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## Practical Experience with the Buildings of the Avant-garde in Berlin and East Germany

### Modernism – Building in Flux

The buildings of modernism which were erected in Germany and other European countries such as Russia in the 1920s mark a break with traditional architecture. Detached wall surfaces, extensive glazing, flat roofs and polychromatic facades, to name just a few of the characteristics of modernism, speak their own architectural language, which has entered the history of architecture under the name of “classical modernism”, with its country related variations which, for example, can be found in Russian constructivism.

The specific characteristics of this architecture are an expression of new urbanistic, social or aesthetic concepts. But the buildings are also an expression of a construction industry in flux with new construction materials, types of construction and construction technologies which have contributed to making the buildings of the 1920s and 1930s an architectural language and aesthetic of their own. Steel, glass and concrete are among the new materials of industrial construction, based on elements (e. g. Torkret process). A number of very different systems for building walls and ceilings mark new tendencies in the construction industry of this time.

### Preserving Modernism

Even today, modernistic buildings are dismissed as “experimental constructs” that must be inadequate from the constructional and physical points of view. They are presumed to be unrestorable because of their use or application of technically immature construction methods and materials. In fact, however, it has not generally been possible to demonstrate that they are flawed or even falling apart. My experience as architect, which in the past few years has included commissions to restore modernistic buildings, has suggested that the damage profiles of such buildings are due more to faulty execution and omitted repairs than to the materials used or the construction methods themselves. These may have been in an experimental stage when the buildings were erected, but today many of them are common, proven materials and principles of construction.

The greatest danger with restoring buildings under monument protection arises from ignorance of the existent substance and contradictions between technical constructive specifications on the one hand and those of building codes on the other. The result is frequently an all-around remodelling with materials and constructive

solutions that have little in common with the original. The gravest sins of construction in regard to restorations that have been executed inadequately arise from the use of the wrong construction materials, unprofessional restoration and maintenance work, and exaggerated demands for optimal thermal insulation of the buildings. The care of a monument or historic building should always be guided by the original; thus repairing any given part should be preferred to reconstructing it.

### Methodical Approach

I wish to present some examples from my experience in order to illustrate the proper approach to dealing with modernistic buildings. A methodology has been developed for the architectural task of renovating a given historic building. It places preparation and individual steps for restoring the building at the centre of all activities to be carried out, as follows:

- Case history (anamnesis)
- Concept for care of the given historic building (analysis)
- Restoration of the building (therapy).

A comprehensive preliminary examination is of decisive importance for clarifying the state of the building and, being an interdisciplinary inventory, entails very diverse points of view and work steps carried out in parallel. A thorough inventory gives the architect and the technical planners entrusted with restoring the building the information required to evaluate the building and its contents. This information about the existent building must all be available before a restoration and preservation concept, which fixes the decisions for executing individual activities, can be drawn up. Only a restoration concept that also lays out the new uses of the building and has been drawn up on the basis of its inventory can provide for proper, careful handling of the original substance of the building as well as for new uses which are appropriate for the conditions imposed by the building itself.

### Examples from Practice

Berlin has numerous housing developments and other housing units from the 1920's. Their highly different urban planning and architectural solutions bear witness to the diversity and openness to change in subsidised housing which then prevailed. Today, these residential buildings not only still fulfil the important function of providing liv-



*Housing block Ernst-Fürstenberg-Strasse, courtyard, before restoration, 1997*



*Housing block Ernst-Fürstenberg-Strasse, courtyard, after restoration, 1998*

ing quarters, their inhabitants love them as places which promote a sense of identity and offer a high quality of life. It is for this reason that retention of these flats is a special concern of the city of Berlin and of the housing companies which own these housing areas.

Before restoration, Berlin's large housing developments of the 1920s, such as the *Hufeisensiedlung*<sup>1</sup> in Britz, the *Waldsiedlung*<sup>2</sup> in Zehlendorf by Bruno Taut and the *Siemensstadt* development, which arose through participation by Gropius, Scharoun and others, had very extensive damage profiles. The most important problem was the plastering and large flaking surfaces which arose after the war through application of steam-tight dispersion paints. The restoration work of the 1980s such as in the Zehlendorf *Waldsiedlung* demonstrated the importance of mineral coatings as a protective layer for a building's substance and, of course, as an inexpensive but effective means of decoration.

It was possible to draw on this early experience for restoration of modernistic buildings in the former eastern zone of Berlin in the 1990's. This proved to be quite advantageous for the large number of old buildings which had to be repaired. Among these buildings was Bruno Taut's housing block of 1926/27 in Paul-Heyse-Strasse in Berlin-Prenzlauer Berg. While this housing block is one of the smaller building projects in its architect's life work, it is also one of the most interesting, not least of all because of its expressive use of paint.

Although the property in Paul-Heyse-Strasse, which was located in the midst of Wilhelminian tenements, offered unfavourable conditions, Taut succeeded in implementing an urbanistic, architecturally convincing solution with hygienic and organisationally faultless flats. Taut selected a design which opens up the block so that he would be able

to realise the concept of "exterior living space" which he had devised for housing developments. Taut designed an H shaped structure which is reminiscent of a three winged baroque composition with generous, garden like residential courts that are located on the street or face the courtyard. The urbanistic form of this arrangement is supported by the architecture of the type houses and their distinctive colouring. The expressive colourfulness of the facades can be seen in the juxtaposition of red clinker and white facade surfaces, deep blue facade parts near the building's entrances and attic storey and an accentuation of the lower staircases in brilliant red. Beyond that, the windows and doors are done in striking combinations of colour.

At the time of German reunification in 1990, this housing development from 1926/27, which had been located in Eastern Germany, was in a very changed state. The effects of the war, maintenance and repairs left undone since then, and faulty restoration work had all contributed to an appearance which differed significantly from that of the original. Indeed, there were no longer any recognizable remnants of the multiple brilliant colours which had distinguished this housing development when it was built. The concept for the care of these historic buildings which was drawn up by the owners, the Berlin monuments authority and the architect first provided for an inventory that would be comprehensive in respect to monument care as well as first steps toward securing the building substance which was still left. It was only when this inventory was available that a catalogue of restoration activities was drawn up as the basis for the work to be carried out. The objective was to restore the greatly neglected stock of buildings and outdoor facilities while retaining as much of the still existent building substance as at all possible, in order to let the buildings' urbanistic and architectural qualities become visible again. This worked out first and foremost for the original colourfulness of the facades and staircases, which were regained in accordance with the restorational findings, as well as for the restoration of architectural details that document the special design quali-

<sup>1</sup> *Hufeisensiedlung* = horseshoe settlement

<sup>2</sup> *Waldsiedlung* = forest settlement



*Master House Muche/Schlemmer in Dessau, southern facade (to the garden) before restoration, 1998*



*Master House Muche/Schlemmer in Dessau, southern facade (to the garden) after restoration, 2002*



*Master House Muche/Schlemmer in Dessau, northern facade after restoration, 1998*



*Master House Muche/Schlemmer in Dessau, northern facade after restoration, 2002*

ties of the 1920s (e.g. glass brick balconies and moulded glazed terracotta bricks on the fascia).

The special difficulties in restoring modernistic buildings with their architectural language typical of the 1920s and 1930s can also be clearly illustrated by selected details of construction, the materials used and the construction principles applied.

Walter Gropius saw undreamt-of artistic possibilities in the advances in the building trade with its new materials and construction methods. Gropius first used new methods with prefabricated parts and new materials in housing construction in his “trial development” Dessau-Törten. His interest in “industrialised construction” was already evident in earlier projects. In 1925/1926 Gropius, who at this time was director of the Bauhaus school in Dessau, erected four residential and studio houses nearby for the master craftsmen who taught there. For this reason these buildings were also called “masters’ houses”. These houses were not built with traditional brick walls, but rather with Jurko hollow walls of cemented scoria bricks (54 x 32 x 10 cm). These bricks have good thermal insulation properties and weigh less than traditional bricks, so that processing and completion times and consequently the overall costs of the building would be reduced.

The forced closing of the Dessau Bauhaus in the year 1932 and the assumption of power by the Nazis in 1933 ultimately led to alterations of the houses with ideologically motivated defacement of its Bauhaus architecture in the year 1939 (removal of the large studio and staircase windows and of the staircase head). During the East German period, further interventions (e.g. annexes and replastering) and failure to carry out repairs led to further impacts on the appearance of the houses and to further damage. It was not until after German reunification in 1990 that work would begin on repairing the masters’ houses, including the Muche/Schlemmer house.

Although the Muche/Schlemmer house had been disfigured to the point where it could hardly be recognised, the existent fabric originated primarily from the time of the original construction. The building’s condition was entirely satisfactory from the points of view of its statics and physical structure, even though not all the values measured were in keeping with today’s standards. On the basis of the inventory, the decision was taken to make the original architecture of the Bauhaus period visible again. Accordingly, the work centred around restoration of the large glazings of the ateliers and staircases, as well as reconstruction of the staircase head of the Muche house, which had been carted away. With reconstruction of this staircase head, restoration of the cubature with its details was much less of a problem than walling in a suitable material with the physical constructive properties of the existent masonry.

Restorations of the condition at the time of the original construction were also made possible by the findings of colours and materials of the surfaces of facades, walls and various fittings so that – at least in some areas – it

was also possible to restore conditions that could be dated back to the usage phase of Bauhaus times. Since, however, the findings did not permit retrieval of all the room fittings and colouring at the time of construction, the concept also provided that areas and parts which could not be restored or reconstructed would be left as palpable traces of history or else done over in contemporary, neutral presentations.

The steel window became a determinative constructional element for the appearance of modernistic buildings. The transparent architecture of the 1920's and the need to open the buildings and to provide natural light required special constructive solutions for the design of windows. Thinner profiles became possible with steel windows and this also accommodated contemporary aesthetic ideals. Widely different construction tasks brought forth a variety of solutions with a great diversity of window types. Intensive occupation with the window considered as a construction part led to a high level of knowledge on how to work out constructive details (e.g. milled steel profiles, special conical profiles, hollow profiles of compressed sheet steel).

A clear example of the topic of windows is given by the restored steel windows of the former School of the German Federal Trades Union (ADGB) in Bernau, which was erected in 1928–1930 in accordance with plans by Hannes Meyer. The architecture of this school lives from its steel windows with their filigree profile thicknesses. Unfortunately, at a later time these windows were replaced by clumsy wooden windows which at the time of restoration were falling apart and had to be replaced by new windows. Profiles from Switzerland of milled, bent steel were taken to produce steel windows that were largely true to the original, with the profile thicknesses also being approximately those of the originals. At the same time, insulation glass panes (in contrast to the simple glazing of the originals) were installed to achieve approximate fulfilment of today's requirements for thermal protection. Scarcely visible ventilation slits underneath each window's metal plates are another contemporary ingredient introduced for physical reasons (fresh air ventilation during the night). When the work is over, the school will once again be equipped with steel windows throughout.

In the Großsiedlung Siemensstadt<sup>3</sup> erected between 1929 and 1931, the balconies, because of their swinging form, were an indispensable design element for the exterior effect of the facades, especially because they were done by Hugo Häring, but unfortunately they had serious structural damage, most of which had been caused by corrosion. Häring selected a steel construction for the



*Siemensstadt. Row houses by Hugo Häring. Balconies before restoration*



*Siemensstadt. Row houses by Hugo Häring. Restored facade with balconies, 2005*



*Former school of the German Trade Union (ADGB) in Bernau near Berlin, window of the refectory before reconstruction, 2001*



*Former school of the German Trade Union (ADGB) in Bernau near Berlin, window of the refectory after reconstruction 2006*

<sup>3</sup> *Großsiedlung Siemensstadt = large Siemensstadt development*



*Former school of the German Trade Union (ADGB) in Bernau near Berlin, refectory before the reconstruction, 1998*



*Former school of the German Trade Union (ADGB) in Bernau near Berlin, refectory after the restoration in 2006*

balconies which, in accordance with the swinging form, consisted of curved edge supports of steel; in addition, the balcony roofs were steel stone roofs and a 10cm steel pipe bore the load. Examination of the buildings showed that when they were erected there was an error of execution relative to the plans in connection with the steel pipe. Over the years, this error had led to formation of corrosion of all the constructive steel parts because of accumulation of dampness and a lack of ventilation. This ultimately busted the parapets and thus had devastating consequences for the entire structural safety of the balconies.

The renovation concept of the housing company originally foresaw a “modern” solution with new balconies of prefabricated concrete parts. Not until the comprehensive inventory, which exposed the causes of the damages, was available, was it possible to convince this company that it would be better to retain the existent balconies, with work

carried out by craftsmen familiar with the requirements of historic architecture.

Modernistic buildings are characterized by an architecture that is imbued with a spirit of frugality. This architecture limits itself to a reduced canon of forms and expresses itself in little, unimposing details. Its special qualities lie in its confinement to essentials, its carefully proportioned closed form, and its sheer simplicity. Even slight changes can alter its character in essential ways. The examples was meant to show that restoration and repair of modernistic buildings should not just be guided by the technical options of today. Rather, careful application of the knowledge gained about their original construction principles and materials provides far better protection against consequential damages, maintains the original design of these constructs, and helps to reduce the costs of repairing and restoring them.