An Inventory of Construction in Germany

Nothing is more constant than change, this is also true in the world of construction

As in so many cases J. W. v. Goethe defines a method for troubleshooting in German literature. However, his British colleague W. Shakespeare presents a definition par excellence when it comes to building. In Henry IV in 1598, Lord Bardolph says:

„When we mean to build, we first survey the plot, then draw the model; And when we see the figure of the house, then must we rate the cost of the erection; Which if we find outweighs ability, what do we then but draw anew the model“ (1).

The processes in the world of construction have steadily changed since the old days in which the master builders of the Berlin Building Academy dominated design, construction and construction management. The origin of constant change in construction goes way back to 1879. This split old traditions in this period of industrialization. The first Technical University of Prussia developed from the School of Architecture, the Alma Mater for the builders. Thus two additional occupational groups emerged from the general field of the builder. Since that time we speak of architects and civil engineers.

But even in this era, as the Reichstag was built from 1884 to 1894 in Berlin, it was difficult to estimate construction costs. Initially, the cost of an area of 13,000 m^2 was estimated at 13 million RM. The final bill amounted to more than 24 million RM for an area of only 11,200 m^2 (2).

The further development of these 2 partners involved in construction was largely determined in Germany by the consequences of the rapid reconstruction after the Second World War. Although the already high technical level of building was adding other expert engineers to the planning team, the architect was still regarded as the chief trustee.

This architectural epoch secured a market of distribution for the basic building needs of the citizenry. Architecturally it was influenced through unity and ideological theories oriented to the lost modernity in Germany. This offered the construction industry an inexhaustible amount of employment. Here even lower quality buildings in poor locations were forcibly accepted by the market and the users.

The end of this development phase coincided with the fact that the buyers and users dominated the market due to oversupply. This structural change in the construction industry in the mid-70's, which can also be referred to as a specialization or break in the economy, was characterized by much higher requirements of the buildings, since production time in the industrial operation was shorter and service sectors in the economy increased.

With this change in user requirements, planning and implementation of building projects in conjunction with newer higher-quality techniques and ever-shorter completion deadlines for construction programs became more complex. Functionality, flexibility and individuality were not to be ruled out. The risks for participants in construction and financing increased, which at that time already resulted in serious cost overruns. Prominent large-scale projects from this period were (3).

The Olympics in Munich should have costed 600 mil. DM, were billed for 1.9 billion DM.

The ICC in Berlin should have costed 270 million DM, was billed for 926 million DM.

The Aachen clinic should have costed 700 million DM, was billed for 2.4 billion DM.

While this certainly had political reasons, it also had to do with the fact that the architect was both executor of project planning and coordinator in the overall planning and execution process. In this dual role it was objectively impossible to act as an independent coordinator. Even architects make mistakes. The planning of the Hospital in Aachen simply failed to take the toilets into account. This caused an endless series of shortcomings.

This factual circumstance, especially considering public and legal obligations as well as simple self-interest, means that the client must assume the role of general project manager. He(she) must ensure that all participants work together optimally. When the client lacks expertise, then the general project manager function must be replaced by a competent, independent and assertive third party.

In the 70's near the end of the 20th century, just like at the end of the 19th century, and as part of this re-orientation due to quality improvements on the one hand and failures and conflicts of interest on the other hand, a new profession has developed: that of the project controller. The legislature defined for the first time in 1976 this new professional image for architects and civil engineers as a fragmentary provision in the HOAI in § 31. Since then we speak of the project manager.

For a long time there were many professional concerns held in particular by the chambers of architects and the contracting authority which postulated that builders tasks can not be delegated, slowing a breakthrough for the indispensability of the project controller. However, this changed slowly starting in 1984 with the founding of the German DVP association of project managers, who gave this new job a much needed contour. Continuing globalization and the ensuing construction boom resulting from the german reunification supported this new profession of project management so that it survived the above-identified concerns. Parallel to this and after the boom, the sections for project management of engineering organizations and chambers AHO together with the DVP 1996 established common standards for project management (4).

However, this could not prevent the undesirable developments that became apparent in the reunification process in the new federal states through uncoordinated site development, which resulted in a construction and real estate crisis on a wide scale. The investment promotion of the Federal Government, with the special depreciation a haphazard construction activity has set in motion, resulted in an irreversible urban sprawl of cities and towns. Each community stood against its neighboring communities in a race to develop a business park, although it was obvious on the one hand that a market for these investments did not exist and on the other hand a rural exodus for better living conditions to the West was in transition. This wild construction at the time was also reinforced by the fact that the banks saw property financing followed by investment banking as their cash cow and didn't understand how to realistically assess the risks between market law and tax gift. Thus, loans were granted which evolved into the most diverse investment ruins laying dormant as NPLs (non-performing loans) in the balance sheets of the banks still threatening the financial system of the country.

After the decay of this boom and the cleanup/adjustment to the real market, a further generation of knowledge concerning the professionalization of project management in the construction and real estate industry was put in motion, for which purpose (DVP) and (AHO) continued to strive together. This cooperation produced rules that are also now recognized by the courts and the legislature, making the once controversial § 31 obsolete; it has been deleted without replacement from the HOAI 2009.

Many universities have outfitted themselves with appropriate departments for the necessary research and teaching as a further consequence of this construction and real estate crisis which began in the new federal states. Meanwhile, interdisciplinary programs between the economic and engineering faculties exist for many years, so that one wonders why projects fall again into such enormous imbalances, not to mention that the image of the country as an export nation will be seriously damaged.

The following four prominent large projects or infrastructure measures are being increasingly negatively discussed since the cancelation of the opening of the new Berlin airport in 2012 (5).

The Stuttgart 21 rail station:
Awarded in 1995 at a projected cost of € 2.45 billion and scheduled to be completed before 2010 according to an investigation. In 2013 the increase in the cost already amounted to € 6.5 billion, completion is not expected before 2021.

The Elbe Philharmonic Hall in Hamburg:
Should have been implemented before 2009 based on planning costs in 2005 amounting to € 187 million. By 2013 the costs accumulated to € 865 million and completion is not expected before 2017.

The national airport in Berlin / Brandenburg:
The planned investment volume amounted to € 1.7 billion in 2004. This amount increased to € 4.3 billion at the canceled date of commissioning in 2012. Costs are currently skyrocketting at an estimated rate of € 15 million a month until the actual opening in 2016.

The Square at Frankfurt Airport:
Originally this project was planned with construction costs of € 650 million. The project was billed for € 1.25 billion in 2012.

All of these investments, with the exception of "The Square", have in common that they are more or less public-sector projects. Although the German Railway is a corporation, the federal government still has 100% of the shares and "The Square" client was originally a Federal Agency.

And last but not least, the building of the ECB-headquarters in Frankfurt is in a precarious situation where the initial construction costs of € 500 million have increased to € 1.3 billion.

Although the projects listed have been producing negative headlines for years, still now a journalistic bundling of these problem projects is taking place after the commissioning of the new Berlin city airport was canceled in 2012. For this reason Federal Building Minister Ramsauer was not able to avoid addressing these affairs and launched a "Reform Commission on Large Scale Projects" in the spring of 2013. However, looking at the issues on the Agenda at the kick off of the Reform Commission, this act could be seen as a successful diversion. The minister, representing the federal government and its co-owners, was indirectly responsible for the problems at the Berlin airport. The agenda topics (6) considered the following problem areas.

- In-depth planning in early project phases
- Risk analysis, cost estimates and reliable scheduling
- Application of innovative planning methods
- More control, better project management and efficient organization models
- More cooperation in building
- Bonus-/ Malus- rules
- Clear rules of responsibility and liability
- Award to the best, not the cheapest

It's easy to assume, after seeing the topics to which the members of the Reform-Commission have been seduced, that architects, engineers and project managers in the construction industry are responsible for the tragedies listed above. The fact is that the imbalances of mismanagement on the part of politicians in Berlin, Hamburg or Stuttgart,

who organized their prestigeous projects by kitchen management, resulted in the disaster projects. No one should be surprised if the whole team goes down with the ship.

Now that our country has this reform commission to identify the failures of the above listed projects and develop advice and instructions, it will be interesting to see what recommendations for the successful management of future large scale building projects are put forward by this committee – or if the same old rules will simply just be repackaged.

These recommendations might be taken as an unjustified blow against the establishment of project managers and players in the industry who have spent the last two decades endeavouring to advance and professionalize this discipline. The issue has experienced considerable scrutiny through the associations DVP / AHO and university research. Thus, in the 2nd decade of the 21st Century, there is a body of knowledge concerning project management available, even if different concepts are being pursued and scrutinized. And since these think tanks are producing a generation of truly professional managers and firms, there can be no lack of qualified capable staff available for Large Scale Projects.

Considering the fact that the few projects listed above are beleagered with mistakes in process- and mismanagement from the Political side, it is wrong to take a whole new profession under suspicion and reproach the players that they do not plan carefully, do not accurately determine costs, do not control properly and are unable to communicate rationally. The politicians need to break away from their kitchen management and search carefully for the right counsel.

Perhaps only a knee-jerk speech by Minister Ramsauer would have been sufficient as in 1997 by the eminent german President Roman Herzog. Yes maybe you politicians should start your projects with a sense of reality, with more moderation and prudence.

A fundamental problem in the large scale project business is certainly the Teutonic hierarchy, which hinders internal communication. In Germany employees have too much respect for (or even fear of) executives, as also noticed by the new TUI boss and Swede Christian Clemens (7). The British allow no such communication blockages, but create a climate of open disputation about the matter with their genetically inborn humor. Generally speaking such blocking arrogance in the planning team caused by egomaniacal executives does not arise there.

On the other hand, follow the public debate, in particular the Spiegel interview (8) in Issue No. 26 of last year. Only the architects seem to play a role, railing against the contracting authorities and construction companies. The use of an independent project manager for the avoidance of conflicts of interest is completely absent. The denigration of the architects appears like two football teams playing without a referee where each club digresses in polemic about the fouls of the other.

A wise critic (8) noted questioningly in this interview: Whether a major reason for these mistakes is a mixture of the obsolete planning practices of architects with the often prevailing snobbery? This may well be and so interfere with the communication to the extent that the project is predestined to failure. This situation requires even more so a conductor who as a sound engineer directs the program in the best interests of the customer. Especially because the customer also pays the bill, the main purpose is bringing the project forward and not facilitating conceit. Perhaps the failure of several major projects also has to do with the fact that many planning companies are no longer under the personal control of their founders, but instead are being run by external managers in search of profits. Then it's high time that the builders become more professional.

What is meant by project management with an independent project manager (conductor/sound engineer) representing the interests of the client for a large scale project? First of all PM encompasses all planning, management and control activities during temporary, innovative and risky projects with complex structures, predetermined schedules and limited costs, including the multidisciplinary coordination of this management task (9). The most important formula for the management of large scale projects can be derived from this definition. A client can only complete a project successfully when the following recommendation for independent assignment of benefits complies with

Builders services versus **Planning services** versus **Construction services**

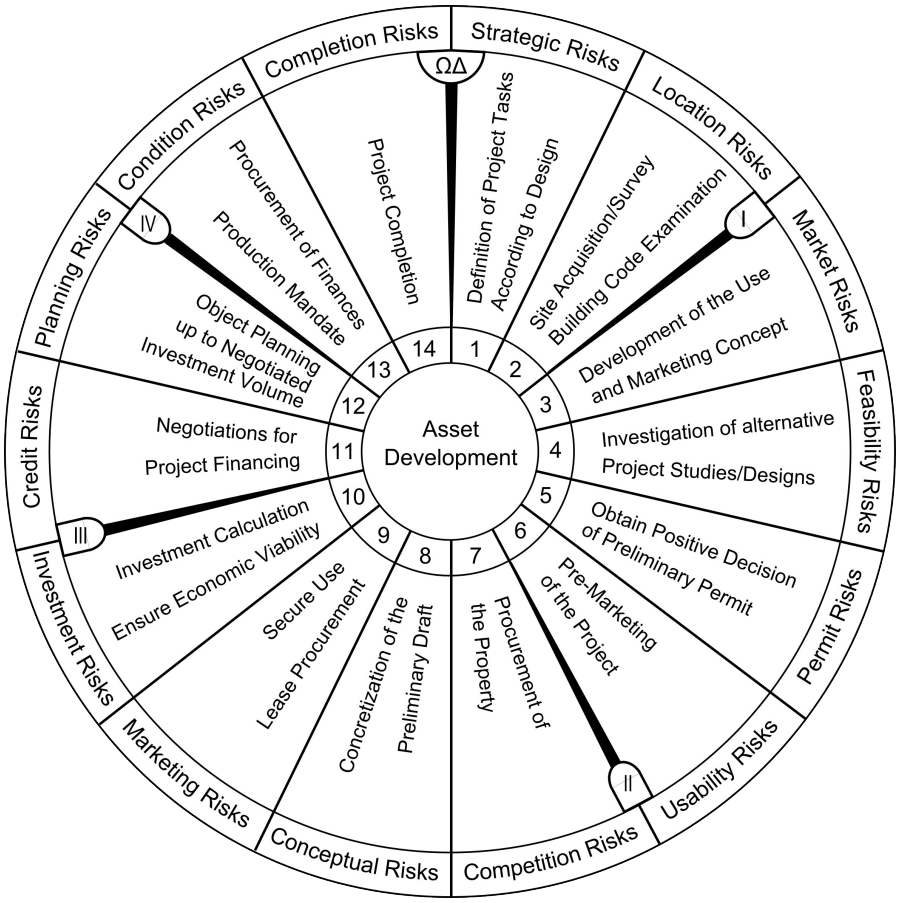
Gerhard Laage, a great German architect has written: "Planning is the gradual, logical, systematic approach to reasonable preparation for future action under risk" (10). Looking back, PM builds on expert systems, such as network technology, which comes from space development and is based on systematic theoretical approaches. Thus, projects must first be understood as unreal or nonphysical and are determined by risky and unexpected interactions of competing interests. Interests can also openly or secretly interact against the project, so that there is always the risk of failure. Basically a plethora of tools are available for project management to lend form to matters marked by inconsistency, chaos, randomness or non-linearity. Of course all the planning ideas and approaches need to be complemented by management tools related to the project (4).

Nevertheless, the success of a project does not result from the exact use of these instruments, but rather from the expertise, personality and assertiveness of the project manager. The experience of this key person plays the most significant role in the development, planning and execution of projects. The success of a project therefore begins with HR. Project managers, like surgeons in an operating room, should only be used if they have the slog behind them and are physically and mentally strong. A tremendous amount of experience in the market is the most important component of success in the project business and a change of this person is a considerable risk.

Successful project management is also the constant, appropriate review of continuously registered and renewed information (4). This requires a competent and dedicated project team. A project manager may not be an introverted single player that would pose a fundamental threat to the project, but instead should be an unpretentious, charismatic and character-solid team player who can communicate with all participants eye to eye and insure the success of a project. This is also only possible if the customer is cooperative. If the subsequent due diligence agenda is taken into account on large scale projects, then disasters can be prevented.

1. Avoid improvisation and use strategic planning to define all organizational requirements for all design measures including step-based structure - and process organization.

2. Development of not only one, but also alternative feasibility studies with the goal of a comprehensive business plan including cost - and risk analysis with constant update.



The risk model serves as a general view of standard risks, in particular start-up costs, the cost-effective treatment of venture capital and the achievement of efficient project results. The Roman numerals show special moments for providing facts and making decisions (11).

3. Use the competition wherever possible and contract the necessary planners, architects and technical and structural engineers directly with the client. The real problems only come to the surface when the planners are legally separate agencies or companies.

4. Diligence and in-depth planning is to be insured not only in the early stages, but is also required in all project phases according to a pro-active work attitude. The project management team must have adequate personnel to fulfill all the necessary functions.

5. All details must be maintained as operative information to the process linked with the risk analysis so that the costs do not lead to a Casus Belli.

6. The final coordinated planning needs to be celebrated with the client in such bold fashion that the grave consequences of subsequent changes are clear to all parties. Here the immense responsibility of the client also needs to be made visible, which is the most obvious source of change.

7. The tender offer (bidding) should be the basis for a market oriented target cost, which the client performs internally before going to the market. Only in this way can the negotiating team under the leadership of the project manager prepare the all encompassing price negotiations. Negotiation must be understood in the primary sense as technology. In this sense, it is also essential to hire a Quantity Surveyor according to the English model, who designs the building contract as claim resistant and defends it during execution.

8. The tender offer, which forms the basis of the construction contract in whatever form, must be consistent. Large Scale Projects are mostly digitally documented and often in paper-print contract works that extend to a few hundred document folders. Due diligence means these can be cut in half, which also avoids inconsistencies.

9. The requirement of avoidance for the award of the cheapest shows a lack of experience. The client is in control during negotiations when he knows his project, particularly the technical details. This of course requires an absolute due diligence, as in the M & A business. Then the contract may also be awarded to the cheapest bidder, provided the price corresponds to the target calculation.

10. The client ensures the successful commissioning by already proactively engaging a fire protection expert during the planning process who is responsible for the fire protection engineering including BMS (Building Management System). This will effectively ensure authorization by the permitting authorities.

One of the most famous project manager personalities of this country, Mrs. Birgit Breuel (12) once said: "If one knows that one is marching in the wrong direction, one does not necessarily have to increase the pace." In a comparison of the four projects, the objects of

study of the "Reform Commission on Large Scale Projects", the Elbe Philharmonic Hall probably takes the most disastrous position. The Breuelsche aphorism found its full application when looking at all of the backgrounds of the representatives of the Free and Hanseatic City of Hamburg. Parallels can be identified in this context under the heading of "concealment" to the latest project scandal in Limburg. While in Limburg, a single high-church pastor misled his diocese about the cost, collective failure took place in Hamburg by a governing CDU faction. As a result, a Hamburg SPD government may now soon be celebrated for arguably the world's most spectacular Philharmonic and in Limburg the poor and homeless can look forward to the commissioning of a feudal table in ambience.

The republic can look forward to the recommendations from the reform commission in the real context of these malicious acts in the public eye and how the next Large Scale Projects such as the City Palace Berlin will be charged.

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