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Theses

1. Fundamental criteria are of significant importance for the acceptance of engineering structures in the arts of civil engineering for the new design as well as for the (archaeological) reconstruction.

2. For a well directed analysis of engineering structures the term “architectural form” and “structural form” are introduced as assessment criteria.

3. The historical analysis of the correlation of architectural shape and structural shape in dome architecture as well as in timber engineering admits to display developments, which have been examples for the design of the cupola of the Dresden Church of Our Lady.

4. The pyramidal flow of loads as well as the static behaviour of the buttresses of the wood construction can clearly be identified as models for the design of the structural form of the Dresden Church of Our Lady.

5. Based on the static-constructional analysis of archivally documented projects of the construction of the Dresden Church of Our Lady as well as the embedding in its historical context these considerations can be identified as a significant enrichment of the static-constructional way of thinking in the 18th century.

6. Contrary to the attitude of some art historians indicated in literature, which doubt GEORGE BÄHRs authorship regarding the design of the finally accomplished Dresden Church of Our Lady at least in parts, BÄHR can be approved as the author of all the essential elements of the structural form.

7. The building concept, which has been developed by GEORGE BÄHR independently from the established building, can be accredited as separate achievement with a high building-theoretical demand.

8. The reactions of BÄHRs contemporary building experts concerning his building concept evidence the efforts in terms of the optimisation of the supporting members for the main cupola of the Dresden Church of Our Lady and prove the embedment of BÄHRs thought within the standard of knowledge at that time.

9. The statements of BÄHRs building concept can be transferred into an independent structural form of the main cupola and its support, whereat BÄHRs mistakes in terms of the transference of his building concept into the finally accomplished building are identified and eliminated.

10. The structural form, developed based on BÄHRs building concept, represents a kind of cupola, which has not been applied in dome architecture until now: the polyclastoid.

11. The insertion of the polyclastoid into the geometry of the architectural form of the Dresden Church of Our Lady results in a structural design for the carrying stone bell, whose compatibility with the phenomenology of the Dresden Church of Our Lady is verified.

12. The structure-mechanical analysis of the state of stress and deformation clearly demonstrates the qualitative load-bearing behaviour of polyclastoids and their resistance even in case of disaster.

13. Models manufactured within the framework of this dissertation prove, that GEORGE BÄHRs building concept anticipatory correctly describes an absolutely new structural form of dome and shell architecture, the polyclastoid, and that it would have been accomplishable as a stone cupola.

14. Due to the documentation of BÄHRs intellectual achievement of design the detection of the polyclastoid as a structural form based on the building concept of GEORGE BÄHR is an important contribution for the reconstruction of the Dresden Church of Our Lady and an enrichment for dome architecture.