

An (Almost) Extinct Engineering Heritage Asset—The Case of the Reichsautobahn Bridges

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Introduction

In early May 2015, a motorway bridge dating from the 1930s was demolished near Pfungstadt. Refurbishment had been ruled out, and the bridge had to make way for a replacement. A routine matter hardly worth a mention, replacing old bridges along motorways and major roads has been an everyday task for many decades. The headline to an article in the local newspaper announcing the impending demolition work was therefore correspondingly laconic: “Facelift for South Hesse’s motorway bridges”.¹ The demolition, which went almost unnoticed by experts in this field, however, was a milestone in the story of the treatment of one of the most important heritage assets in the history of 20th-century transport. This unspectacular structure was indeed the last remaining historic bridge on the oldest section of the German motorway network.

The *Reichsautobahn* and Its Bridges

At the time, the *Reichsautobahn* was probably the most ambitious traffic infrastructure project in the world. Work on this motorway network began in the autumn of 1933—only a few months after the National Socialists had seized power. Although there was plenty of experience from previous motorway plans to fall back on, these roads were declared to be “roads of the Führer” and were instrumentalized as symbols of a new order. Nevertheless, even wary foreign countries followed the rapid construction of an unprecedented road network almost 4000 km long, purely for motorized traffic, with increasingly unconcealed enthusiasm. Today, the *Reichsautobahn* is quite rightly regarded as the defining blueprint for modern motorways. Initially, the motorways project followed primarily economic goals. Soon, however, cultural aspects increasingly became the focus of attention, with the motorway network supposedly demonstrating the reconciliation between nature and technology. However, exploiting this for propaganda purposes proved to be quite complicated at first; after all, although the motorways were “thousands of kilometres long, they were also rather flat” (Ernst Bloch). Thus, besides the very ambitious integration into the landscape, the count-



Fig. 1: Landscaping and bridge building in 1938: motorway in the Wisenta valley near Schleiz

less bridges, as the most significant landmarks, became central elements in the propagandistic exploitation (Fig. 1).

Unfortunately, the first bridges, including the aforementioned bridge near Pfungstadt, were an utter fiasco in terms of their appearance. Therefore, the architect Paul Bonatz was appointed as artistic adviser; he had already enjoyed great successes in cooperating in the design of engineering structures. Together with the engineer Karl Schaechterle and the architect Friedrich Tamms, Bonatz supplied crucial ideas for developing a truly high-class bridge design philosophy for the motorway

network.² In contrast to almost all other building projects carried out by the National Socialists, these motorways were widely acclaimed internationally. One remarkable feature was the diversity of the bridges. Modeled on different principles, the bridge designs embodied conflicting ideas, ranging from pure creative engineering in steel and reinforced concrete to “vernacular” and even monumental structures in stone. Over a period of not quite ten years, some 6000 bridges and culverts were completed along these motorways, with another 2000 or so at various stages of completion. The catchphrase in the propaganda of the National Socialists at that time was therefore the “land of bridge-building”.³ And indeed, the motorways offered a unique insight into the various possibilities of bridge building in the second quarter of the 20th century.

A Story of Continuous Losses

Toward the end of World War II, more than just a few motorway bridges were destroyed by the *Wehrmacht* in order to hamper the advance of Allied troops. Nevertheless, much of the damage had been already repaired by the mid-1950s. One real problem for the retention of the *Reichsautobahn* as a unique infrastructure heritage asset in the coming years, however, was the growing volume of traffic, particularly in former West Germany. Wider carriageways and increasing traffic loads frequently led to bridges having to be demolished and replaced by new structures. As the term heritage began to be applied more widely, engineering structures and facilities started to attract the attention of the conservationists. The first motorway bridges were declared monuments in the early 1980s, and the first scientific monograph on the *Reichsautobahn* appeared at the same time⁴—since followed by many other publications. However, these measures could not stop the ongoing loss of cultural assets, especially after this trend was given new impetus by the unification of East and West Germany. A gigantic avalanche of investments was now underway under the heading of “German Unity Transport Projects”, the intention of which was to upgrade the ailing transport infrastructure of the former GDR. This resulted in a remarkable paradox. Although the “untouched state” of the motorways in the east of the country was praised with enthusiasm,⁵ this did not change the fact that, very soon, their appearance matched that of motorways in the west. Countless bridges were demolished in the course of modernization measures, including many outstanding examples of German engineering, but their potential value as heritage assets was not seriously considered. Only the intended demolition of the bridge over the Teufelstal (Devil’s valley) provoked some opposition. This bridge, formerly Germany’s largest arch bridge in rein-

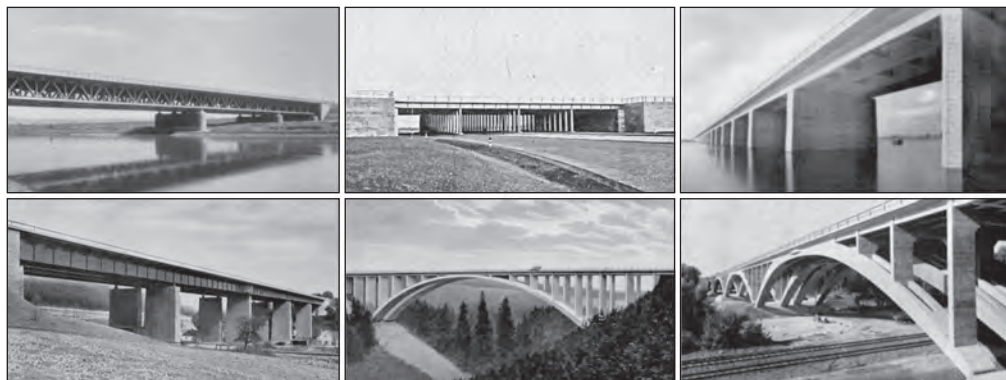


Fig. 2: Examples of the loss of outstanding motorway bridges. Top, left to right: River Elbe, Dresden (1934–1935, demolished 1995); Schkeuditz interchange (1935–1936, demolished 2000); Elbe floodplain, Hohenwarthe (1934–1937, demolished 1994). Bottom, left to right: Lauter valley near Kaiserslautern (1934–1937, demolished 2015–2016); Devil’s valley near Stadtroda (1936–1938, demolished 1999–2000); Danube, Leipheim (1934–1937, demolished 1999)

forced concrete, had been protected since 1993 and had even been named a potential UNESCO World Heritage candidate in 1997.⁶ However, although prominent experts testified that the bridge could be refurbished, even this icon of the *Reichsautobahn* was demolished at the turn of the 21st century. At the same time, demolition continued unabated in the west of the country. Especially bitter here was the loss of the Danube bridge at Leipheim, the most important example of the contemporary adoption of Robert Maillart’s concept of three-pin arch bridges (*Fig. 2*).

The Difficulty of Preserving Historic Transport Infrastructure Assets

The problem was definitely not restricted to former motorway bridges and certainly did not go unnoticed. For example, in 1999, a publication by the German National Committee for Heritage Preservation drew attention to the frightening scale of the destruction of cultural assets in the realm of transport infrastructure.⁷ However, to date, we have seen no substantial change in policy. One reason for this state of affairs can be found in the administrative structures, which make the preservation of heritage assets such as motorways extremely difficult in Germany. Here, the fundamental responsibility for issues regarding motorway bridges lies with the highways and heritage conservation authorities, organized on the level of the separate federal states. Heritage conservation authorities are normally involved in building measures, even smaller projects, but even today, they only rarely consider construction history aspects. The reasons for this are, on the one hand, that some heritage conservation authorities show no particular interest in becoming involved in such matters. On the other hand, their work is hampered by a lack of strategic preservation plans. Thus, decisions regarding demolition or retention are frequently left solely to the engineers in the highways authorities. There is no doubt that they have become aware of the early motorway bridges’ significance and that they certainly base their decisions on the best of their knowledge and belief. However, an unfortunate mix of a lack of construction history knowledge, overcautious safety concerns regarding the “theoretical service life” and a prefer-

ence for new structures over refurbishment in the public financing system leads them to favor the demolition of a historic structure in most instances. As far as this author is aware, Germany does not yet have an official register of all heritage assets from the time of the *Reichsautobahn*. So, it is not surprising that, so far, the group of protected motorway bridges seems arbitrary. Conspicuous here is the dominance of large stone arch viaducts. Apparently, from the standpoints of both engineering (good ability to carry higher loads) and heritage protection (especially vivid depiction of National Socialist monumentality), these bridges seem to represent the “ideal” heritage asset when it comes to motorway bridge building. The clear preference for a certain type of bridge is, however, highly problematic because this means that one vital element of *Reichsautobahn* bridge building, namely, the surprising diversity, can no longer be seen in an adequate number of examples.

The situation regarding underpasses and overpasses is particularly frustrating. Seen from the driver’s viewpoint, although the latter are much more important than large bridges carrying the motorway, they were and still are being poorly treated. The fact that such bridges normally constitute a series along motorway segments has only been acknowledged once so far, with “route 46” being protected since 2003.⁸ This motorway segment was never completed, and this fact undoubtedly simplified the granting of such comprehensive protection. However, the fragments spread across remote forest areas over a length of about 30 km lack one essential element: the “experience” of a connecting road. An example from North Rhine-Westphalia shows just how difficult it is to preserve overpasses on roads that are in use. The “Weg Hesseler” overpass at Beckum, built in 1938, was one of the first bridges in the world using the Freyssinet prestressing system. A preservation order for this bridge was granted in 1991, and so, it survived the upgrading measures carried out shortly before the turn of the century, whereas an overpass built at the same time just a few kilometers away using Ulrich Finsterwalder’s rival system quietly disappeared in 1996. After considerable doubts arose regarding the structural safety of the Beckum bridge, a decision was made to relocate the superstructure in 2012. Owing to the considerable costs, this measure, no doubt carried out with the best of intentions, led to a storm



Fig. 3: Attempts to deal with the motorway bridge-building inheritance: the “Weg Hesseler” prestressed concrete overpass (1938) following its relocation to the Vellern motorway rest area; a preserved segment of welded superstructure from the Mühlenfliess Bridge (1937/1938)—now an exhibit in the motorway history collection at Erkner Motorway Maintenance Depot; the extension (2003–2005) to the Saale valley bridge at Jena (1938–1941) with an “appropriate” design language

of public protest. Not totally blameless here was undoubtedly the presentation of the “torso” on a nearby motorway rest area in a manner that can hardly do justice to the heritage idea. This is just another instance in a whole series of seemingly almost desperate attempts to preserve at least some of the motorway bridge-building inheritance (*Fig. 3*).

Outlook

An example that demonstrates that a different approach is possible, despite considerable traffic, is Merritt Parkway in Connecticut, which is protected in its entirety—a length of over 60 km. However, in the meantime, it would be nearly impossible to find a comparable segment of the *Reichsautobahn* that has not been extensively reshaped. Most of the historic sections have been upgraded or enclosed between noise barriers or given new structures. These days, gaining some kind of authentic impression of the earlier “adventure of the motorway”⁹ is virtually only possible on routes outside the country, in former German territories in Eastern Europe. However, it is probably only a question of time before these examples also vanish. It would appear that preserving the last original parts of the early motorway network (and compiling a meaningful record of structures to be demolished) is only possible when a number of fundamental ideas recently proposed in a remarkable dissertation¹⁰ are quickly put into practice. The most important element here would be the compilation of a national register containing facts on the general state of preservation in addition to substantiated information on the historical, construction history and cultural relevance of individual motorway segments. With such a basis, it would then be possible to develop targeted preservation plans. However, in Germany, a fundamental improvement to the situation regarding the retention of historic transport infrastructure can only succeed when the players involved join forces in some kind of association, such as the USA’s Historic American Engineering Record (HAER), which has been around since 1969. We can already see a first glimmer of hope: the series *Wahrzeichen der Ingenieurbaukunst* (landmarks in the art of engineering) published by the Federal Chamber of Engineers has already had a lasting impact on German construction engineers’ awareness of their engineering heritage. The recently founded Gesellschaft für Bautechnikgeschichte e.V. (German Construction History Society) is emerging as a competent partner for authorities when it comes to construction history issues. There are also many voluntary groups performing valuable documentary work. Critical, however, is the fact that German structural engineers must see themselves as advocates of their own history to a greater extent. The (almost complete) disappearance of the motorway heritage asset vividly demonstrates the consequences of a lack of awareness of history among this profession. It is true that the early German motorways are cumbersome in historic and technical terms, but only when engineers fully appreciate the value of construction history for their current everyday engineering will they perhaps succeed in preserving a symbolic segment of the *Reichsautobahn* for the future.

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