btu profil news

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SPECIAL

May 2009 Special Issue of the Brandenburg University of Technology Cottbus News Journal

Editorial

This special issue of our University news journal celebrates the Third International Congress on Construction History, hosted by the Brandenburg University of Technology.

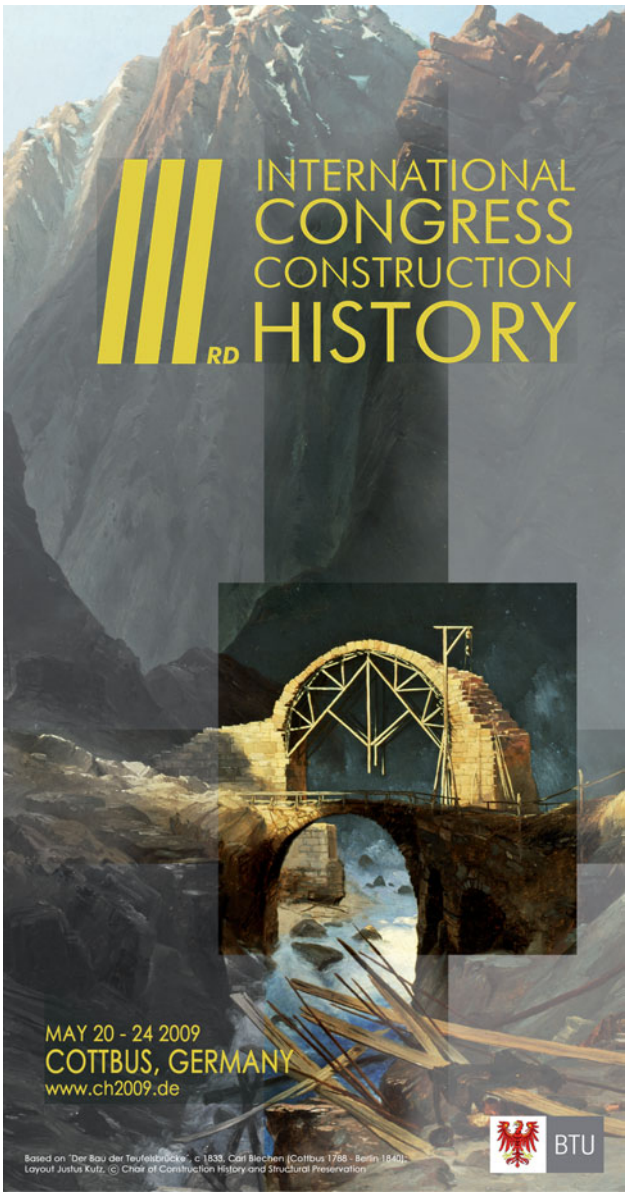
The first of these congresses was held in Madrid, the second one in Cambridge, and it makes me very proud that Cottbus was chosen to host the third in the series. The BTU is an excellent choice of venue for this particular subject, being a young and modern university of technology, which has – from its inception in 1991 – been committed to the idea that excellence in technology and engineering cannot be achieved today without a wider view of the world, without a grounding in the humanities.

Nothing symbolises this policy better than the Department of Construction History and Structural Preservation, headed by Professor Werner Lorenz, rooted as it is simultaneously in the realms of structural engineering and historical research.

This special issue presents some of the research projects of Professor Lorenz and his team, but it also shows that this department does not exist in isolation: it is part of an institute where three other departments (History of Architecture, History of Art and Architectural Conservation) are pursuing related topics in often close collaboration with each other and with many national and international partners. The institute also runs one of the classes of our International Graduate School. This class, „Technological and Cultural Values of Historic Building Structures" consists of 20 doctoral students, some of whose research projects are also represented here.

Let me extend a very warm welcome to all participants of the Congress: I wish you a very successful conference and hope you will enjoy your stay in Cottbus!

Welcome to the Third International Congress on Construction History



Following the congresses in Madrid (2003) and Cambridge (2006), now, in May 2009 the Brandenburg University of Technology Cottbus has the honour to host the Third International Congress on Construction History. We intend to continue the tradition of the extraordinarily successful meetings in Spain and Great Britain - transcending the constraints of traditional cultural and disciplinary boundaries, open to contributors associated with all disciplines focussed on and around the worldwide movement of construction history.

With just a cursory glance at the agenda and the papers, one cannot help but notice the impressive breadth of this movement, both in terms of content and method. The fact that, meanwhile, more and more practising engineers and architects are maintaining a dialogue with historians reflects the increasing shift in construction practise from building new to developing existing structures. In this field, an intelligent and appropriate intervention is hardly imaginable without knowledge of the history of construction.

The congress would not have been realisable without the engaged support of a wide range of colleagues, friends and institutions. I cordially want to thank all our sponsors and collaboration partners for their generous sponsorship and benefits as well as my university, the BTU Cottbus, for its enthusiastic backing. Best thanks for their help and assistance go to my friends of the Berlin-Brandenburg Construction History Group, to the colleagues of the National Support Group and to all members of the International Scientific Committee under the chairmanship of Dr.-Ing. Karl-Eugen Kurrer. To ensure a high scientific quality among all contributions they peer reviewed about 400 abstracts and again assessed more than 200 papers submitted! Last but not least I want to express my sincere thanks to all members of the fantastic Organising Committee in my department, leaded by the incredible Volker Wetzk. It's more than two years ago that we started our work without any premonition of all the problems lying ahead of us. We mastered them, we arrived, and the congress begins: It would not have been thinkable without the Organising Committee's unfailing, enthusiastic work!

Heartfelt thanks to all of you! Together with my friend Karl-Eugen Kurrer and in the name of all supporters I cordially welcome our guests. The Cottbus Congress will offer you an open forum for presenting the broad field of research in the young international movement of construction history. I am sure: Among paper sessions, keynotes, panel discussions and excursions, nevertheless there will be plenty of time and opportunity for what modern science needs: The vivid exchange of concepts, ideas and experience among international academics, practicing engineers and architects, building researchers and archaeologists from across the world

Werner Lorenz
Department of Organizing Committee

The IBK and the International Graduate School

Researching historic building structures

Staff and doctoral students of the Institute of the History of Art and Architecture

Further Information:

- *Department of History of Architecture*
- *Department of Construction History and Structural Preservation*
- *Department of Architectural Conservation*
- *Department of History of Art*
- *International Graduate School Cottbus*

Literature:

- *Forschen, Bauen & Erhalten, Jahrbuch 1, 2007/2008 and Jahrbuch 2, 2008/2009*

The "Institute for the History of Art and Architecture" (IBK) within the Faculty of Architecture, Engineering and Urban planning of the BTU Cottbus is an interdisciplinary group of scientists in the field of construction history, history of building, architectural conservation, and art history, which joined together to form an efficient institution for historical research of architecture and construction. The IBK keeps its own library of more than 20.000 titles of building-, construction- and art history. The four members of the institute are currently carrying out research projects or contribute to research projects of other scientific institutions in Germany and several foreign countries like Russia, Great Britain, Scotland, Spain, Italy, Greece, Turkey, Lebanon, Egypt, and Sudan. Nearly all projects are parts of international cooperations with scientific partners and organisations in our host countries. For students of architecture, town planning and engineering the international research activities of the participating departments offer opportunities to take part in interesting scientific projects which usually provide a wide range of topics for study projects, master or doctoral theses.

Extensive historical research of ancient constructions and buildings is not at all usual at German and international universities. For the BTU Cottbus the high number, good equipment, and above all the large network of international relations of the historical departments are significant unique selling points within the German and international research environment. The high reputation of the researchers of Cottbus is shown by the fact that they are asked to carry out research project at most prominent foreign monuments like the temples of Baalbek in Lebanon, the Cathedral of Santiago de Compostela, the Hermitage in St. Petersburg, Toddington Manor in Great Britain etc. In most cases the department of surveying of the BTU Cottbus collaborates in the projects. In close cooperation new methods of building and construction survey and building information systems have been developed, discussed and published. The research projects of the IBK-members are financed by the German Research Foundation (DFG), the Fritz Thyssen Foundation, the Gerda Henkel Foundation and by several private sponsors.

The IBK departments contribute to several bachelor and master courses like Architecture, Urban planning, Civil and Structural Engineering, World Heritage Studies and run their own master course in 'Building and Conservation', which addresses architects, engineers, restaurateurs and art historians, who are specially interested in research and preservation of historic buildings and in building and planning within an existing fabric. More than 30 doctoral projects are currently in progress at the IBK-departments, most of which are members of the International Graduate School Cottbus. The class B of the IGS "cultural and technological significance of historic buildings" is very successfully running since 2007 with dominant participation of the IBK-departments. The class provides not only funding of several scholarships but above all an interdisciplinary discussion forum for young researchers. The range of topics within the Graduate School is not restricted to historical periods or geographical regions but contains as well research on the construction history of ancient temples in Lebanon or Sudan, flying buttresses of French and English cathedrals, British country houses, early modern architecture in Brazil and after-war reconstructions of baroque and 19th Century buildings in Germany.

In the field of research the IBK-departments and their partners provide the whole range of methodical and scientific approaches to examine and understand historic buildings as primary sources to answer historic questions, and to evaluate historic constructions for modern use. To study Architecture, Engineering or Urban planning in Cottbus offers not only a good education in construction and planning but also the opportunity to take part in top range research projects and to earn a doctor's degree within a broad and lively environment of historical building research.

Klaus Rheidt

Bauhaus myths

New insights into the Bauhaus

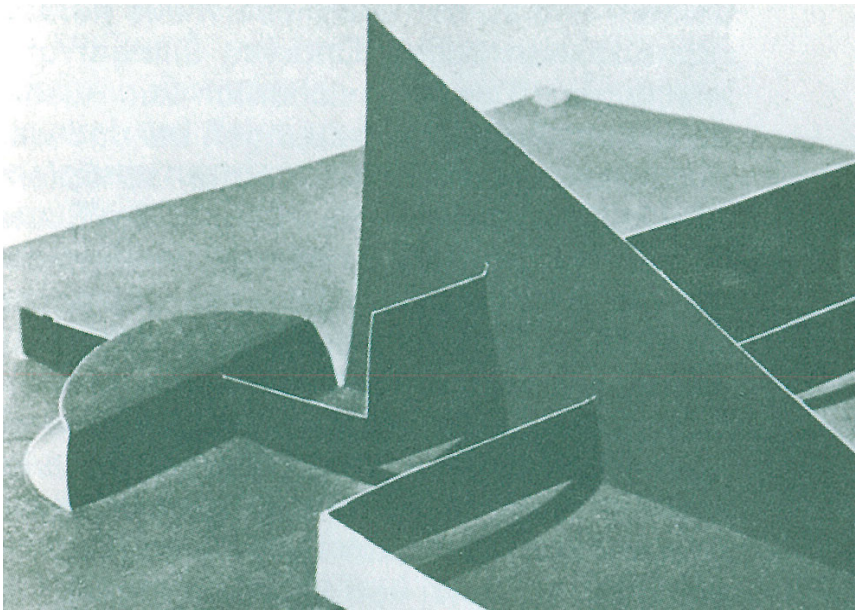
The anthology, "Bauhaus Myths" gathers the contributions of a scientific conference held at the Center for Interdisciplinary Research at Bielefeld in 2007. The organizers were Magdalena Droste, Department of Art History at BTU Cottbus, and Anja Baumhoff, from The University of Loughborough, England.

The contributions dealt with the development and reception of a mystical narrative in the modern Bauhaus. The impact of such a narrative in the Bauhaus was particularly important for the artists of the classical avant-garde, who were in the search of a foundation of the connection of their art beyond History, and who seem to have developed an a-historical context for their biographies and for the description of themselves and their art.

The contributions are centered in three narrative spheres: Oskar Schlemmer and Wassily Kandinsky wrap their art with a cosmic and symbolic narrative that should lend their work a transcendence and higher signification. Paul Klee, and also many other artists were concerned with the foundation of their art in creativity and humanity.

The third fundamental narrative can be defined as the symbiosis of Science and the Esoteric. Many of these narratives took quasi-religious forms, and has up today been relegated to secondary literature.

In parallel to the transmission of these artistic myths, new myths and narratives were elaborated from the end of the Bauhaus to 1945, which are likewise presented by the collaborations. A number of factors and persons leads us to believe that in the Bauhaus after 1945 it is precisely the appeal of myth that attracts and structures diverse forms and reception of analysis, participation or appropriation.



The anthology is composed of 17 contributions, and is scheduled for publication next summer by Reimer Verlag, Berlin. The layout and design of the book is a project of Professor Lengyel, Professor Droste, Diplom-Des. Christian Schlimok, in collaboration with the students of BTU Cottbus.

Thanks are due to HOCHTIEF, BTU Cottbus, ZIF Bielefeld, and ETH Zürich.

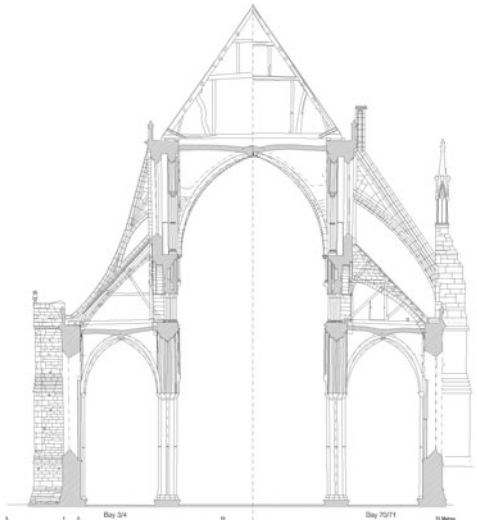
Flying buttresses at gothic cathedrals

Structural function and construction using the example of Salisbury Cathedral, England

The focus of this dissertation project lies on the analysis of the structural behaviour of flying buttresses at Salisbury Cathedral using the methods of building archaeology and structural analysis. It is funded with a scholarship by the International Graduate School Cottbus.

The structural function of flying buttresses

The invention of buttressing systems consisting of flying buttress and buttress is regarded as one of the main structural developments in Gothic architecture. The flying buttresses have a double function in the structural system of the cathedral. They transfer the horizontal forces either created by the vaulting of the nave or induced by wind loading to the foundation safely. Depending on the height of the point where the vaults transfer their horizontal thrusts and the height of the clerestory wall there may be one ore more levels of flying buttresses.



Salisbury Cathedral, south side of the nave with two different types of flying buttresses, 2008.

Salisbury, Cathedral of Saint Mary

Salisbury Cathedral is regarded as one of the finest cathedrals of the Early English style. The foundation stone was laid in 1220. At the consecration in 1258 the building was largely finished. The buttressing system of the cathedral consisted at that time solely of interior flying buttresses (see fig. 1, bay 70/71 below). The first exterior flying buttresses were added in connection with the heightening of the tower and spire over the main crossing. More were added in several phases until the late 15th century.

Methods and aims

Besides the investigation of the buttressing systems of Salisbury Cathedral with the methods of building archaeology, the investigation of the function of the different types of flying buttresses in the structural system of the cathedral is the main aim. This is carried out for the overall system with the methods of graphic static. A more detailed model for the flying buttresses will be obtained with the Discrete Element Method in order to represent their structural behaviour and failure mechanism realistically. The findings are meant to shed light on the following questions: To what extent do the buttressing systems contribute to the security level of the bearing capacity of the cathedral? Is a positive trend in the performance of the structural systems of the cathedral observable? How significant is the design of details? A structural typology for flying buttresses is being developed based on these investigations taking into account various other examples. The findings for the individual element are thus extended to the structural element itself and allow for a broader use.

Johanna Mähner,
International Graduate School Cottbus, Class B

Salisbury Cathedral, nave, section bays 3/4 (left) and 70/71 (right), 2008 (Measured and drawn by J. Fuhrmann, J. Mähner, A. Wittek; incorporating existing surveys for the main roof and the exterior parts of bay 3/4).

Cooperation:

- *Department for Building Archaeology and Architectural History, University of Bamberg, Department of Buildings and Estates of Salisbury Cathedral*

The rebuilding of English Country Houses gutted by fire

The perception of the classical Country House, 1875-1914

Wrotham Park
› *Wrotham Park was rebuilt close to the original 1883-1885.*

Sledmere House
› *After a devastating fire in 1911, Sledmere House was enlarged and rebuilt. The new west front was erected after an 18th century drawing.*

This research project focusses on English Country Houses gutted by fire and eventually rebuilt between 1875 and 1914. Through looking at the way the houses were rebuilt – whether close to the original or with alterations – the project attempts to infer how classical Country Houses were perceived during the decades around 1900, at a time when the owners of the houses had to face serious crises challenging their social and economic status.

As properties of the aristocracy and the landed gentry, English Country Houses had always been power bases. They were therefore not only homes to be lived in but status symbols. Most of the estates date back to the Middle Ages and were handed on from generation to generation within one family. Due to the importance and influence of their owners the houses were built and developed to ambitious designs and often show innovative aesthetic, functional and technical features.

Whilst periodical building alterations or modernisations, usually effected by each new generation, can be regarded as normal practice, reflecting changes of requirements according to the standards of the respective time, a fire struck the owners unexpectedly. After such a catastrophe, owners and families were required to take stock and to decide what to do with the devastated house. Their decisions reflect not only how they felt about the house they had lost but also their current requirements and financial possibilities. It also provides insights into how they saw their future during a period that brought dramatic changes to County families who incrementally lost their dominant role in society, economics and politics. The question of rebuilding after fire during these decades indicates therefore how Country Houses were perceived and valuated when their context was changing substantially.

The research project investigates the rebuilding of more than 20 Country Houses, two of which – Wrotham Park and Sledmere House – are looked at more closely.

Anne Bantelmann,
Department of Architectural Conservation

Toddington Manor (Gloucestershire)

The invention of a new "National Style"

Cooperation:
› *Toddington Manor seen from the South before restoration (left) and encased in scaffolding (right)*

British country houses have long been in the focus of research carried out by the Department of Architectural Conservation of Cottbus University.

Toddington Manor, built from about 1819 onwards, was designed for himself by Charles Hanbury Tracy, an ambitious politician who was also an amateur architect. Conceived at a time when the Gothic idiom was valued mostly for its picturesque and emotional qualities, Toddington was intended to display a new National Style. An unexpected opportunity to give the new style greater publicity arose when the old Houses of Parliament at Westminster burned down in 1834. Hanbury Tracy became chairman of the small parliamentary committee that laid down the guidelines for its rebuilding and he also chaired the jury. It is therefore not surprising that the new Palace of Westminster, designed by the architect Charles Barry and built from 1840 onwards, seems virtually an overlarge copy of Toddington Manor.

Toddington was only lived in until the late 1930s. Following military use during the war it was turned into a private school and changed hands several times. From 1985 onwards it stood empty and unused but was saved by the artist Damien Hirst who bought it in 2005 and intends to use it for his extensive collection of contemporary art.

In close collaboration with the Department of Architectural History, the current research project is concentrating on the planning and construction history of the house. Building archaeology provides interesting insights into 19th-c. construction practice showing that the house was built very quickly as an empty shell with a roof so as to have a weather-proof construction site; only then were floors and non-bearing walls added. In the case of Toddington it seems that many internal features were only developed as building progressed, necessitating many ad-hoc structural adaptations. It is also interesting to note that, while the facades and all the public spaces of the house were planned with great attention to detail, the private living areas were remarkably uncomfortable, including a woefully inadequate heating system.

Leo Schmidt
Department of Architectural Conservation

From sanctuary to city

Baalbek: More than 10,000 years of history

Baalbek – the ancient city of Heliopolis – is located in the modern state of Lebanon. It is situated in the northern part of the Beqaa-valley, bordered by the snow-covered peaks of the Lebanon Mountains in the West and the Antilibanon in the East. Baalbek is particularly famous for a huge Roman sanctuary dedicated to Jupiter, whose monumental remains deeply impressed travellers since centuries. In 1898, the German emperor Wilhelm II visited the remains and initiated the excavation of the Roman sanctuary.

The ruins of Baalbek became a World Heritage Site in 1984. Today the city is in the focus of scientific research as a place of continuous settlement for more than 10,000 years. Its location in a fertile oasis with sufficient water supplies as well as at important ancient trade routes provided prosperity and growing wealth throughout the ages. Since 2002 an international and interdisciplinary project studies the urban concepts and the development of Baalbek throughout the different ages of settlement. It aims at the diachronic exploration of the topographic, urban, economic and social bases of the sanctuary and the city. Of particular interest within this time-span are the beginning of the settlement and periods of radical structural transformation, e.g. the change of settlement-patterns from pre-Roman to Roman era or the transition from late antiquity to Islamic-Medieval age. To achieve this, the comprehensive on-site findings at Baalbek, in the quarries and in the economic hinterland are documented and scientifically studied in interdisciplinary cooperation. Head of the studies of building archaeology is the department of history of architecture, Prof. Dr. Klaus Rheidt, from BTU Cottbus. The project is run in close cooperation with the orient-department of the German Archaeological Institute and the Direction Generale des Antiquités du Liban.

Four sub-projects are executed by members of the department of history of architecture or scholarship holders of the IGS supported by the members of the Geodesy of the BTU Cottbus, they will be presented in the following. The sanctuary in the so called Area of Sta. Barbara comprises two Roman cult-buildings. The circular temple is known as so called Temple of Venus, the second temple is frequently named as so called temple of the Muses. Up to this point, however, we cannot be sure as to the deities they were dedicated to. Both buildings are enclosed by one trapezoidal peribolos, the outer face of the enclosure incorporated porticoes. The cult place was excavated during the 1950-70ies by the Direction Generale des Antiquités du Liban; the completion of the documentation and interpretation, however, was disrupted by the outbreak of the civil war in Lebanon. Since 2002 it is studied again and finally documented. Due to its central location just south from the main sanctuary and because of the continuous use and remodelling throughout antiquity the Area of Sta. Barbara is a crucial point in the urban tissue of antique Heliopolis and an important key to the understanding of the city development. The studies in this area are a part of the doctorate of Dipl.-Ing. Friederike Hoebel. Since 2007 they are funded by the IGS.

In the 1960/70ies the Lebanese DGA excavated remains of several large-scale buildings at a garden located southwest of the huge sanctuary of Jupiter, the Area of Bustan el Khan. They had been built in Roman imperial times but used and transformed throughout late antiquity and medieval times. The documentation and study intend to clarify the buildings' function, their historic development and their appearance in detail. According to current building archaeological studies there seem to be three major blocks of buildings.

A monumental Roman bath covering at least 5000 m² has been documented in the years of 2001-03 and is finally documented and studied again since 2008 by Dipl.-Ing. Clemens Brünenberg within his doctoral thesis. The entrance to the bath grants access in the main symmetrical axis of the building, first crossing a front court – maybe used as a Palaestra. It leads into the bathing area. There are only a few remains of the primary building – the huge substruction works, few remains of a hypocauste system, remains of a swimming pool and parts of the outside walls. A porticoe was rebuilt by H. Kalayan in the late 60ies. The intention of the work is to virtually reconstruct the building in its substantial structures and functions. Furthermore, its axial-symmetrical layout and its enormous dimension are significant factors for the understanding of the Area of Bustan el Khan and its importance for the urban development in Roman times.

South of the Roman bath there is a building with a peristyle courtyard. Studies on the different periods of the building and its age determinations last since 2004. Remains of some podia in the inner building allow the interpretation as a large-scale banquet hall. Its possible orientation to the Temple of Mercury supports this theory. These studies are a part of the doctorate of Dipl.-Ing. Henning Burwitz. They are funded by the IGS since 2007. The work intends to reconstruct the building in a first step, followed by a typological classification. The continuative studies should establish a better understanding of the archetype (bautypus) of the podia hall and the cultic / ceremonial topography of Heliopolis. A further building with a peristyle courtyard completes the area to the south. This building is unexplored up to now. All buildings in the Area of Bustan el Khan probably had been built along a road, which lead into the ancient city centre. The traditional, particularly the late Ottoman building structures within the urban area of Baalbek seem to inherit older urban patterns and therefore promise clues on the urban development and the ancient cityscape. Since 2002 the remaining historic structure was systematically documented. In a next step selected dwelling examples had been measured in detail, photographed and described regarding their construction method. With these studies influencing factors and archetypes can be defined for the *Baukultur* of Baalbek and criteria of age determination can be developed. A matter of particular interest is the area of the so called Bustan Nassif. It is located nearby the sanctuary of Jupiter, the so called Area of Sta. Barbara and the south-western part of the city. The excavations of medieval and older architectural structures can be complemented to the remaining late Ottoman housing there. The building archaeology studies are made by Dipl.-Ing. Heike Lehmann as a part of her doctorate.

Klaus Rheidt, Department of History of Architecture

Further Information:

- *K. Rheidt, H. Lehmann, C. Brühnenberg, H. Burwitz, F. Hoebel, Department of History of Architecture, BTU Cottbus*

Literature:

- *Bulletin d'Archéologie et d'Architecture Libanaises, Hors serie IV, 2008*

„Neues Bauen“ abroad

Paths, transformations and the impact of the exiled Weimar modern movement in architecture.

”Neues Bauen”
Reunion in Chicago. Left to right: Erich Mendelsohn, Walter Peterhans, Ludwig Hilberseimer and Ludwig Mies van der Rohe, around 1940.

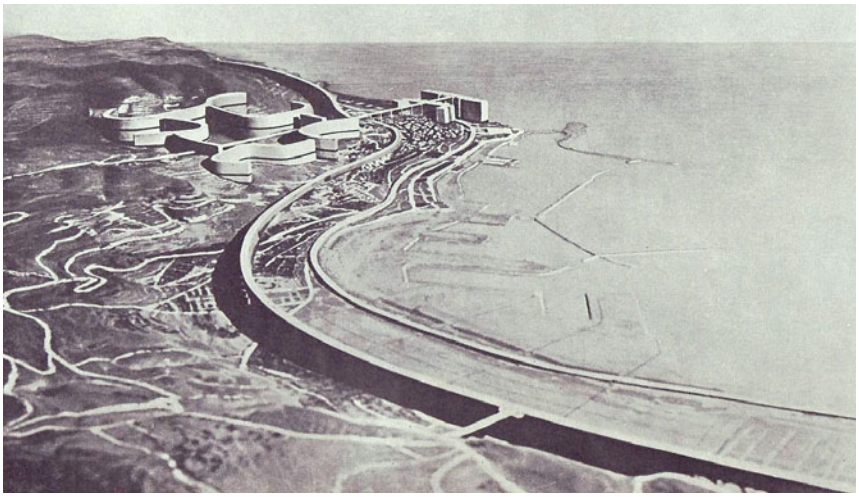
Bildrechte: Fotografische Sammlung Museum Folkwang Essen

The topic of the research project, which has been funded by the German Research Foundation (DFG) and headed by Dr. Regina Göckede since October 2008, is the transformation of modern architecture under the conditions of flight, emigration and exile. The study explores the contribution of the so-called Neues Bauen to the globalization of the modern movement in architecture which emerged progressively during the 1930s, ’40s, ’50s and ’60s.
The project focuses on the lives and œuvres of those figures like Mies van der Rohe, Walter Gropius, Erich Mendelsohn or Bruno Taut whose personnel and institutional network was irrevocably destroyed in 1933, and who, scattered throughout the world, contributed decisively to the theoretical debates and to the structural manifestations of globalized modern architecture. The twenty-five architects and theorists considered do not represent a homogeneous group with regard to their national or ethnic background. Neues Bauen is ’German’ merely in view of its Weimar context; it was in fact in every respect a transnational and multi-ethnic phenomenon. A not insignificant number of the architects got into the Nazis’ crosshairs even before the seizure of power because of their Jewish backgrounds and/or their party affiliations. By 1936, two thirds of the selected group had emigrated from Germany; the last architects left the country at the end of 1938. Using their common Weimar background as the point of departure, the study traces the pathways of these figures “abroad”, and records their professional development. The dynamics for which it searches is the continuing effectiveness of old group connections, or the loss of that group connections, and the formation of new network configurations.
The expected research results are to extend considerably beyond the framework of biographical sketches. The multiple interwoven monographic essays are to be framed by a reception-critical, methodological introduction as well as by a conclusion which will outline the range of possible future research. By consciously transgressing the limited procedure of placing works by autonomous style categories and by constructing homogeneous stylistic movements, a history of the influence of modern Weimar architecture is to emerge, which reveals less the continuities of common origins than the progressive estrangement from those origins.

Regina Göckede
Department of History of Art

Colonial difference and the evidence of modernity

Case studies in the impact of european artists’ personal experiences of non-european cultures on the transformation of early 20th century painting, photography & architecture



”Colonial Difference and the Evidence of Modernity”(Habilitation)
Le Corbusier Proposal for Algiers, Projet Obus A, 1931

Bildrechte: FONDATION LE CORBUSIER

The general interest of the research is focused on the formative dynamics and transformations of cultural significations under the conditions of late coloniality and an increasingly globalizing European art movement. The habilitation project is directed towards the concrete material contexts, discursive construction and assimilation of alterity within European art practices during the first half of the 20th Century. Specifically it aims at thinking beyond a linear geo-historical mapping and autonomous style-oriented conception of modern art that are lacking a critical reflection of its colonial legacies
For this purpose the study analyzes selected works of major figures of the so called modern movement, whose biographies and works are decisively influenced by direct physical and topological-discursive encounters with the non-European, in particular with Egypt and North Africa. The spectrum of involved positions ranges from the famous paintings related to Paul Klee’s seminal trips to Tunisia (1914) and Egypt (1928/29), and Le Corbusier’s monumental architectural-urban forms planed in the course of his ambitious Algiers-project (1931-1942) to the photographic work of Ré Soupoult produced during her stay in Tunisia (1934-1942). In mainstream art historiography all the works to be examined are discharged hastily into a de-politicized sphere of an immanent artistic-aesthetic development. While acknowledging these works as key turning points within the individual oeuvres of the artists as well as for the transformation of European modern movement as a whole art critics still tend to leave aside a crucial and constitutive moment of this very artistic movement: the local histories and global discourses of early 20th Century colonialism. The theoretical framework and methodological approach is interdisciplinary. Drawing upon colonial discourse analysis and postcolonial theory with specific reference to recent developments in the fields of postcolonial visual studies and postcolonial urban studies my critique not only focuses on the experience of colonial difference as a concrete source and locus of artistic enunciation in the works of Klee, Le Corbusier and Soupault. It also seeks to demonstrate how in these works the non-European other (real or imagined) and the other’s spaces function a split screen on which the debates on individual artistic emancipation and Europe’s cultural modernization are mediated. The proposed approach enables the specific process of the modern artist’s selving and the concept of modern art in general to be addressed as contingent on a juxtaposition against an intrinsic non-modern other.

Regina Göckede
Department of History of Art

The iron structures at the State Hermitage St. Petersburg

Structural survey, analysis and assessment in the context of early European steelwork

The iron structures for roofs and floors consisting at the buildings of the State Hermitage Museum St. Petersburg - the former palace complex of the Russian tsars - represents an extremely enlightening/instructive example of the early developements in European structural steelwork. They were erected only in a short period around 1840 but in an incomparably abundance and variety. In many parts preserved in their original state they also showbears the different personal 'signatures' of their designing engineers and manufacturers.

With the current project this these (load-bearing) structures are getting being systematically recorded for the first time. The evaluation of the comprehensive archive material is includeding as well as the detailed research and analysis of different historical aspects concerning design, erection and repair. The main focus of the project lies on the interpretation and assessment of the solutions for structures and details, which may seem sometimes strange from a today's perspective.

The interpretation and assessment of the - from a today's perspective sometimes strange - solutions for structures and details is just one particular interest. The rich context - Russian as well as European - gives provides also manya lot of topics: The transfer of technology and theory within Europe, as well as the influence of regional designing traditions, the developmental stage of the russian iron manufacturing or the profile of the engineering education in at that time. The aim of the analysis is to understand how the designing engineers thought and how they found solutions using iron as a new building material. To set the iron structures of the Hermitage in relation with examples of iron structures from other European countries gives also the possibility to identify different cultures of technology.

For this project with its engineering structures, the method of "Historische Bauforschung" (building archaeology), itself a branch of the architectural history of architecture which has become been established in Germany over the past few decades, has been expanded with engineering specific components. The added parts methods like structural survey or statical structural analysis allows not only a precise analyse assessmentnalysis of the condition of the structure but also a discussion about quality of the engineering design.

The research project is implemented by the Department of Construction History and Structural Preservation at the BTU Cottbus, Prof. Dr.-Ing Werner Lorenz, in collaboration with Dr.-Ing. Sergej Fedorov, University Karlsruhe;, and realised in close cooperation with the responsible departments of the State Hermitage Museum. It is funded by the German Research Foundation (DFG).

Werner Lorenz, Department of History of Construction and Structural Preservation

Global Bauhaus

International influence of a concept

The reception of the Bauhaus began shortly after its foundation in Weimar in 1919 and takes place in diverse fragmentary and varied forms until the most recent present. The influence and traces of Bauhaus can be found not only in European or American countries, but also in Siberia, Shanghai, Australia, or Africa.

The point of departure of the project of research and publication "Global Bauhaus" is the study of the reception that allowed the "input" of the Bauhaus, as well as the appropriation of it in the company of other concurrent influences.

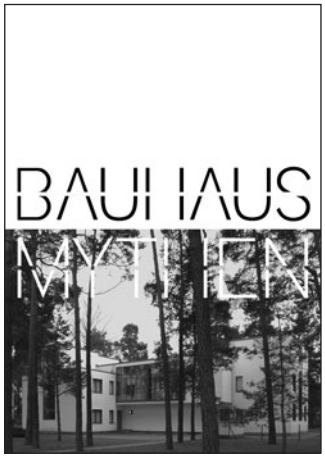
The development of the Bauhaus projection abroad is closely related to the emigration and exile of its members, which on its turn is directly related to the national historical and political avatars. The international style of the Bauhaus could oppose to a variety of old styles, or use them towards a new form. Thus, in the 1950's India, it replaced with its modernity the old dominant colonialist style. The 1918 funded Czechoslovakia adopted the Bauhaus-Modern as another line of the several modern styles that it already knew. Jaroslav Fragner is there called the "Czech Gropius."

In Hungary, it competed with older national styles. It would be Farkas Molanr, who had studied during one year at the Bauhaus Weimar, who led the movement there.

In the US of the ninety-forties, the movement of so-called Critical-Regionalism questioned in architecture, on the contrary, the concept of an international style.

The goal of the project is not, however, the contrast between traditional and "Bauhaus-style", but rather the way in which sometimes they mixed. In many countries there were, concomitant to the Bauhaus, new movements and schools such as the "Nieuwe Kunstschool" in the Netherlands, the "Sur" school in Czechoslovakia, or the "Mühely" school in Hungary. Two important art traditions to consider also are those of photography and graphic design, where the discussions as frequent as they were regarding architectural forms.

Magdalena Droste
Department of History of Art



Early reinforced brick floors in Germany

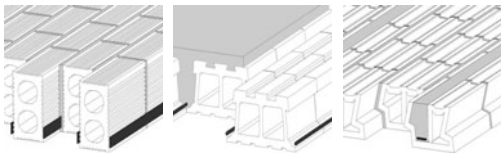
Historical development, construction types, methods of dimensioning and load bearing capacity.

Typical cross section of a reinforced brick floor from about 1910, with brick, steel and concrete (Photo: Lorenz)

The Reinforced Brick Floors (RBF-) Project at the Department of Construction History and Structural Preservation was just a first step in discovering the multifaceted history and typology of reinforced brick floors.

New floor systems and types have been developed in Germany after 1925, but first of all rather different systems have been used beyond the German borderlines in Europe and the USA. Comparative analyses are likely to provide interesting results and help to understand and maintain in a better way these fascinating testimonials of modern construction history worldwide.

Since fire-proof brick constructions had begun to replace the traditional wood structures following the Chicago Fire in the 1870s, reinforced brick floors have shaped the system of skeleton construction world-wide up to our times – in a wide range of multi-storey buildings as well as in many famous buildings of "classical modernism" from Le Corbusier to Mies van der Rohe. In recent years a research project at the Department of Construction History and Structural Preservation of the BTU Cottbus, enabled by funds from the German Research Foundation DFG, gave for the first time the opportunity to investigate systematically the historical development and structural typology of early reinforced brick floors in the German empire from the beginnings in 1892 up to 1925. Those decades saw the emergence of a wide range of different brick floor types. Their variety by far outnumbered that of the reinforced concrete slabs which were developed in the same period. Many of these historical floors are still in use today. Nevertheless very little is known about them. Not only an accurate, close-to-reality assessment of their load-bearing capacity (for example in response to changes of use), but already their simple classification raises considerable difficulties for engineers dealing with them. The first phase of the research project, which was connected with the dissertation thesis of the lead project partner Michael Fischer, was focused on pure historical questions. Based on patent



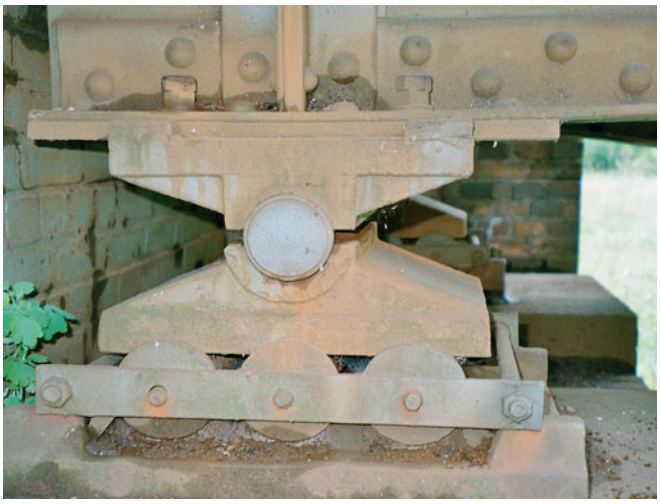
The three most important types of early German reinforced brick floors - Kleinesche Decke, Förster Steineisendecke, Reformhohlsteindecke (with Ackermann clay bricks) (Graphics: Fischer)

documents and contemporary publications as main sources, different construction types, their proliferation, typical advantages and faults, historical methods of dimensioning and other interesting aspects have been studied. Seventy one different systems of reinforced brick floors were found in the German Empire up to 1925. With the typology and the catalogue developed in this first phase, now detailed information is available on those floor systems as a structured basis for planning tasks. An internet database (www.steineisendecken.de) simplifies the task of exact classification and provides the user with a modern tool to deal with these structures. Furthermore, the overviews created within the framework of this analysis of the faults caused during production and construction allow one to react to the characteristic structural properties when planning for each existing floor. Based on the results of the historical studies, the second phase of the project was dedicated to the structural examination of reinforced brick floors from a current point of view. Aiming at a close-to-reality assessment of the load bearing capacity the usual calculation algorithms could be refined. The improved calculation algorithm gives the engineer dealing with a historical reinforced brick floor the ability to assess its load-bearing capacity more realistically without the need for expensive load-testing.

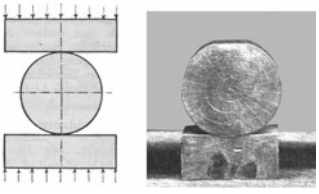
Werner Lorenz, Department of Construction History and Structural Preservation

Historical bridge bearings

Principles and structural assessment



Typical historical bridge bearing



Typical problem to be discussed: Flattenings in the contact area due to overloading

The structural assessment of existing historical bridges or viaducts, mainly in iron, steel or concrete, has become a main subject for engineers during the last decades. It has to be decided, whether these structures can still be used in the future after they have been serving traffic for about one century or even more and being in more or less sound condition. They can not simply be replaced because of economical reasons or because the whole bridge is classified as a monument. But even if the existing bearings look sound and there is visually no need to replace them, engineers encounter difficulties in proofing their ability in resisting present-day or future loads.

Against this background, the research focus "Historical Bridge Bearings" will acquire the profound knowledge for a sensitive assessment of existing bridge bearings, which usually need to be assessed as part of the assessment of a whole structure. It is surprising, but despite the key position of bearings for the structural behaviour of bridges and despite the enormous research work which was necessary for their development, little has been published regarding bridge bearings and their history.

As a logical consequence, in a first part of the project and based on the systematic analysis of historical literature, the principles of the genealogical development, the fabrication and the historical structural analysis of the historical bridge bearings are to be analysed. First results were already discussed in 2006 at the Second International Congress on Construction History in Cambridge and at the Fifth International Conference on Structural Analysis of Historical Constructions in Delhi. At the end of 2009 this first part of the project will find its conclusion with a dissertation thesis. Based on this profound research of the historical principles, the second part of the research focus "Historical Bridge Bearings" is to acquire reliable methods for a structural assessment of the historical bridge bearings. Basically the work will tackle questions of load bearing capacity and serviceability, but the fatigue strength is also to be brought into focus. Taking into account the specific installation conditions of bridge bearings on site, a main challenge will be the development of an applicative and non-destructive testing method to find out all relevant properties of the material used for the bridge bearings to be assessed. The second part of the research focus will be undertaken together with the Federal Institute for Materials Research and Testing Berlin. However, the general management and supervision for the whole research focus is carried out by the Department of Construction History and Structural Preservation of the Brandenburg University of Technology Cottbus.

Volker Wetzk, Department of Construction History and Structural Preservation

The Berlin Wall

A border fortification of world-wide significance

On August 13, 1961, the GDR closed the sector border between between East and West Berlin, thus sealing off the last means of escape from Communist East Germany to the West through an exit that 2.7 million East Germans had taken between 1948 and 1961. The defences along the 155 km of border encircling West Berlin, quickly known as the „Berlin Wall" were constantly perfected during the 28 years of their existence but were demolished nearly completely following the fall of the Wall in 1989.

An interdisciplinary research project led by the Department of Architectural Conservation and involving also the Institute for Contemporary History (Munich/Berlin) and the Federal Army's Military History Research Unit (Potsdam) concentrates on the physical structures and the topography of the fortifications around West Berlin, providing not only a comprehensive documentation of the hundreds of remnants of the Berlin Wall landscape, but also aiming at understanding the manifold cultural significance of this complex place.

Studying the physical structures, their development and changes between 1961 and 1989 forms a central task of the project, but to understand their significance it is essential to reconstruct the motivations and aims of those who built the Wall, namely the Communist leaders whose attitude towards the Wall appears to have changed several times during its existence: in the beginning, the Wall was a means to solve a problem, but after a few years the Wall also turned into a problem itself, being increasingly seen as an embarrassment. The changing attitudes of the GDR leaders towards the Wall resulted in a complete rebuilding of the border fortification in the mid-60s – turning a provisonal fortification into a permanent ne – and then again in the mid and late 1970s when they tried to make the border as inconspicuous as possible, to support their claim that it was „a national border like any other".

Dismantled wall elements on the Teltow Canal

To understand the Wall it is also necessary to form an idea of the routines and circumstances of those who had to guard it, namely the soldiers of Border Command: how was it possible that ordinary young men, mostly conscripts, could be persuaded to shoot their own compatriots for the „crime" of wanting to escape from their country? The joint research approach from the angles of architectural, military and political history leads to insights that could not be achieved by any one discipline on its own.

Leo Schmidt,
Department of Architectural Conservation

One of three remaining watchtowers

Hopetoun House

Understanding the reasons of alterations

Near Edinburgh beside the Firth of Forth you can visit the country house Hopetoun House, which is referred to as much the finest seat in Britain. The present Earl of Hopetoun and his family still occupy the south wing, but the official owner is a private preservation trust, which opens parts of the house from April till September to the public.

The first building contract was signed on 28 December 1698 and commissioned by Lady Margaret Hope, nee Hamilton, widow of John Hope. She wanted to create a substantial and modern home for her son Charles Hope. Sir William Bruce, once Surveyor-general and overseer of the Kings buildings as well, as in effect, founder of classical architecture in Scotland, was the architect. It took four years to finish the house that was almost a square block of four floors. Only two years later Charles Hope himself - now raised to the peerage as Earl of Hopetoun - contracted Bruce again to enlarge the building. Plates of the front façade and first floor ground plan are published 1717 in Colen Campbell's Vitruvius Britannicus, but it is uncertain how much of the printed design had been actually realised. Recently, building archaeology done by the BTU Cottbus led to the assumption that more had been completed than previously thought. Nevertheless the building work stopped - finished or not - at considerable expense in the year Bruce died.

Only eleven years later the same owner contracted William Adam, an other celebrated Scottish architect, to enlarge his house again by partly demolishing and rebuilding it in a more elaborated baroque style. The whole front façade was redesigned, side wings and grander pavilions added. Neither Lord Charles Hope, nor William Adam lived to see the house completed. Since 1750, no mayor changes occurred on the exterior. That is why one is still able to compare Bruce's Palladian style and the beginning of the classical architecture with the more decorative one of William Adam by the differences between the front and back façades. Only inside functions of many of the rooms changed from time to time, and with them some construction and decoration.

Showy main front by William Adam

It is our aim to discover the development in the needs of the family and the servants as well as to comprehend the question of status and the media of displaying it. What did the architects and owners want to tell their contemporaries or later generations? Which language did they use in design, room types, room orders and décor? What did they think about the creations of their ancestors and what were the roles of political and economic circumstances?

While previous British researchers already based their knowledge about Hopetoun House on the documents found in the archives and coeval publications we analyse the building on the basis of precise measurement and documentation. The second architectural survey campaign is just in progress.

Asita Farnusch
Department of Architectural Conservation

Modest garden front with Dutch influences by Sir William Bruce

From city wall to urban history

The fortification system of Antioch on the Orontes

View of one part of the wall on Mount Silpius (D. Jerominek)

„Antiocheia is likewise a Tetrapolis, since it consists of four parts; and each of the four settlements is fortified both by a common wall and by a wall of its own". With this statement, the city walls of Antioch, today's Antakya, a medium-sized town in the southeastern part of turkey, are described by the historian and geographer Strabon. Even today the remains of the fortification walls, first constructed around the time of the city's foundation in 300 BC, are still visible as a silhouette on both town hills (Staurin and Silpius) to the southeast of the city – even though these walls have been damaged, destroyed or repaired within the following centuries. In spite of their rather good state of preservation (some parts still reach a height of about 15 m) the fortification system has never been subject to detailed archaeological research. The precise mapping of the city walls is one of the main objectives of the ongoing project `Archeological investigations in the urban area of Antakya´ conducted by Doc. Dr. H. Pamir (Mustafa-Kemal University of Antakya) and Prof. Dr. G. Brands (Martin-Luther University of Halle/Wittenberg) since 2004.

Visible remains of the walls and their surrounding topography have been recorded and implemented in a new plan of the city's area while another major focus was laid within the last four seasons on accurate investigation of important constructive details and the building technique of relevant parts of the walls. These operations form the basis on which a Ph.D. thesis on the fortification walls of Antioch on the Orontes is prepared by C. Brasse at the Department of History of Architecture of the BTU Cottbus.

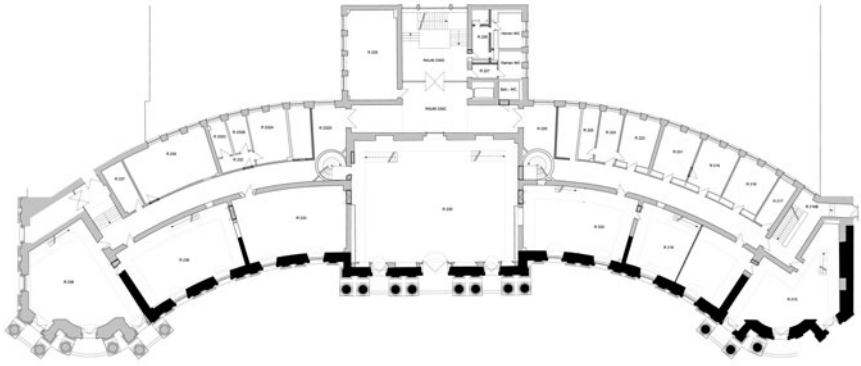
As already mentioned by Strabon, the early walls of Antioch did not consist of one circuit wall only - and the same holds true for today but due to a very different reason: various curtains of the fortifications (but now from different times) can still be detected on the crest lines of Mount Staurin and Mount Silpius. In the plain however, between the river Orontes and the slopes of the two mountains, the course of one circuit wall only, reducing the city's area substantially and most likely dating from the 6th century AD, remained visible. Accurate study of the construction techniques of the walls along the hills had therefore to be the most important tool in order to identify chronological differences. The wall´s core mainly consists of opus caementitium covered by an outer layer of limestone which is formed by different types and shapes of stone. Further possibilities to pursue chronological sequences within the various curtains of walls are offered by structural design of towers, architectural details such as windows, arrow slits or staircases and, most of all, joints between adjacent compartments. While stronger evidence in form of inscriptions or building decoration to ascribe building phases to certain periods is completely absent, numerous written sources (e.g. the Chronographia of Iohannes Malalas or the various books of the historian Prokopius) hand down descriptions of countless events connected to construction work along the walls of Antioch.

Finally comparing results of architectural and archaeological research with these descriptions is a most fascinating process – the aim is not only to be able to reveal the history of the city's fortification walls but as well to follow the development of Antioch as an urban structure. In the end it should be possible to gain insights in the political, cultural and social position of this most important antique metropolis of the Eastern Mediterranean world between its foundation in the 3rd century BC and its decline from the 6th century AD onwards.

Christiane Brasse,
Department of History of Architecture

The building of the former Royal Library in Berlin

Dramatic changes in a great building



Floor plan of the 2nd floor indicating the age of the building fabric
(Elke Richter)

Façade of the Old Library, 2007
(Elke Richter)

The Former Royal Library in Berlin was built during the period 1775-1780 under the Prussian King Friedrich II. It was the last component of the so-called "Forum Fridericianum", a newly planned square at the western end of the boulevard Unter den Linden. The library´s concave baroque façade forms the western edge of this square.

A drawing of the façade, designed by J. E. Fischer von Erlach for the Michaeler wing of the Hofburg in Vienna, served as the sole reference for the architects in Berlin. Despite the four-storey façade, the building originally had only two levels. At first the library used only the upper floor; the ground floor was a storage room for the military and the nearby opera house. During the 19th century the library`s need for space increased dramatically. It gradually expanded until it occupied the whole building, which underwent slight modifications in order to adapt it to the new needs. In 1909 the Royal Library moved into a new building. The original building, thereafter known as Old Library, was converted into a lecture hall for Berlin University, and was altered structurally and stylistically, mainly in the interior. After being partly destroyed during the Second World War, the building remained in ruins for almost 20 years. During the 1960´s the front façade was restored to it´s original appearance, whereas the interior and the back façade were completely redesigned in a contemporary and functional architectonical way. In 1969 the building was reopened, and since then it has served as a library and university building.

The existing structure of the Old Library has been recorded by means of architectural survey and photographic and verbal documentation in the main floors, the cellar and the façade. Due to the extent of the damage suffered in the Second World War, information on the building´s prior development has been gathered mainly from files, literature, photographs and drawings. Using these sources it will be possible to reconstruct the alterations before 1945. The aim of this dissertation is to analyse the dependencies between the processes of alteration, the existing building and the changing demands. In this context it is interesting to ask, to what extent changes were made for purely pragmatic reasons as opposed to fulfilling a need for representation.

Elke Richter
Department of History of Architecture

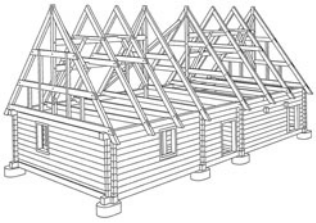
Historic constructions in the Spreewald

Rural building in inhospitable environment

One of the touristic centres near Cottbus is the village of Burg, spread over a large area in the very heart of the extensive woods along the river Spree with its uncountable tributaries and side arms. Founded in the early 18th century by rural settlers the settlement activities were forced and organized within the framework of the so called "Inner Colonisation" of the Prussian king Friedrich II. (1740-86). Thus, the preserved Spreewald houses are special monuments of regional history and human appropriation of a region, which – with its swampy underground and incalculable watercourses proofed to be hostile against any attempt of cultivation and settlement.

The first settlers in this inhospitable surrounding had no other building material available than alder. Because of the weak underground and the changing courses of the brooklets they had to develop a wooden structure, which needed no more foundation but some huge foundlings stones under the corners of the houses. Therefore a typical block structure with horizontal beams and complex corner-junctions was used. The whole house could be lifted and shifted to another place of the site, when necessary – a translocation, which was practiced nearly at all traditional houses in the woods of Burg, sometimes even more than once. The specific structure proofed to be so solid, that even with more wealth and new techniques in the 19th and early 20th centuries only a few modern changes were made but the typical wooden construction basically never changed.

The construction and the history of the traditional houses of Burg /Spreewald belong to the main research-projects of the departments of history of architecture and surveying of the BTU-Cottbus in collaboration with the local authorities of the preservation of monuments and historic buildings. Since a couple of years associates and architecture students from the BTU have surveyed, drawn and documented three houses in Burg in plans, sections and views as an example for the traditional construction type of the "Wohnstallhaus" and the "Doppelstubenhaus". Beside the understanding of the traditional building technique of the "Spreewaldhaus" the research gives also a good view on the needs, possibilities and experiences of the settlers, who always had to fight against their hard surrounding.



Klaus Rheidt
Department of History of Architecture

Literature:

› *Forum der Forschung 21/2008, 91-98*

At the destination of St. James' way

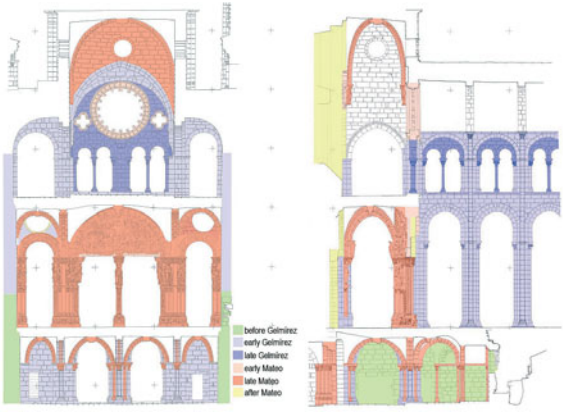
New research on the construction history of the Cathedral of Santiago de Compostela

The huge cathedral of Santiago de Compostela belongs to the most important destination of Christian pilgrimage from medieval times until today. Begun around 1075 AD the construction of the Romanesque pilgrimage church came to an end with the final consecration in 1211. Within this span of time the building process underwent several interruptions and changes of the original planning, the most spectacular of which is undoubtedly the insertion of the famous Pórtico de la Gloria, the richly sculptured portal, into the existing Romanesque west porch in the late 12th or early 13th century.

In 2004 the department of history of Architecture started together with the department of surveying of the BTU Cottbus with an extensive architectural survey of the whole cathedral, which since 2007 is financed by the Fritz Thyssen Foundation and private sponsorship of A. Doderer-Winkler. Work on the Cathedral of Santiago is carried out as interdisciplinary project together with the Institute of Art History of the University of Bern (Prof. Dr. Bernd Nicolai) and the Department of History of Architecture and Preservation of the University of Applied Sciences of Wiesbaden (Prof. Dr.-Ing. C. Rohn). Since our last campaign in February and March 2009 we could finish for the first time complete ground plans and sections of the whole Romanesque building with its more than 90 m length in the very detailed scale of 1:50 showing every single stone and building joint.

A comprehensive survey of this kind has not been made since the work of Kenneth John Conant in the 1920th, which gives a first overview over the stages of construction but leaves many questions unanswered and was controversially disputed in art historian literature of later times. Our new approach with a systematic building archaeological survey of the whole cathedral is only possible with modern measurement methods like tachymetry without reflector, laser scanning, photogrammetry, which are used simultaneously und combined with each other and with traditional measuring and drawing by hand. By mapping every detail of the structure, every stone cutter's mark and by documenting and classifying each of the nearly 1000 medieval capitels an illustrative picture of the building process from its beginning at the eastern parts to the end at the west porch can be drawn. It could be proved, that even this western part of the building is far away from being of one founding, but consists of several fundamentally different phases within a short range of time. The reconstruction of the elder building and planning phases will show, how the cathedral of Santiago de Compostela influenced the pilgrimage architecture and how it was influenced by other large church buildings of its time.

Klaus Rheidt, Anke Wunderwald
Department of History of Architecture



3. International Congress on Construction History – Programme

The programme of the Third International Congress on Construction History will offer a vivid forum for the exchange of ideas and experiences among international scholars and students as well as practising engineers and architects. (Fig. 1) In the morning and after lunch, the scientific programme will be opened by a keynote lecture respectively, followed by parallel sessions in the various lecture rooms of the central Congress building. Between these technical sessions there will be plenty of time for discussions. Some of the sessions are reserved for topics which might be a matter of general interest such as the foundation of a German organisation of construction history. An exhibition showing the presentation and documentation of early and fine examples of design and construction within Prussia will accompany all days of the Congress.

On Friday, the third day of the Congress, attendees can choose between various full-day guided excursions to monuments of construction history in the region and in Eastern Saxony as well as to important places in Berlin, Potsdam and Dresden (Fig.2). For people travelling with participants of the Congress an accompanying programme will be offered containing among others a visit of the Branitzer Park, one of the most famous landscape gardens in English tradition. All accompanying persons are welcome to share the social programme with the Congress attendees. One of the central events will be the Congress Dinner on Saturday in the refurbished halls of an old power station – the Dieselkraftwerk. Already on Wednesday evening the

members of the International Scientific Committee are invited to a banquet given by the Congress organisers to thank all members of the Scientific Committee for their work within the last months.

Starting on Monday the 25th of May, a two-days post-Congress tour to Wroclaw gives the opportunity to visit some of the very finest construction history monuments, for example Max Berg's Jahrhunderthalle (Fig.3). Further and more detailed information of the Congress programme may be found on www.ch2009.de.

Volker Wetzk
Department of Construction History and Structural Preservation

	Wednesday, 20.05.2009	Thursday, 21.05.2009	Friday, 22.05.2009	Saturday, 23.05.2009	Sunday, 24.05.2009
8.00			Start Excursion Tours		
8.45 – 9.00		Daily announcements		Daily announcements	Daily announcements
9.00 – 9.30		Keynote lecture		Keynote lecture	Keynote lecture
9.30 – 11.00		Sessions		Sessions	Sessions
11.00 – 11.30		Tea / Coffee Break		Tea / Coffee Break	Tea / Coffee Break
11.30 – 13.00		Sessions		Sessions	Final Panel Discussion
13.00 – 14.00	13.30: Congress Opening	Lunch Break		Lunch Break	Farewell Note Lunch Snack
14.00 – 14.30	Inaugural lecture	Keynote lecture		Keynote lecture	
14.30 – 16.00	Sessions	Sessions	Day of Excursion	Sessions	
16.00 – 16.30	Tea / Coffee Break	Tea / Coffee Break		Tea / Coffee Break	
16.30 – 18.00	Sessions	Sessions		Sessions	
18.00 – 19.30	Welcome drink + snack	individual		individual	
19.30 – 22.00	Dinner for Scientific Committee	Theatre Evening		Congress Dinner	

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