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# Analysing Historical Timber Structures A Case Study on Ernst Gladbach [1812-1896] and His Research on the “Swiss Style”

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## The “Swiss Style” and construction history

Switzerland’s rural building traditions attracted much attention in the course of critical positions towards modern civilization in the Enlightenment (Capol 2000, 28-37). And it was not just texts and engravings glorifying simple rural buildings in the alpine landscape in a romantic manner that emerged as a result: in the second half of the 18th century, so-called “Swiss chalets” were also erected in numerous parks all over Europe (Horisberger 1999). In any case, in this period the “Swiss Style” remained basically a *topos*, having no close links to the ‘real’ Swiss building traditions. This changed by the mid-19<sup>th</sup> century, when three comprehensive publications with detailed building surveys of historic Swiss buildings appeared: Carl Adolf von Graffenried’s and Ludwig Rudolf Stürler’s *Architecture Suisse* (1844), Jakob Hochstetter’s *Schweizerische Architektur* (1857) and Amédée and Eugène Varin’s *L’architecture pittoresque en Suisse* (1861). The prestigious large-format illustrated volumes conveyed a limited view of the Swiss building traditions: the publications of Graffenried/Stürler and Hochstetter dealt only with buildings from the canton Bern while the brothers Varin largely abstained from showing the construction. Only Ernst Gladbach provided a broader overview of historical Swiss timber buildings, with his mainly large-format illustrated volumes published in 1868-1893. He presented surveys of buildings from different cantons and highlighted the aesthetics as well as the construction of the buildings and their details. Contemporary textbooks

on construction such as Rudolph Gottgetreu’s *Lehrbuch der Hochbau-Konstruktionen* built upon Gladbach’s findings (Gottgetreu 1882, e.g. 21). Nevertheless, Gladbach’s work is usually reduced to the picturesque drawings of chalets that have been reproduced in numerous books worldwide (Fig. 1).

This paper focuses on Gladbach’s importance for the history of construction. Examining his biography, his field studies and the final production of his publications, it analyses his specific manner of research and documentation. The central thesis is that Gladbach as a scientist and artist linked approaches from construction history with approaches from cultural studies and questions of aesthetics to provide a comprehensive view of historical Swiss timber buildings in their contexts.

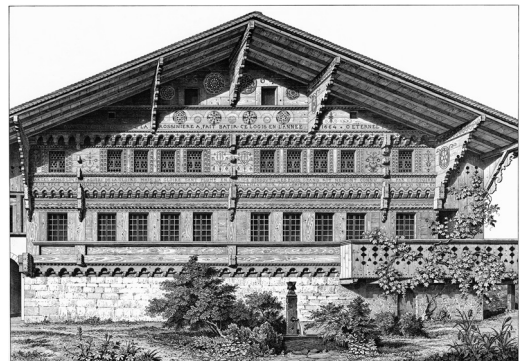


Fig. 1: Ernst Gladbach, drawing of the evangelical parsonage in Rossinière (Gladbach 1868, plate K.II.1), reproduced, for example, in Dana’s *Swiss Chalet Book* (Dana 1913, 98).

### On the career of a versatile historian of construction

Born in Darmstadt, Germany on 30 October 1812, the son of a jurist, Gladbach (Fig. 2) early on became involved in architecture and construction issues in particular through his uncle Georg Moller (Lehmann 1898, 9). Moller [1784-1852] was an influential court builder in the Grand Duchy of Hesse. At the age of 14 Gladbach began an apprenticeship in his uncle's office. He soon worked on major projects such as the theatre of Mainz [1829-1833] and supported his uncle in teaching young architects (Gladbach 1857, 2). Aside from this, he got involved with the book series *Denkmäler der deutschen Baukunst* (Moller 1815-1851). In the large-format illustrated volumes Moller presented detailed architectural surveys of medieval buildings. In the books and in his work as an architect and teacher he focused on construction issues in particular. 1833-1844 he published his own textbook on construc-

tion, under the title *Beiträge zu der Lehre von den Konstruktionen*, that assembled surveys of exemplary buildings (Moller 1844). For Gladbach's further work, the exposure to construction issues in his uncle's office was formative (Gladbach 1857, 1). In addition, Gladbach received drawing lessons from his cousin Fritz Hessemer who also worked in Moller's office. The lessons resulted in the publication of some of Gladbach's artistic drawings by a publisher in Darmstadt (Lehmann 1898, 10).

After studying at the universities in Giessen and Heidelberg, Gladbach further improved his drawing skills on a three-year study trip that took him to different German cities and then to Italy from 1837 to 1839. Back in Germany Gladbach worked as a master builder for the Hesse state civil service, dealing with timber construction mainly in a practical way. In his spare time he did some building surveys that he published together with some of Moller's surveys as a third volume to the series *Denkmäler der deutschen Baukunst* (Moller 1815-1851, vol. 3). In 1857 Gladbach was appointed professor for structural theory and construction materials at the newly founded Swiss Polytechnic School in Zurich and kept this position until 1890 [he had resigned from teaching already in 1881]. Being professor at the Polytechnic School, he shifted once more the main focus of his work: Gladbach stopped being professionally active as an architect. Instead, teaching became the centre of his life. In addition to his teaching load at the Polytechnic School he gave private drawing lessons. The long semester breaks allowed him to carry out study trips in the Swiss mountains where he conducted his extensive studies on historical timber constructions.

In summary, Gladbach explored construction issues from different views before publishing his well-known books on Swiss timber construction: from the view of a designing architect, of a teacher wanting to make constructions issues comprehensible, of an artist who likes to draw and, last but not least, as an architect doing precise building surveys for his uncle's publication series. This multi-perspective view decisively influenced Gladbach's method of analysing and documenting historical Swiss timber structures.

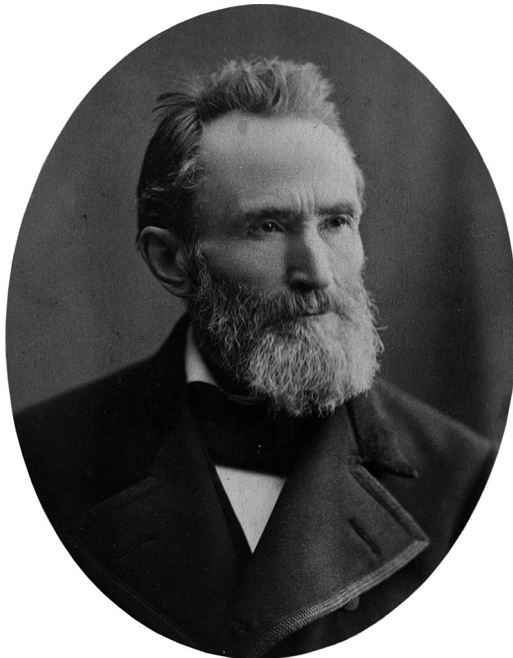


Fig. 2: Louis Zipfel, portrait of Ernst Gladbach, undated (ETH-Bibliothek Zurich, Bildarchiv).

## Historical timber structures as epistemic objects – Gladbach’s exploratory field studies

### *Teaching collections*

Research – and especially research on historical timber structures – was not explicitly part of Gladbach’s areas of responsibility at the Polytechnic School. The starting point for his study trips during the semester breaks was, in fact, the teaching. Gladbach “drew the first large-format sheets only for his classes,” his biographer Wilhelm Ludwig Lehmann wrote (Lehmann 1898, 15). The idea of collecting [historical] examples for teaching purposes played an important role in the contemporary polytechnic education. It is reflected on the one hand by the numerous collections of objects at the Swiss Polytechnic School which also included the collection of building materials set up by Gladbach after 1857 (Eidgenössische polytechnische Schule 1857, 20). On the other hand it is reflected by the collections of drawings of [historical] objects that were used for teaching purposes in the form of large-format panels and publications. Already in 1853, Friedrich Eisenlohr had justified his surveys of historical timber structures of the Black Forest on the basis of the suitability of the drawings for teaching purposes (Eisenlohr 1853, 2). Gladbach emphasised with respect to the historical Swiss timber buildings that “these structures are not only of interest for Switzerland but can rather serve more generally as models for all times” (Gladbach 1868, n.p. [introduction]). In Gladbach’s opinion the Swiss timber structures could also serve as models in respect of their aesthetics which he closely linked to the construction. He wrote the historical timber structures would have “a vocabulary of forms that does not contradict the nature of the material or the construction itself – not even in the most fantastic carvings” (Gladbach 1868, n.p. [introduction]). This dual importance of the historical buildings – as models for structures *and* styles – is clearly reflected in the different types of panels that Gladbach produced for his teaching at the polytechnic school. Besides panels with details of construction there are also several panels with picturesque drawings of entire buildings with their surrounding landscape (gta Archive/ETH Zurich, stock 52, n.p.)

### *Choosing study objects*

On his study trips Gladbach travelled – often hiking – as an explorer in the Swiss mountains. Due to the lack of extensive publications on notable buildings he often developed his route spontaneously using personal recommendations, often from locals. Gladbach’s field study trips can therefore be considered as “exploratory field studies.” His “hiking through a field of knowledge” can be closely linked to the methodology of the Munich professor for cultural history Wilhelm Heinrich Riehl [1823–1897] that Gladbach quotes frequently directly and indirectly in his publications [Gladbach’s first publication even starts with a quotation from Riehl] (Gladbach 1868, n.p. [introduction]). Riehl emphasised the importance of “sources from real life” (Riehl 1869, 5), in contrast to written sources a researcher can take on while hiking. Instead, Riehl largely relinquished a strict classification and analysis of his observations. Gladbach also focused less on a systematic analysis of certain types of buildings or a full documentation of an area and its particular forms of construction. According to his diaries Gladbach neither closely examined research literature nor drew on sources from the archives as building and art historians normally did. Rather, he behaved like an explorer drawing what seemed interesting to him when travelling and especially while hiking through the mountains. He saw himself as a “researcher artist” (Gladbach 1868, n.p. [introduction]). As such, he dealt with historic timber structures in a creative way. He did not only see them as abstract subjects for study but saw them also through the eyes of an artist – as art. This aesthetic approach as well as his interest in construction issues heavily influenced his selection of objects for study. His interest in both aesthetics and construction especially made Gladbach look at the prestigious buildings from the cantons Bern, Zurich and Graubünden, for example, whereas he mentions the plain log houses of the canton Appenzell only in passing. But for Gladbach aesthetic qualities of a building do not only result from a prestigious design but from “a design ennobling the construction while still letting them shine through and never using decoration that is not based on structural



requirements or acceptance” (Gladbach 1868, n.p. [introduction]).

*Drawing as a tool for analysis and documentation*

“Nothing enhances perception as much as when one draws as accurately as possible from reality,” the architect Rudolph Redtenbacher (1879, 207) wrote in an article dealing with new concepts for teaching architecture in 1879. Gladbach also recognised the importance of drawing as a tool for analysis especially through using a wide variety of drawing types. As a detailed examination of the drawings from his field studies shows the kind of drawings range from sketchy perspectives of entire buildings in an artistic and picturesque manner [in some of those sketches the surrounding landscape and vegetation even dominates the picture], to three-dimensional drawings of details of constructions and forms, and even carefully constructed perspectives and dimensioned elevations and floor plans in the reduced style of technical drawings. The diversity of the drawings corresponds with Gladbach’s conception of the “researcher artist” who combines artistic and analytical drawings to simultaneously convey technical, aesthetic and contextual issues of historical timber construction in a didactic manner.

Gladbach’s approach to the study objects can be precisely analysed using his diaries and the remaining drawings from his trips (e.g. Swiss National Museum Zurich LM-1330). His work mainly aimed at a broad survey of Swiss historical timber construction. This is why it only took him a few hours or days to analyse a single building and to draw it – in most cases with a variety of different types of drawings simultaneously. He often uses artistic and picturesque sketches to draw entire buildings and some details. Despite their fleeting appearance, the sketches are carried out with a great richness of detail and especially in the shadows cast. The buildings are often represented in perspectives showing their surrounding landscape. Gladbach also often drew the interior, the furniture or occupants of the buildings. By these means he wanted to situate the buildings – as, in his opinion their structures and design were closely linked to the surrounding landscape (Gladbach 1868, n.p. [introduction]). This in turn shows the close relationship to approaches from folklore and cultural studies. The detailed study of the construction – even in fleeting

sketches – shows Gladbach as an architect trained and interested in construction issues. At the same time as he made these quick sketches in his diary, Gladbach carefully constructed perspectives of entire buildings and details as well as dimensioned elevations and floor plans on larger single sheets in a more reduced manner. Unlike the sketches, hardly any of these drawings show the surrounding landscape or vegetation. The drawings on the larger sheets clearly present their construction. With regard to the perspective drawings of entire buildings, Gladbach often constructed the central lines and scribed them with a ruler. In this framework he inscribed further details freehand. Large portions of the drawings are dimensioned. To carry out these drawings Gladbach took along simple tools for measurements like a ruler, a [measuring] stick and strings, as his diary from a trip in 1890 mentions (Gladbach 1890, n.p.) A sheet with construction details from Waltenschwil/Aargau from 2 September 1862 provides examples of such dimensioned perspectives (Fig. 3). The examples clearly show Gladbach’s effort to capture the complex structure of the roof overhang in a perspective view. He draws elements such as the bearing beams and the wooden dowels starkly and with a greater line weight to highlight them as central elements of the presentation.

The floor plans are also based on a rectangular framework in which Gladbach inscribed door and window openings etc. freehand. Two things become clear when considering the drawings based on building surveys: firstly, Gladbach was not aiming to create building surveys with millimetric accuracy in every detail, or accurate recordings of deformations and aging of a building. Instead, Gladbach measured the parts of the buildings that were important for the acquisition of the main proportions. Secondly, he did not aspire to complete documentation. He measured and drew only the particular perspectives, floor plans, elevations and details that were in his opinion important for the understanding of the entire building, its structure, its functional layout and aesthetics. In addition to the actual buildings, Gladbach sometimes also measured details of the interior decoration as part of his broad approach of analysis and documentation. There are, for example, several dimensioned detail drawings of the interior decoration and furniture of a building

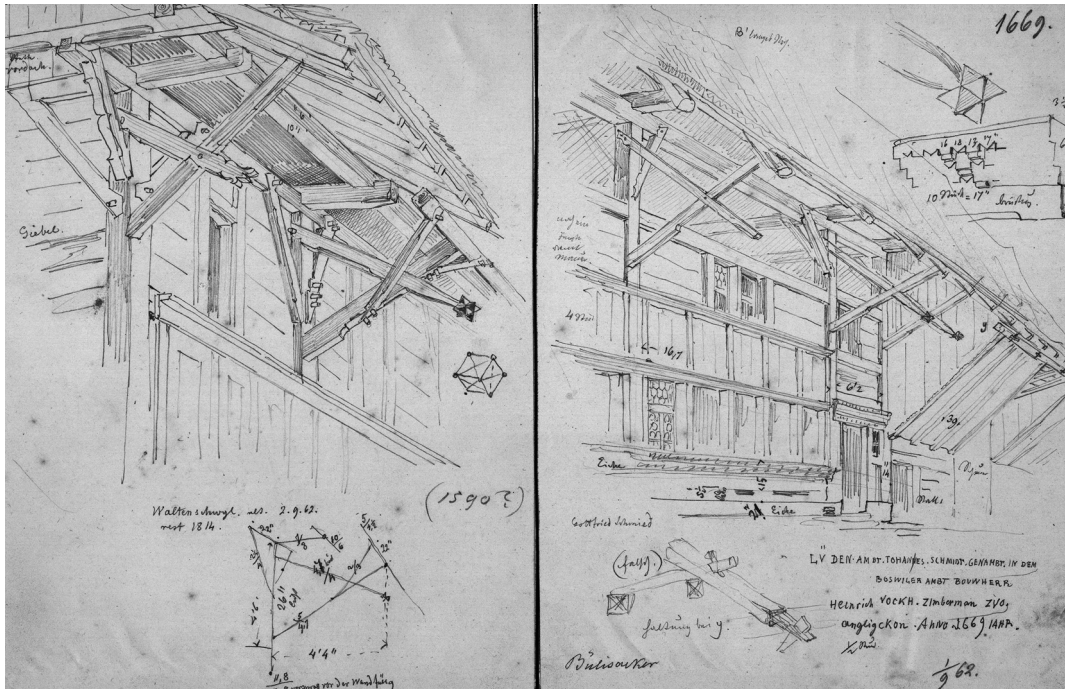


Fig. 3: Ernst Gladbach, sketches of the house of the brothers Schmidt in Waltenschwil, drawn in 1862 (Swiss National Museum Zurich LM-1330.K-16).

called “Ital Reding-Hofstatt” in Gladbach’s diary from the trip in 1890 (Gladbach 1890, 11-21).

Besides the artistic sketches, dimensioned perspectives and floor plans Gladbach drew simple sketches of complex timber structures. One aspect of these simple drawings is the presentation of entire constructions such as roof structures or wall mountings. Gladbach also drew details of constructions such as joint connections. The drawings are reminiscent in their analytical and graphic treatment of the building of Moller’s earlier works. However, Moller used this kind of drawings solely in his handbook on construction *Beiträge zu der Lehre von den Konstruktionen* and not in his large-format illustrated volume on historical buildings *Denkmäler der deutschen Baukunst*.

### Transformations – from travel records to large-format illustrated volumes

Teaching was the starting point for Gladbach’s field studies. But soon “some of his drawings [...] were brought to a publisher in his home-

town Darmstadt who decided to publish a book on Swiss timber buildings” (Lasius 1897, 17). But unlike what is suggested in Lasius’ quotation, Gladbach’s travel records were in fact not suitable for direct publication. Instead they underwent an extensive transformation.

#### *Conception and arrangement*

During his field studies Gladbach collected historical buildings that interested him by drawing them. This corresponds to the conception of the publications which assemble the buildings as collections under the heading of the “Swiss Style.” The buildings are presented in large-format plates and in a brief overview text containing some details on the building history and the construction as well as some small drawings like floor plans, sections and details. The classification of the buildings mainly follows their construction methods and not their style or building data. In this respect Gladbach’s approach strongly differs from that of contemporary building and art historians. In Gladbach’s first publication from 1868 the order of the buildings follows – as

Gladbach explains – “the main principles of construction [...] namely post and lintel construction on the one hand and log construction on the other hand” (Gladbach 1868, n.p. [introduction]). The later large-format illustrated volumes are not explicitly ordered according to construction types, but they play an important role in the drawings and the accompanying texts. Nevertheless Gladbach relinquished establishing a larger theory on the overall development of timber construction or introducing new terms. The publication *Die Holzarchitektur der Schweiz* from 1876 [as well as the new edition from 1885] is no large-format volume like Gladbach’s other books but rather a textbook with small figures in the running text and ordered in chapters such as “types of construction,” “assembly parts” and so on. However, the publication is also primarily conceived as a collection which assembles descriptions of concrete examples and just a bit of theory. One reason for this is that Gladbach focused less on an abstract description. Instead, he wanted to present the single objects as result of individual demands and contexts. Compared to contempo-

rary pattern books (e.g. Sales Meyer 1893; Holz 1876) Gladbach shows barely any overview pages, for example, with abstract figures of timber joints or ornamental lining boards.

### *Forms of representation*

Gladbach closely linked the forms of representation in his publications to the drawings from the field studies. For instance, he used a similar variety of kinds of drawing, ranging from artistic perspectives of entire buildings with surrounding landscape and sometimes inhabitants to reduced technical drawings such as floor plans, sections and elevation plans. Using this variety of techniques Gladbach wanted to impart a preferably comprehensive image of the historical buildings, their structures and contexts. The final artwork mainly focused on emphasising the structures of the buildings. Gladbach displays, for example, the aforementioned house of the brothers Schmidt in Waltenschwil in an artistic way with people and its surrounding landscape. At the same time he reveals the front part of the roof structure and the wall mounting by the means of drawing

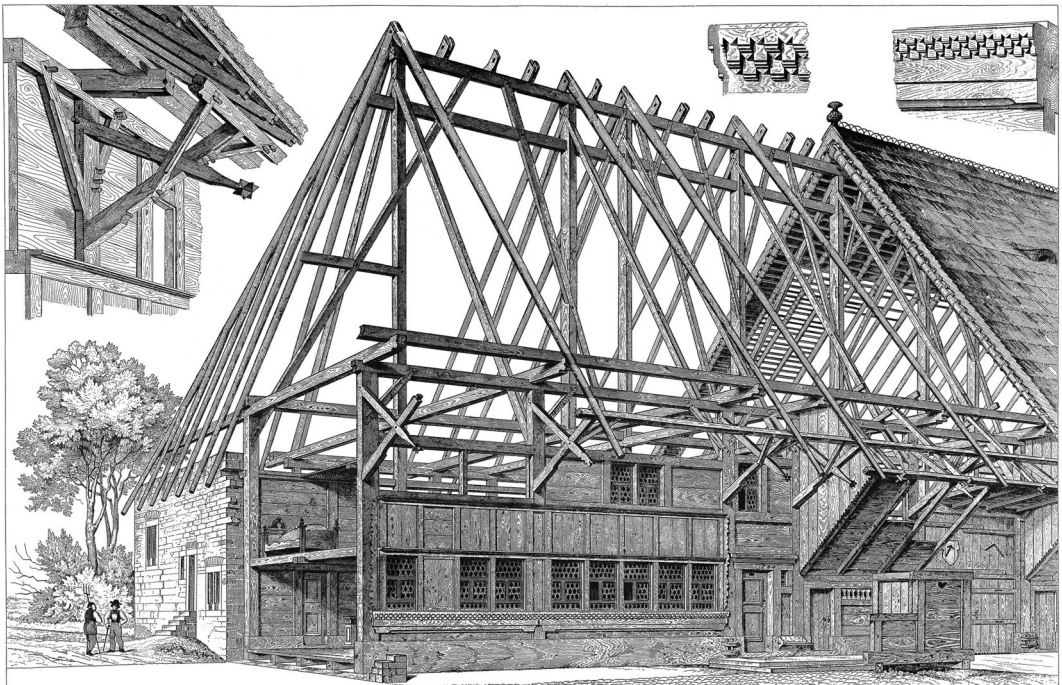


Fig. 4: Ernst Gladbach, published plate of the house of the brothers Schmidt in Waltenschwil (Gladbach 1868, plate B.1.1).



(Fig. 4). The published drawing embodies in an ideal way Gladbach's conception of a “researcher artist” as the results of his analytic observations of the construction are seamlessly integrated in an artistic and picturesque image. Through the use of different line weights and shadings the construction is clearly emphasised despite the homogeneous effect of the image. In addition to the large-format plates Gladbach provided figures with details of the constructions in the main body of the text. The drawing of a base of a farm house in the canton Zurich (Fig. 5) shows how Gladbach makes the elements of the structure comprehensible by creating three-dimensional sections and revealing parts that cannot be seen in reality. Furthermore both examples give evidence of Gladbach's great interest in the representation of materiality. In any case, the drawings of wooden drains, for example, do not reproduce the ‘real’ drains as some researchers suggest (e.g. Capol 2000, 75). Gladbach invented, for example, wooden

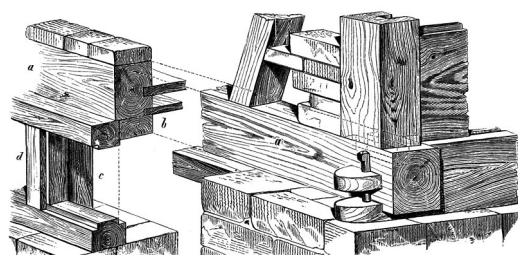


Fig. 5: Ernst Gladbach, farm house “Rosswiesli im Fuchslochs,” detail of the base (Gladbach 1868, 8).

## REFERENCE LIST

- CAPOL, J., 2000. Die Sehnsucht nach Harmonie. *Eine semiotische und mentalitätsgeschichtliche Interpretation der Fassadenbilder der Zürcher Baugenossenschaften*. Zurich: Chronos.
- DANA, W.S.B., 1913. *The Swiss Chalet Book. A minute analysis and reproduction of the chalets of Switzerland, obtained by a special visit to that country, its architects and its chalet homes*. New York: Comstock.
- EIDGENÖSSISCHE POLYTECHNISCHE SCHULE (ed.), 1857. *Verzeichniss der Unterrichtsgegenstände 1857-58*. Zurich: Orell Füssli.
- EISENLOHR, J.F., 1853. *Die Holzbauten des Schwarzwaldes*. Karlsruhe: Veith.
- GLADBACH, E., 1857. *Kurzer Lebenslauf, 22 Januar 1857*. ETH-Bibliothek, Archive, SR 3: Schulratsprotokolle, Akten 1857, Sign. 67 (Zurich, Switzerland).
- GLADBACH, E., 1868. *Der Schweizer Holzstyl in seinen cantonalen und constructiven Verschiedenheiten vergleichend dargestellt mit Holzbauten Deutschlands*. Darmstadt: Köhler.
- GLADBACH, E., 1876. *Die Holz-Architectur der Schweiz*. Zurich: Orell Füssli.
- GLADBACH, E., 1883. *Der Schweizer Holzstyl in seinen cantonalen und constructiven Verschiedenheiten. 2<sup>nd</sup> series*. Zurich: Schmidt.
- GLADBACH, E., 1890. *Passagier Gladbach von Fluntern-Zürich, August 1890* [diary]. Diary. Zentralbibliothek

drains on the basis of his extensive experience of wooden surfaces (e.g. Lehmann 1898, 18).

## The potential of historical bodies of knowledge

Gladbach considered the structures of the historical Swiss timber buildings and their design as “models for all times” (Gladbach 1868, n.p. [introduction]). Nevertheless, neither his field studies nor his large-format illustrated volumes aimed at being one-to-one patterns for new design. Gladbach did not provide collections of constructional or formal details that an architect could use to compose his own building in “Swiss Style” [as the contemporary pattern books did]. Instead, he used the individual objects to demonstrate structural decisions in their contexts. In particular, he wanted to transfer the idea of a close connection between construction and style from the past into the present. One could say that his publications demonstrate the potential of historical bodies of knowledge but they do not contain concrete recipes.

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- Zurich, Handschriftensammlung, MS Z IX 624 (Zurich, Switzerland).
- GLADBACH, E., 1893. *Charakteristische Holzbauten der Schweiz vom 16. bis 19. Jahrhundert, nebst deren innerer Ausstattung*. Berlin: Claesen.
- GOTTGETREU, R., 1882. Lehrbuch der Hochbau-Konstruktionen. Zweiter Theil. *Die Arbeiten des Zimmermannes (Holz-Konstruktionen)*. Berlin: Ernst & Korn.
- GRAFFENRIED, C.A. VON and L.R. STÜRLER, 1844. *Architecture Suisse ou choix des maisons rustiques des alpes du canton de Berne*. Bern: Bourgdorfer.
- GTA ARCHIVE/ETH ZÜRICH, stock 52 (Nachlass Gladbach).
- HASSLER, U. et al., 2013 [forthcoming]. *Die Verwissenschaftlichung des Bauwissens im 19. Jahrhundert*. Zurich.
- HOCHSTETTER, J., 1857. *Schweizerische Architektur. Erste Abtheilung: Holzbauten des Berner Oberlandes*. Karlsruhe: Veith.
- HOLZ, F., 1876. *Holz-Architektur. Eine Sammlung praktischer Beispiele*. Leipzig: Scholtze.
- HORISBERGER, C., 1999. *Das Schweizer Chalet und seine Rezeption im 19. Jahrhundert*. MA thesis, University of Zurich.
- LASIUS, G., 1897. Prof. Ernst Gladbach. *Schweizerische Bauzeitung* 29, 15-18.
- LEHMANN, W.L., 1898. *Neujahrsblatt der Kunstgesellschaft in Zürich für 1898. Professor Ernst Gladbach*. Zurich: Berichthaus (Neue Reihenfolge LVIII).
- MOLLER, G. (ed.), 1815-1851. *Denkmäler der deutschen Baukunst*. Darmstadt: Heyer and Leske.
- MOLLER, G., 1844. *Beiträge zu der Lehre von den Konstruktionen*. Leipzig and Darmstadt: Leske.
- NATIONAL MUSEUM ZÜRICH, stock LM-1330 (Ernst Gladbach).
- REDTENBACHER, R., 1879. Wie lernt und wie lehrt man die Baukunst? *Deutsche Bauzeitung* 13, 197-199, 207-210, 217-220.
- RIEHL, W.H., 1869. *Die Naturgeschichte des Volkes als Grundlage einer deutschen Social-Politik. vol. 4: Wanderbuch*. Stuttgart: Cotta.
- SALES MEYER, F., 1893. *Die Bau- und Kunstzimmerei mit besonderer Berücksichtigung der äusseren Form. 2<sup>nd</sup> part*. Leipzig: Seemann.
- VARIN, A. and E., 1861. *L'architecture pittoresque en Suisse ou choix de constructions rustiques prises dans toutes les parties de la Suisse*. Paris: Morel.