



Structural Shaping of Bridges – A Forgotten Task of Engineers

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Summary

The design of bridges within the highway infrastructure is mostly driven by very cost-optimized and function-based concepts. To raise public acceptance an architectural revision is often undertaken in the design process resulting in very surface-orientated and wrapped-over design ideas using for example colours, haptic effects and cladding. Many solutions remind on historic examples where technics and art were separately treated and displayed causing not only higher expenses but also maintenance problems. In order to adequately combine aesthetics with economical and technical requirements when operating publicly financed highway infrastructure a merged approach is pursued. The aim of this paper is to challenge engineers to be more involved into the creative process of finding suitable aesthetical forms in addition to its structural duties. He is invited to take advantage of the ingenious process of “Structural Shaping” which involves the engineer-technical thinking combined with a sense of evolving aesthetical structures based on structural approaches.

In 2010 the Austrian motorway and expressway operator, ASFINAG, launched a design initiative to improve the appearance of its highway and expressway network. With a design guideline for bridges the ASFINAG focuses on the aforesaid targets.

Keywords: Bridge Design, Aesthetics, Structural Design, Structural Art, Structural Shaping infrastructure, Engineering

1. Introduction

The visual design of infrastructure facilities is commonly accepted and worldwide under practice. Not least through Jörg Schlaich who claimed “Art of building (germ. Baukunst) is indivisible!” [1] many papers and projects have been published and realized to underline this demand. In the light of the actual variety of design approaches the question now is not whether to design infrastructure but how to design it and who should be in charge.

Nowadays many architectural bridge design approaches tend to be surface-orientated mainly including colour, light, haptic, and texture effects. The architectural concepts are mostly wrapped over very down-to-earth planned bridges ignoring their structural elements at all. A discussion to combine the structural concept with an appropriate visual appearance is mostly not pursued or welcomed leading to a complete separation of the architectural and structural design procedure (see Fig. 1).