

Architecture and local resources: project experiences in Vorarlberg

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Copertina / Cover: detail of the façade of the Salgenreute chapel, Bernardo Bader Architekten, Krumbach, 2016 (Photo Cristian Dallere)

Errata corrige
Nel numero 11-2023, nella didascalia di p. 72 compare erroneamente come immagine d'apertura Église du Sacré-Coeur, Brig, Atelier coopératif d'Architecture et d'Urbanisme (ACAU), 1970 (Nadine Iten), la didascalia corretta è: Église St-Nicolas d'Hérémence, Hérémence, Walter Förderer, 1967 (Michel Martinez), ce ne scusiamo con gli autori e i lettori / In No. 11-2023 issue of ArchAlp, the captions on pages 72 erroneously report as the opening image Église du Sacré-Coeur, Brig, Atelier coopératif d'Architecture et d'Urbanisme (ACAU), 1970 (Nadine Iten), the correct caption is Église St-Nicolas d'Hérémence, Hérémence, Walter Förderer, 1967 (Michel Martinez). We sincerely apologise to the authors and our readers.

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Architecture and local resources: project experiences in Vorarlberg

The *Land of Vorarlberg* is Austria's second smallest but most densely populated province after Vienna. Known for its innovative timber architecture, Vorarlberg's approach integrates ecological, economic, functional, and aesthetic considerations, as championed by Wolfgang Ritsch of the Vorarlberger Architektur Institut (VAI). The region's timber industry has faced challenges, including local provincialism and modernist material preferences, but gained prominence in the 1990s with the establishment of the *Baukünstler* group and the *Vorarlberger Bauschule*, recognised for their contributions to timber construction.

Key to this development is Vorarlberg's significant woodland, covering one-third of its area, and its commitment to sustainable forest management. Regional timber architecture aligns with the principles of appropriate technology, emphasizing eco-responsible, community-driven innovations. Vorarlberg's timber architecture exemplifies a collaborative effort between designers and craftsmen, focusing on the use of local resources and high construction quality. The essay represents the introduction of notable projects including multifunctional public buildings, schools, offices, and residential complexes, reflecting the region's commitment to sustainable development and architectural excellence. This ongoing innovation in wood-integrated solutions reinforces Vorarlberg as a hub for eco-friendly and culturally resonant architectural practices.

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Keywords

Vorarlberg, Holzbau, sustainability, wood supply chain, forestry.

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The *Land* of Vorarlberg, situated on the north-western slopes of the Austrian Alps and bordering Germany, Switzerland, and Liechtenstein, is Austria's second smallest province. Despite its size, with around 410,000 inhabitants it is the most densely populated after Vienna (Landestelle für Statistik, 2023). The exceptional nature of contemporary timber architecture production within the region is now recognised internationally. This recognition is not only rooted in the use of wood resources but is also part of a much broader discourse revolving around an eco-responsible development of the region and a “holistic” approach to design practice, as articulated by Wolfgang Ritsch, former director of the *Vorarlberger Architektur Institut* (VAI), which integrates ecological, economic, functional, and aesthetic aspects of architecture (Ritsch, 2003). The establishment and growth of the timber industry have been by no means linear, as timber construction had to assert itself against the backwardness and provincialism of the region on one hand, and against modernist influences favouring the use of different materials on the other. Friedrich Achleitner, architecture critic, writes of an autonomous and distinctive development in the period after the Second World War, referring to a *regionalen Bauklima* (regional building climate), scarcely achieved in other Austrian *Länder*. It was not until the 1990s that a group of architects and artists, referred to as *Baukünstler*, was finally established, leading this revolution “from below”, was finally established. In 1991, the International Prize for the Arts of the Land of Vorarlberg awarded its highest honour to the so-called *Vorarlberger Bauschule* (Kapfinger, 1999), which is naturally linked to timber construction.

To understand the origins of the lengthy process described above, it is essential to step back to the inter-war period. In 1934, Austrian architect Clemens Holzmeister published his essay titled *Der Holzhausbau*, discussing the decline of the timber building tradition, accompanied by economic difficulties in Austrian regions. Within this brief publication, Holzmeister highlighted several significant buildings, some located in Vorarlberg, to underscore the positive impact that sustainable forest management

and the use of locally available resources could have on regional economies.

Vorarlberg boasts woodlands covering one-third of its area (Amt der Vorarlberger Landesregierung - Abteilung Forstwesen, 2021), bordering Bavaria to the north and Tyrol to the east – two primary regions for the production of construction-grade timber. Considering this, alongside an understanding of the emergence of contemporary timber architecture, it becomes evident that this technology is particularly appropriate for the region. “Appropriate technology”, strictly speaking, refers to small-scale, simple, energy-efficient, environmentally friendly, labour-intensive, and community-driven technologies (Hazeltine, Bull, 1999). The development of appropriate technology is often regarded as a bottom-up innovation movement, emerging in response to perceived social injustices and environmental issues in conventional industrial production contexts (Smith, Fresoli, 2014, 2017). It promotes inclusive innovation processes for sustainable development, a phenomenon highly relevant to Vorarlberg's history.

Austria's forestry policy closely adheres to European guidelines, ensuring that forest harvest remains below natural reproduction levels, preserving growth capacity for the future and taking into consideration other criteria, such as biological and genetic diversity. The *Waldstrategie 2030+* (Vorarlberg Forest Strategy 2030+), published in 2021, outlines key challenges to ensure sustainable, optimised forest management, recognising their multifaceted roles. Forests play a crucial role in mitigating climate change by sequestering carbon dioxide and providing essential ecosystem services such as soil protection, water regulation, and reducing the risk of natural disasters like landslides and floods. Forestry strategies prioritise maintaining economic performance, supporting sectors from energy to construction, and generating employment opportunities. Additionally, there is an emphasis on strengthening the social functions of forests, raising public awareness about their importance, and promoting greater societal involvement and appreciation. The development and communication operations revolving around the timber industry in Vorarlberg, like the

Opening picture

Haus am Stürcherwald, Bernardo Bader architekten, Laterns, Vorarlberg, 2018 (photo Cristian Dallere).

Fig. 1

Haus am Bäumle, Bernardo Bader architekten, Lochau, Vorarlberg, 2016 (photo Cristian Dallere).



meticulous work carried out by *Vorarlberger holzbau_kunst*, have increasingly refined this production machine, creating important reverberations in architectural production and design research.

Vorarlberg was and is an incubator of innovation in wood integrated solutions: more specifically, in the modular approach to construction, networking between production companies, and the renewal of building envelopes.

Oskar Leo Kaufmann and Albert Rüb pioneered modular timber constructions. Their concept of modularity for off-site fabrication evolved over time: from the earliest version, *System 1*, in 1997, *System 2* in 2002, to *System 3*. *System 3* was the winning entry in the exhibition “Home Delivery 2008: Fabricating the Modern Dwelling” at the Museum of Modern Art in New York. The installation featured one individual modular timber element prefabricated in Bregenz Forest and shipped in two containers; on-site assembly was completed in just seven hours. The System has further evolved into a new high-rise office, Life Cycle Tower One in Dornbirn. This innovation is inspired by lean construction principles: the construction workflow is streamlined by

Fig. 2
LifeCycle Tower, pilot project for modular prefabricated construction system, Hermann Kaufmann + Partner ZT GmbH, Dornbirn, 2012 (photo Cristian Dallere).

offsite wood-concrete composite ribbed slabs, complying with fire-protection regulations.

Networks of timber production companies with experience and construction specialisation contribute to fostering synergies at a regional scale, strengthening wood construction supply chains, and the innovation ecosystem. The number and scope of timber projects is multiplying around Europe, and orders are streaming in for timber construction companies. Most companies have reached their production limits. A future possibility is increasing manufacturing capacity through extensive automation of fabrication processes. Hermann Kaufmann considers that the actual pace of growth for the timber sector is slow, since it is grounded on skilled expertise and advanced production capabilities that cannot be replicated in the short term. Kaufmann and Stefan Winter at the Technical University of Munich have developed a research project on networking among small timber production companies taking advantage of digitalisation by means of BIM and web platforms for developing digital procurement and fabrication.

In terms of the systemised renovation of buildings, in 2008 the *TES Energy Façade* project developed large timber frame panels off-site. The project took advantage of existing automated timber frame production lines, resulting in quicker installation on-site and faster renovation with more predictable costs. Several buildings across Europe have been retrofitted, for instance the residential complex in Fernpassstraße, Munich, including new extension terraces: the existing stairways were converted into living spaces and replaced by access galleries, new external stairways, and elevators. A contemporary report, describing it as Munich’s largest timber project, said that it “achieves the best possible added value and efficiency in construction and operation, doubling the living space and reducing the energy used by a factor of 15” (Lichtblau Architekten, 2012).

Hermann Kaufmann states: «Just as the forest can only grow slowly, timber construction can only grow at a certain rate» assuming that it is able to avoid the pitfalls of oversimplification and generalisation that manufacturing poses to architecture, forcing out individuals who care about the quality of the work they love. Instead, construction and design must grow at a slow pace to preserve the continuity and evolution of place and culture. Constructions do not lose meaning due to technological innovation itself, but rather the aim of cutting costs and time, at the price of separating designers and craftsmen from the object of their work.

All the selected projects share a focus on the use of local resources and the quality of construction and space, naturally emerging from a fruitful collabora-



tion between designers and craftsmen. The projects showcased in the gallery are categorised according to their functional roles, encompassing industrial production buildings, public and private multifunctional structures, offices, school facilities, and residential complexes. The exhibition begins with an extension of the historic Rüscher joinery workshop in Schnepfau, designed by young architect Simon Moosbrugger, situated in the heart of the Bregenzerwald. Following this, two multifunctional public buildings are presented: the Pfarrhaus Krumbach, designed by Bernardo Bader, Hermann Kaufmann, and Bechter Zaffignani Architekten, home to a music school, community space, and library; and another project by Bernardo Bader, featuring a school and gymnasium in Laterns. Next is a project by Innauer Matt Architekten, a multifunctional building resulting from the revitalisation of an existing building that used to house a photography studio designed by Leopold Kaufmann; today the building features residential units and an architec-

ture studio. The gallery then transitions to school buildings, featuring the Egg kindergarten by Bernardo Bader Architekten and two kindergartens by Innauer Matt Architekten in Lustenau and Altach, respectively, which differ in the construction technology used. The first consists of a reinforced concrete ground floor on which the first floor is built using a system of wooden beams and pillars, while the second is constructed entirely of wood. In the office category, the forest insurance building, a collaboration between architect Jürgen Haller and Peter Platner, is highlighted for its compact and technologically efficient design. Finally, the review concludes with three residential projects: the *Maierhof* residential complex in Bludenz by Feld72, featuring volumetrically simple structures with high levels of prefabrication, and two projects by Jürgen Haller – a holiday home in Sibratsgfall, resulting from the demolition and reconstruction of a pre-existing building, and a single-family residence with an attached doctor's office in Schwarzenberg. ■

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