor y su finalidad es conservar este a través de su uso. Cuando al valor histórico y arquitectónico se suma la conciencia de la identificación de toda una comunidad tanto que se transforma en símbolo de la ciudad, compromiso fundamental es la conservación activa de un lugar símbolo en el tiempo adaptándolo a las exigencias y a las necesidades de la contemporaneidad. Éste es el caso de la estación de tren principal de Stuttgart diseñada en la primera década del siglo XX por el arquitecto alemán Paul Bonatz, cruce de caminos de tránsito en continua transformación desde la época de su construcción hasta la actualidad. Ha sido objeto de estudio urbano y arquitectónico exhaustivo hasta llegar a una hipótesis de transformación y uso consciente y respetuoso de la situación existente

**Palabras clave:** reutilización, Stuttgart, estación de tren, patrimonio infraestructural, dibujo, reconstrucción 3D.

### German architectural heritage

The study presented here is part of larger research on German architecture and its masters of the twentieth-century. These figures have often been poorly studied in their country due to possible ideological implications of their professional activity with the Nazi regime that had supported some major German architects. This widespread attitude has relegated into oblivion the important contribution to architecture that some of these architects made, as they were considered to be affiliated with the Nazi regime, even in cases where this was not possible due to chronological reasons. This is the case of the architect Paul Bonatz (1877-1956) who, with his production, made an important contribution to the architecture of the twentieth-century and whose main work, the main railway station of

Stuttgart, has been analyzed. This work marks the transition from architecture presenting regional and romantic aspects to "Classic Modernism", a New Tradition, so as defined by Kenneth Frampton (Frampton 2008: 147), characterized by simple volumes, elementary parts with measured and austere language. At the time of the construction, the station was defined "historicist" with a negative connotation by radical architects of Modernism.

### The history of the infrastructure

This was, in fact, the subject of a Master's degree thesis in architecture: it aimed to study this architecture under several aspects and explore its designer. The attention was directed towards the complete study of this building from

a historical, technological and design point of view, as well as rendering it in relief and drawing. The remarkable result of this architecture to become a symbolic monument for Germany consists in the capacity to put together several important architectural aspects.

Furthermore, Paul Bonatz, the designer of the railway station and several other works both in Germany and Turkey during the first half of the twentieth-century, has not been neglected. In order to acquire a thorough knowledge of his architectural theory we proceeded to the study of his architecture, especially in Germany and of those principles he expressed in his teaching period in the Stuttgart School, where he taught principles such as the importance of the role covered by drawing in architecture, keeping in line with the teachings he received by his master Theodor Fischer during his training in Munich (Bonatz 1950).

The research work about this issue was also stimulated by the events that affected the Stuttgart railway station in contemporary times. During the twenty-first-century, we witness the adaptation of the building to the new requirements related to high-speed transport: for this purpose a new project was carried out to transform the building by constructing a new underground station, close to the historic building, but rotating rail tracks perpendicular to their previous orientation. During the last decade the construction of this project, called "Stuttgart 21" (Roser 2008: 115), which is still in progress, has involved the partial demolition of the building designed by Bonatz. Because of the importance which the monument has today and the need to adapt it to high-speed transport, it was considered appropriate to envisage an intervention that should be respectful of the existing building, especially in light of its historical and architectural value.

### **Aims - Rebuilding a process for its enhancement**

The main purpose of this research is to reconstruct a missing link in German and European architectural history of the twentieth-century, with the intent to define some principles for a new urban planning. Integrating the study of architecture and historical insight with the study of Bonatz, including his other works, allowed us to better understand the reasons behind the choices made in the project of the Stuttgart station. Such integration is also crucial for understanding the role of this infrastructure and to propose a reuse of the same architectural element even in the new changed historical conditions.

Many objectives are behind this research work. First of all, the enhancement of the heritage from the architectural, the monumental and social point of view, considered this not only for the city but also for the nation itself. In this regard, the starting point has been the reconstruction of the history of this architecture over time, through the various interventions and transformations that the station has experienced, even by its first designer. We can identify several phases in its history:

from the first phase of the competition (1910) to the building process (1914-1928), from post-conflict reconstruction (1950-1957) to the current transformation.

The analysis focused on two main aspects of the station: the building itself, considered as an architectural gem and the relationship between the monument and the city, highly regarded since the conception of the first project. Our starting point was then the reconstruction of the city's history, through the various phases of its expansion, aimed at understanding the integrated features of the building within its urban context, such as position and orientation (Markelin and Müller 1991). In fact, the city of Stuttgart is in a natural basin surrounded by mountains and has privileged accessibility into the valley which is aligned with a large park and its path was chosen as the direction for the rail beam.

The resulting goal is precisely the analysis of urban elements which play a role in the creation of the relationship between the architecture and the city, such as roads, the turreted elements that act as landmarks and the public space. The research of these relationships is one of the objectives by Bonatz who aimed to follow, at least initially, urban planning as projected by Theodor Fischer which was one of the criteria of the competition (Bartl 1990: 289). He designed the station so as to have visual contact with the main city streets and also provided the design of the square outside the station and the building in front of it. As regards to the building itself, the integrated study of the Bonatz's mindset and its concrete construction in the monument, made it possible to grasp the theoretical evolution and architectural maturation of the architect throughout the years. These studies were conducted with the aim of bringing the building and its urban context back to its original integrity, albeit in digital form, so as to make the use and the preservation of memory possible. This is part of a proposed operation which aims to give new life to the building which is likely to be abandoned, stating the items to be preserved and new methods of use of the architecture.

### **Research methodology - Complex building in the stratified city**

The methodological process we adopted began with the collection of bibliographic and archival data in major libraries in Stuttgart and Baden-Württemberg region, in order to gather the material needed for the historical reconstruction of the various stages in which the architectural and urban interventions can be divided. It consisted of the collection of texts by Bonatz on his main work and texts presented by other authors, sketches and design notes, official documents of the time of the competition and the construction of the building and proposals by other competitors. Original drawings produced by Bonatz were joined to this material pertaining to the building and the city, along with direct relief of the building on site. The large amount of information collected has made it possible to sketch a picture as complete as possible of the genesis and the planning stage, through to the construction of the station.

The next chronological sorting of found documents, relating both to the urban context (historical and urban planning maps) and to the building (competition and detail drawings), led to the accurate reconstruction of the choices at the origin of the project of the station and subsequent works. The great variety, even fragmentary, of the original drawings found was the basis for the reconstruction of each of the major historical phases of the building.

The urban analysis was performed and it has allowed us to understand the context in which the building arose and the choices made for its location and orientation, through the study of the city, according to different thematic layers extended to the entire town and then concentrated in the area around the station, such as monuments, public space, urban axes, poles and knots [figure 1].



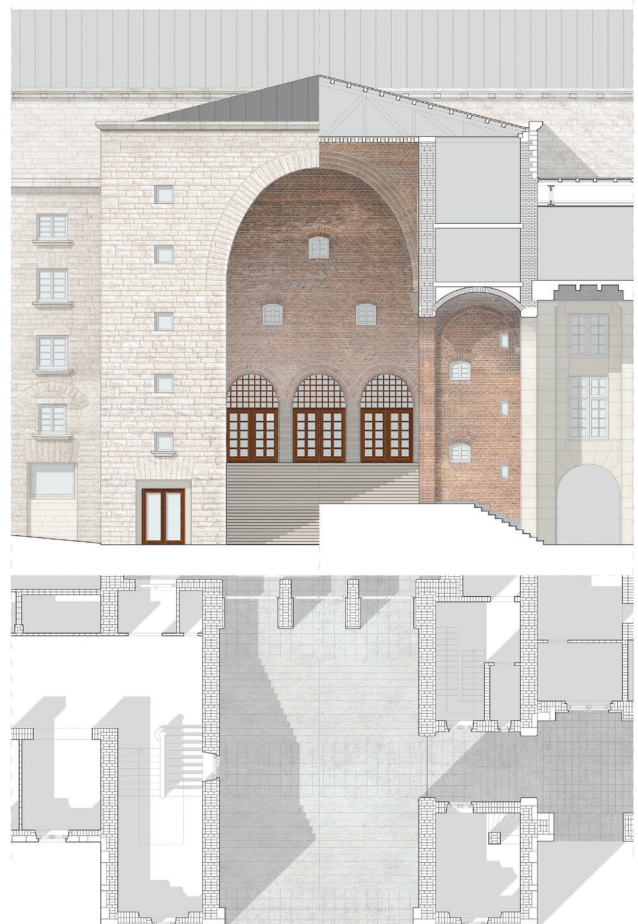
**Figure 1.-** Stuttgart: analysis of urban axes and monuments. Made by M. Balestra, M. Carbone, L. Fornarelli, F. Franciolapilla, L. Musaiò Somma, A. R. Saponara, F. Strada.

The schematization of the context of the urban fabrics around the railway station has highlighted the features and mutually dependant relationship between the monument and the context itself and the reasons for the design choices. Even the historical study of the phases of the town's expansion has supplied an overview as complete as possible of the context in which the new building was inserted at the beginning of the twentieth-century. In fact, we succeeded in reconstructing the history of the railway in Stuttgart since its first appearance with a station building located near the old town, and later on expanding and changing according to new functional needs.

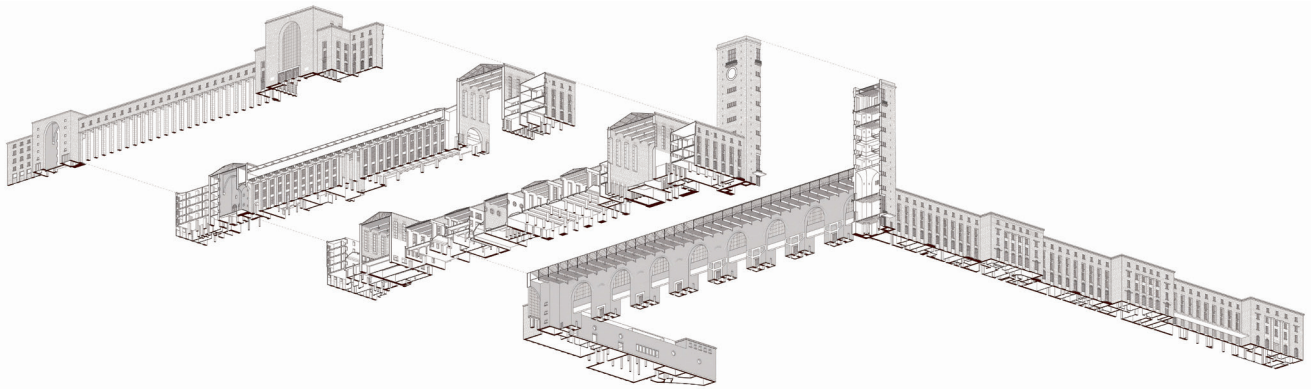
At the same time, a typological study on the building was conducted, placing it in relation to other more or less contemporary railway buildings, to highlight the common features and distinctive elements for railway architectures in the nineteenth-century. Stations in Frankfurt, Leipzig and Helsinki have been analyzed and compared with that of Stuttgart, thus verifying the existence of innovative elements, since the first project designed by Bonatz for the 1911 competition. These elements include the asymmetrical

composition of the volumes, the balance between the masses, the tower on the side of a major road, which were quite set apart from the search for symmetry and hierarchy in the facades that were typical of the nineteenth-century (Voigt and May 2010: 37). The typological analysis was conducted focusing on the relationship between the building and the urban core on the basis of mutual interaction, on the study of facade elements such as entrances, towers and foreparts, the position of the side entrances and waiting gallery of travelers related to accesses and tracks room, on main and secondary axes, and the shape and type of roofing on the building and over the tracks.

Regarding the architecture of the building itself, it was necessary, for the purposes of its understanding, to develop a set of drawings on different scales, up to a detailed one, integrating the original iconic material available with the direct relief of the monument. This allowed us to fill in some gaps regarding the building parts which were not represented, partly because of the changes that occurred during construction. The drawings for each of the historical phases have become the basis for the reconstruction of materials and colors used, as well as a tool to investigate the different technological solutions choices over time [figure 2].



**Figure 2.-** Facade/section and plan of the small ticket hall (*Kleine Schalterhalle*) at the time of the first version of the building (1928). Made by M. Balestra, M. Carbone, L. Fornarelli, F. Franciolapilla, L. Musaiò Somma, A. R. Saponara, F. Strada.



**Figure 3.-** Axonometric section of the railway building at the time of the first version of the building (1928). Made by M. Balestra, M. Carbone, L. Fornarelli, F. Franciolapilla, L. Musai Somma, A. R. Saponara, F. Strada.



**Figure 4.-** New development plan for station area. Made by M. Balestra, M. Carbone, L. Fornarelli, F. Franciolapilla, L. Musai Somma, A. R. Saponara, F. Strada.

Computer aided analysis of architectural drawings made it possible to complete the representation of details and to understand the relationships and ratios between the different parts of the building.

The last step of this long work of reconstruction was the development of a three-dimensional model for each of the major historical phases identified in the life of the building (first building and post-conflict reconstruction). Those models are intended to reconstruct not only the volumes of the station, including those no longer existing today, but also the internal space and the adopted technological details. This three-dimensional model is a valid tool to spread the knowledge of the monument [figure 3].

The study at different scales of representation, at urban, architectural and detailed level, allowed us to evaluate the complexity of the building and to analyze the characteristics in a timely manner. The study did not stop with historical reconstruction, but included contemporary events and projects.

The analysis of the modern project "Stuttgart 21" and the technical and functional reasons on which the new changes are based, were integrated into a new hypothesis

of transformation which aims to give a new function or to restore the railway to the original artifact by Bonatz, so that it continues to be enjoyed by travelers and the local community, while contemplating the necessary changes to its technical and technological upgrading. As for the intervention in the neighborhood of the station, a residential settlement was planned in conformity with the natural and urban characteristics of the place, being a choice which further enhances the value of the place (*genius loci*) [figure 4].

#### Discussion of results - New life to the railway station

The results obtained with this research work are manifold and cover different aspects, all of them related to the possibilities of development of the cultural heritage, in this case linked to the world of infrastructure. The first objective achieved was the work of ordering and organizing all existing information on the matter, object of previous historical studies, but not of reconstruction and architectural exploration. Previous partial attempts at organizing information on the subject did not lead to a collection of graphs and historical data such as we obtained. Even the attempt to gather the body of drawings of the Stuttgart station was directed to the knowledge of the monument as complete as possible. These drawings were laying in German archives, available for consultation, but were not yet arranged into a systematic collection illustrating the various parts of the building in chronological order. The reconstruction of what was lost during the war or because of the contemporary transformation allows to preserve the memory and the architectural and building principles behind the project. The main result of the research we performed consists in the collection of a new corpus of drawings on a definite historical basis, to reconstruct the monument of Bonatz with all its characteristics, making it easy to understand its architectural and technological history.

Delving into the urban context, which was made possible through the study of archival documents, has highlighted the basic elements of the project and the importance they play in the current landscape and identifies the guidelines for the new design transformation.

## Conclusion

The graphic and three-dimensional representation of the station form the base of a possible permanent exhibition inside the building, which would be useful to spread the knowledge of the architecture and to preserve its memory. This exhibit could take place in the spaces left free by the displacement of a part of the functions in the new underground station. It is a case of use in "infrastructure heritage" to be associated with an actual use with functions related to the scope rail, such as ticket offices and waiting rooms. There are several possible scenarios for the reuse of assets belonging to the "industrial heritage", all aimed at the reuse of places and spaces with a physical and symbolic value, which too often have been abandoned.

## Outlook

This research has been the starting point for a study that I am conducting on the PhD course that I am undertaking which deals with the theme "The role of the railway in the development and transformation of the city". It is aimed at the knowledge of a framework of urban transformations related to railway buildings in historical and contemporary

times, in order to identify guidelines for new urban transformations related to railway systems.

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