BUILDING FROM TRADITION

Local Materials and Methods in Contemporary Architecture

Elizabeth M. Golden

ROUTLEDGE

5.6 Haus am Moor

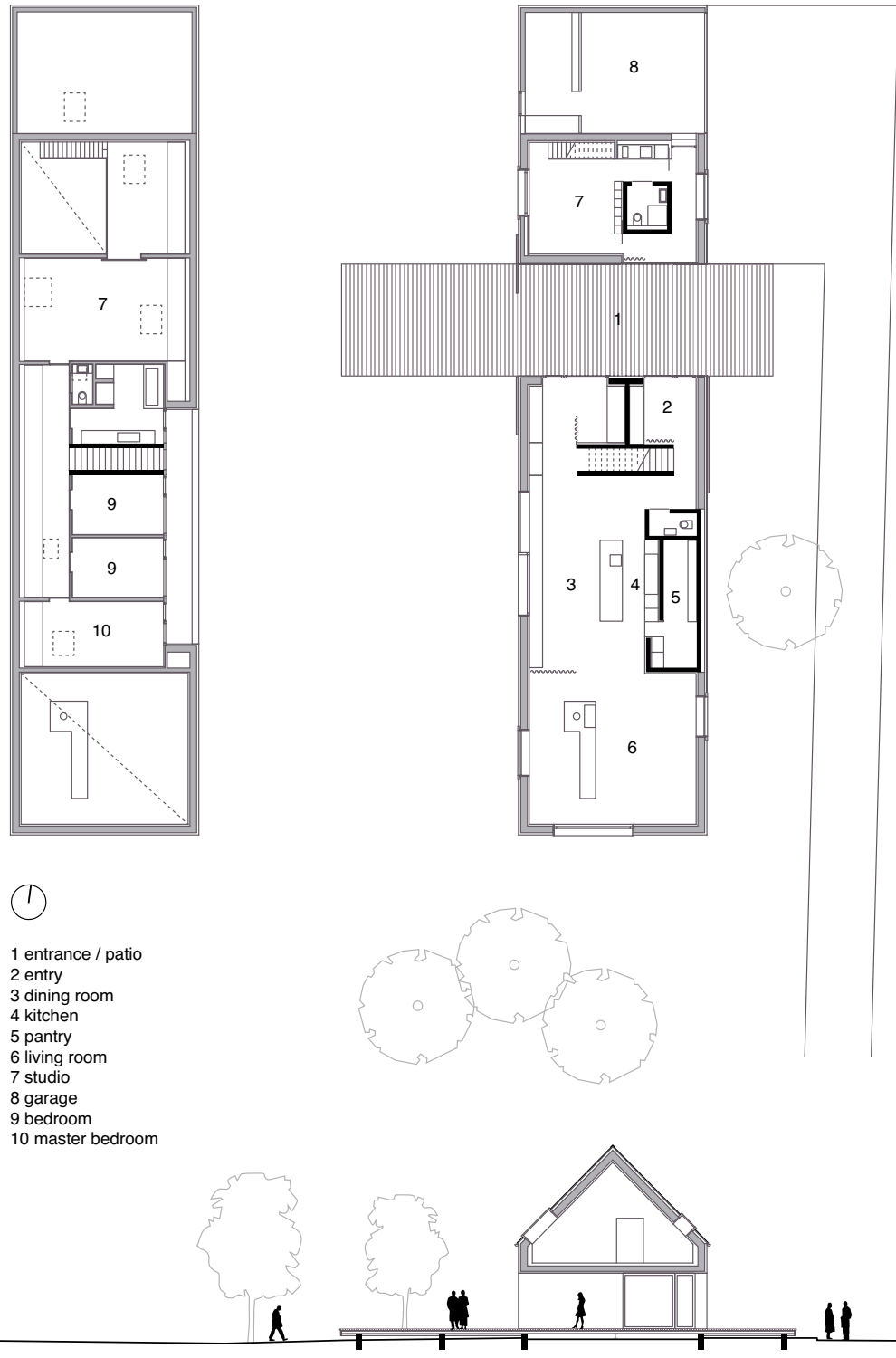
Architect: Bernardo Bader Architekten
Location: Krumbach, Austria
Year: 2012

5.6.1 Haus am Moor east elevation.

Vorarlberg is located in the westernmost corner of Austria and shares a border with Germany, Liechtenstein, and Switzerland. Despite being the country's second smallest province, Vorarlberg has earned a global reputation for the superior quality of its contemporary architecture. During the last three decades, this alpine region has become a model for collaboration between artisans, industry, and architects, continuing a place-based building culture founded on craft traditions. The revival of wood construction can be attributed to this unity between the building trades, as well as to an abundant supply of timber in the region. Along with tourism and agriculture, the timber industry is a primary driver of economic development; consequently, the number of trained carpenters in Vorarlberg is higher than anywhere else in Europe.[17]

Even though Vorarlberg is now highly industrialized, timber used in construction continues to be harvested locally and processed by family-owned businesses in rural villages. The Haus am Moor (House on the Moor), located on the outskirts of the small community of Krumbach, was constructed in this way, and much of the project was built by Bernardo Bader and his architectural team, working in close relationship with carpenters and other members of the construction team.

The house spans the transition between forest and farmland, connecting to both natural and



5.6.2 Plans and transverse section.

man-made landscapes through materiality and form. Bader describes the house as "*baum und dach*" (tree and roof), its solid profile seemingly carved from a tree, and its pitched roof alluding to barns dotting the countryside. From the exterior, the form of the house is deceivingly simple, but the play between single- and double-height rooms on the interior creates a rich array of spatial experiences. The house's elongated north–south orientation serves to create a clear division between the village and the domestic sphere of the living spaces. The *Tenne*, a breezeway commonly found in traditional farmhouses, passes through the volume, forming the main entry on the east, or public, side of the house facing the village and a private deck extending toward the meadow and forest to the west. The addition of room-height sliding doors at the ground level allows the breezeway to be used either as an extension of the indoor living spaces or as a covered portion of the deck. This space also serves to divide the garage and office from the main body of the house, creating a semi-detached studio apartment to the north.

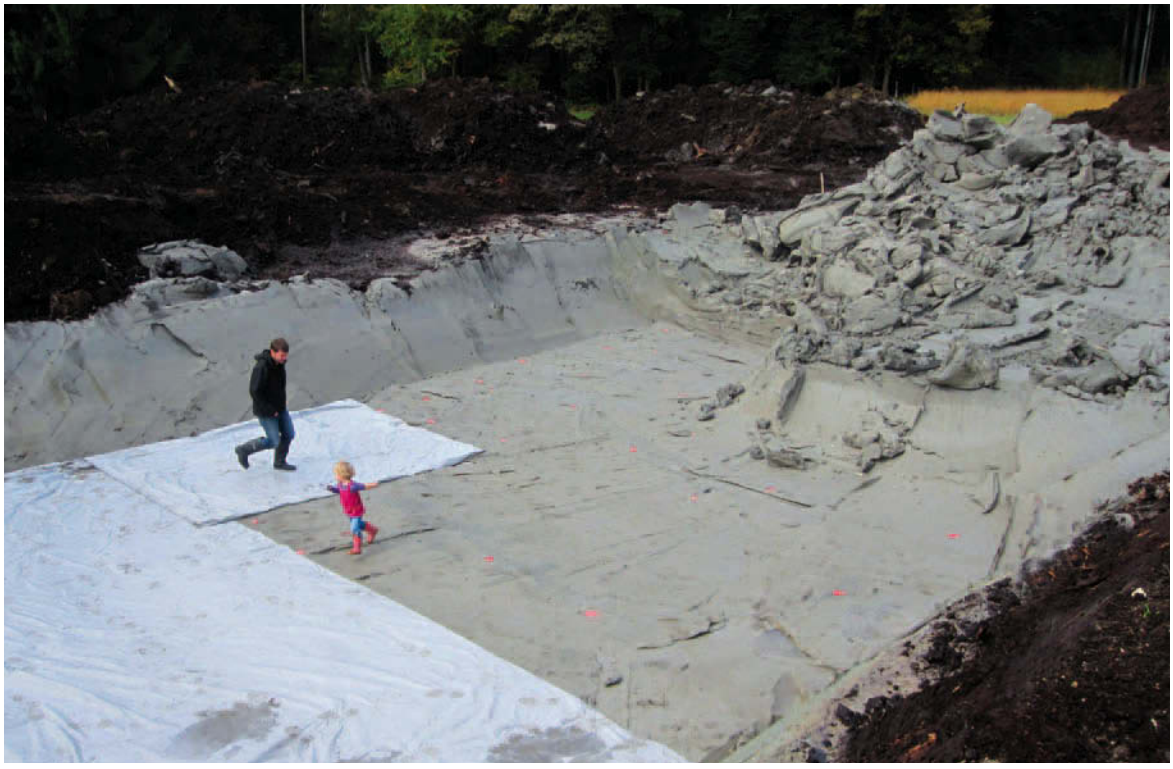
The house was constructed using a combination of timber framing for the structural elements, such as the roof and walls, and reinforced concrete for the core and slabs. Wood for the house was sourced from the client's own stand of timber located near Schwarzenberg, about 15 kilometers from the site. The architect, together with a local forester, selected 20 spruce and 40 silver fir trees, which were felled in December during the phase of the new moon. According to traditional folk wisdom, the ideal time to harvest timber is in early winter, when the moon is barely visible. Scientists have confirmed the validity of this practice: lower sap levels during this period have a beneficial effect on the drying and durability of wood.[18]

After harvest, the wood was delivered to a nearby sawmill, where it was cut into planks and left to dry for several months. For the construction of the house, no engineered products were used, and every piece of lumber was exploited. This was accomplished by using scraps and lower-quality wood for less visible applications and by incorporating varying widths of lumber in certain areas. The structure's highly insulated walls were constructed using prefabricated panels consisting of diagonal tongue-and-groove spruce boards installed over a timber framework. After delivery and installation on site, the panels were filled with cellulose-fiber insulation, covered with a weather-resistant barrier, and clad with larch board-and-batten siding on the exterior and with fir paneling on the interior. The roof was constructed with the same prefabricated system and then clad with standing seam copper sheets. Wood visible on the interior was planed smooth prior to installation and treated with a UV protective finish; the exterior remained unfinished and was left to weather. Fir was also used for the flooring, which was made by incorporating six different plank lengths, varying between 40 centimeters to 5 meters.

In addition to the forest, the surrounding moor also became an important material source. When the basement and foundation were excavated, a large quantity of clay was discovered. The material was transported to a local brick factory and formed into 60-centimeter-thick blocks with channels. After air drying and installing the blocks, tubes for the hydronic heating system were inserted into the channels and the finished floor was installed on top. The blocks

5.6.3 Panel installation.

5.6.4 Studio interior.



5.6.5 Foundation excavation.

5.6.6 Heating system installation.

provide thermal mass for distributing warmth, generated by a ground source heat pump, to spaces on the first floor. Radiators warm the bedrooms on the upper floor. While the house is mechanically ventilated during the winter months, a combination of cross- and stack-ventilation help to keep the living spaces cool in the summer.

Bader notes that the close ties between clients, architects, and craftspeople are responsible for the strong sense of *Baukultur*, or building culture, in his region. For him, building is not solely about materials and form but also about a way of working that is sensitive to clients and craftspeople alike.[19] This is not a hasty process, and as a result the House am Moor took a little over one and a half years to build. Bader observes, "When building, we take our time."[20] With time comes quality and, in this case, economic and environmental advantages associated with the careful use of local resources.

Notes

1 Richard Weston, *Materials, Form and Architecture* (New Haven, CT: Yale University Press, 2003), 101.

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3 David Leatherbarrow, *Architecture Oriented Otherwise* (New York: Princeton Architectural Press, 2009), 81.

4 Kenneth Frampton, "Towards a Critical Regionalism," in *The Anti-Aesthetic: Essays on Postmodern Culture*, ed. Hal Foster (Port Townsend, WA: Bay Press, 1983), 19.

5 Swedish Environmental Protection Agency, *Naturum Visitor Centres in Sweden: National Guidelines* (January, 2009), 3.

6 Tomas Carlberg, "Om Berg, Sjön Tåkern Och Ett Säreget Naturum," *Fauna Och Flora* 108, no. 3 (2013): 10–15.

7 Peter Sheehan, "'In the Interests of the General Peace': The Architectural Development of al-Jahilī Fort and Its Part within the Policy of Shaikh Zāyid Bin Khalīfa," *Liwa: Journal of the National Center for Documentation & Research* 4, no. 7 (2012): 37–57.

8 Monia Chies, "Post-Earthquake Death Rituality and Cultural Revitalization at the Tibetan Pilgrimage Site of Gyanak Mani in Yushu," *Studi e Materiali di Storia delle Religioni* 80, no. 1 (2014): 318.

9 Ibid.

10 Brian Zhang Li, "On Continuum," lecture delivered at Syracuse University, School of Architecture, Syracuse, NY, April 15, 2013.

11 Fang Wang. *Geo-Architecture and Landscape in China's Geographic and Historic Context* (Singapore: Springer Singapore, 2016), 102.

12 Adam Caruso and Helen Thomas, eds., *The Stones of Fernand Pouillon: An Alternative Modernism in French Architecture* (Zurich: Gta Verlag, 2015), 9.

13 Eliet & Lehmann Architectes, exhibition catalog, *Matière à Construire* (2011), 5.

14 John James, "An Investigation into the Uneven Distribution of Early Gothic Churches in the Paris Basin," *Art Bulletin* 66, no. 1 (March 1984): 15–46.

15 Laurent Lehmann, "Architecture, Entéléchie, Poésie," *Pierre Actual* (September 2014): 29.

16 Ibid.

17 Andreas W. Voigt, "Die leise Renaissance eines faszinierenden Baustoffs," *Die Welt*, April 16, 2016, www.welt.de/finanzen/immobilien/article154420287/Die-leise-Renaissance-eines-faszinierenden-Baustoffs.html

18 Ernst Zürcher, "Lunar Rhythms in Forestry Traditions: Lunar-Correlated Phenomena in Tree Biology and Wood Properties," *Earth, Moon and Planets* 85/86 (2001): 471–473.

19 Bernardo Bader, "Getting Things Done: Evolution of the Built Environment in Vorarlberg," interview by Wolfgang Fiel, Hittisau, Austria, February 2, 2014.

20 Bernardo Bader (architect), from material provided by the office of Bernardo Bader Architekten, Dornbirn, Austria.

Building from Tradition examines the recent resurgence of interest in the handmade building and the use of local and renewable materials in contemporary construction. In the past, raw materials were shaped to provide shelter and to accommodate the cultural, social, and economic needs of individuals and communities. This is still true today as architects, engineers, and builders turn once again to local resources and methods, not simply for constructing buildings, but also as a strategy for supporting social engagement, sustainable development, and cultural continuity.

Building from Tradition features global case studies that allow readers to understand how building practices—developed and refined by previous generations—continue to be adapted to suit a broad range of cultural and environmental contexts. The book provides:

- a survey of historical and technical information about geologic and plant-based materials such as: stone, earth, reed and grass, wood, and bamboo;
- 24 detailed case studies examining the disadvantages and benefits to using traditional materials and methods and how they are currently being integrated with contemporary construction practices.

Elizabeth M. Golden is a registered architect in the United States and in Germany. She has contributed her expertise to the design and construction of the Gohar Khatoon Girls' School, the largest institution of its kind in Afghanistan, and to Niamey 2000, an urban housing proposal for the rapidly expanding capital of Niger. As an Assistant Professor in the Department of Architecture at the University of Washington, she teaches courses focused on design, materials, and building technology, with an emphasis on sustainable systems. She is also co-director of the Philippines Bamboo Workshop.

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