

Introduction:

The Transnational Turn in School Architecture 1948–1975

At the conclusion of World War II, as a result of the damage inflicted, the near stillstand in new construction during the interwar period, and unexpected demographic growth, Austria and other European countries faced an acute shortage of schools. A decade later, Austria's federal states completed a first wave of intensified school construction yielding a large number of primary schools in rural and urban areas.¹

The 1960s began in the spirit of optimism. In both the East and West, the baby-boom generation was born amid rapidly growing economies and full employment. In the West, the launch of the Soviet Union's Sputnik program led to educational reforms with a focus on science, while socialist countries introduced comprehensive education modeled on the Soviet polytechnic school. The expansion of education, which gained momentum on a global scale in the early 1960s and aimed to increase social mobility and meet the demand for a skilled workforce, was, however, also the result of Cold War divides and geopolitical competition between the relative spheres of influence.²

By the mid-1960s, in Austria the focus of school-building activity had shifted to secondary schools, including upper-level academic secondary schools, colleges for higher educational vocation, and technical and vocational schools. In 1965, Theodor Piffel-Perčević, the alpine country's minister of education, announced the government's intention to establish a *Matura* school—a secondary educational institution akin to a German *Gymnasium* or an American high school—in every Austrian political district.³

During the early 1960s, as incentives were created to introduce a comprehensive school system, in German-speaking countries the *Hallenschule* emerged as the preferred architectural model. A *Hallenschule* is a large yet compact school building with classrooms adjoining a central hall (*Halle*); the main staircase and circulation areas are integrated into this one continuous space. The hall represents the school collective in its entirety. It controverts the traditional separation of serial classrooms and can potentially be made available for extracurricular use by the broader community or the surrounding neighborhood.

From 1952 to 1969, Viktor Hufnagl designed a series of schools that subtly recast transnational notions of school design. As a young struggling architect, Hufnagl was able to secure commissions and competitions for several small to mid-sized school buildings in small towns near Bad Ischl (Upper Austria), where his office was located. The commissions for the large school centers in Weiz (Styria) and Wörgl (Tyrol) were awarded directly.

An analysis of Hufnagl's wide range of school designs reveals a unique process: by reconfiguring a variety of what I refer to as *typal components* he creates halls that become the symbolic core of the school community. This paper situates Hufnagl's work in the context of the development of the *Hallenschule* over the course of the twentieth century to show how his distinctive approach prompted innovation in school architecture at a broader level.

¹ Loicht, Franz, and Peter Leinwather: "1. Schulentwicklung," in *Schulbau in Österreich von 1945 bis Heute*, Manfred Nehrer and Österreichisches Institut für Schul- und Sportstättenbau (eds.), Horn 1982, 9–14.

² Damiano Matasci: "Assessing Needs, Fostering Development: UNESCO, Illiteracy and the Global Politics of Education (1945–1960)," *Comparative Education* 53, no. 1, 2 January 2017, 35–53, <https://doi.org/10.1080/03050068.2017.1254952>.

³ Loicht and Leinwather: "1. Schulentwicklung," 12.

Building Types and Typal Components (1918–1955)

Interwar *Hallenschulen*

The pavilion-type school, which during the early postwar years was to become the preferred building type in most European countries, can be traced back to the tradition of open-air and forest schools.⁴ Sprawling low-rise, finger-type schools with open-air classrooms built under the direction of Ernst May and Martin Elsaesser as part of the New Frankfurt program were among the most typologically innovative and progressive school designs of the interwar period in German-speaking countries. Ernst May coined the term the “open-space school” (*Freiflächenschule*), thus linking the design of schools to urban planning.⁵

Der neue Schulbau, Julius Vischer’s publication on new school construction, was printed in 1931. The handbook, a collection of model school facilities in several European countries and the United States, reveals that large multistory buildings built during this era became the standard type for primary and secondary schools. Vischer included only a few *Flachbauschulen* (low-rise schools) in the publication.

The technical segment of the handbook suggests that the gymnasium can be used for festive events, but in Vischer’s view, the school hall (aula) is only economically justifiable in large schools.⁶ His stance on the aula reflects the modernist paradigm of optimization. The selection of model schools contains only two European schools that correspond to the postwar *Hallenschule* type, in which the hall also serves as a circulation area and is surrounded by the classrooms. The first school of this type was the Øregård Gymnasium in Hellerup Denmark, built in 1924 by G. B. Hagen and Edvard Thomsen (fig. 1). The hall is located in an enclosed inner courtyard and has a glazed roof.

According to Vischer it was used for festivities and rainy-day activities.

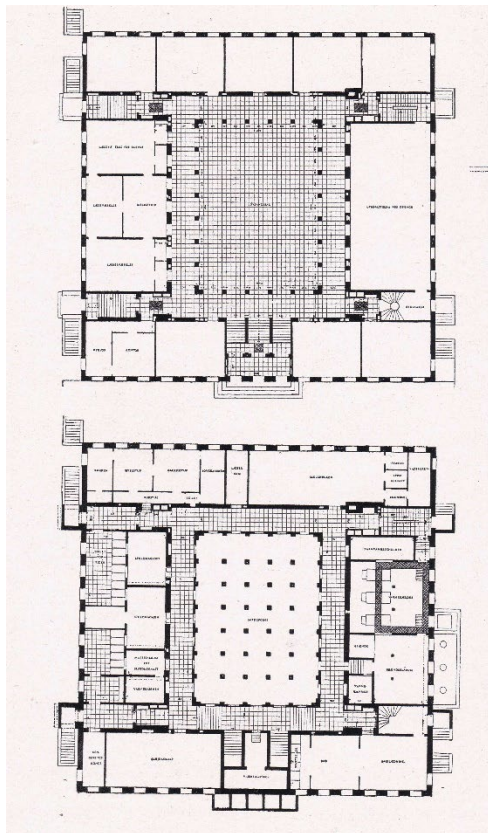


Figure 1: Floor plan hall in Hellerup. Source: Julius Vischer, *Der neue Schulbau* (Stuttgart: Hoffmann, 1931), 58.

⁴ Anne-Marie Châtelet, Dominique Lerch, and Jean-Noël Luc (eds.): *L'école de plein air: une expérience pédagogique et architecturale dans l'Europe du XXe siècle = Open-Air Schools: An Educational and Architectural Venture in Twentieth-Century Europe*, Paris 2003.

⁵ Renz: *Testfall der Moderne*, 47–48.

⁶ Julius Vischer: *Der Neue Schulbau in In- und Ausland: Grundlagen, Technik, Gestaltung*, Stuttgart 1931, 29.

The second school to be built with a central hall was the Altstädter Schule, a primary school in Celle, Germany, by Otto Haesler (1926–1928). In this case, the hall is an enclosed *aula* doubling as a gymnasium. More than four decades later, Viktor Hufnagl wrote an article on international school architecture and its influence on Austria—including *his* selection of exemplary school buildings. He directed attention primarily to the Hallenschule type⁷ and presents two images of the Altstädter Schule: a photograph of the aula (with a ceiling that allows daylight to enter the space from above) and a floor plan (fig. 2). Hufnagl classified Haesler’s school as a “typological contribution based on a centrally positioned multipurpose hall with skylights, framed by corridors on all four sides.”⁸

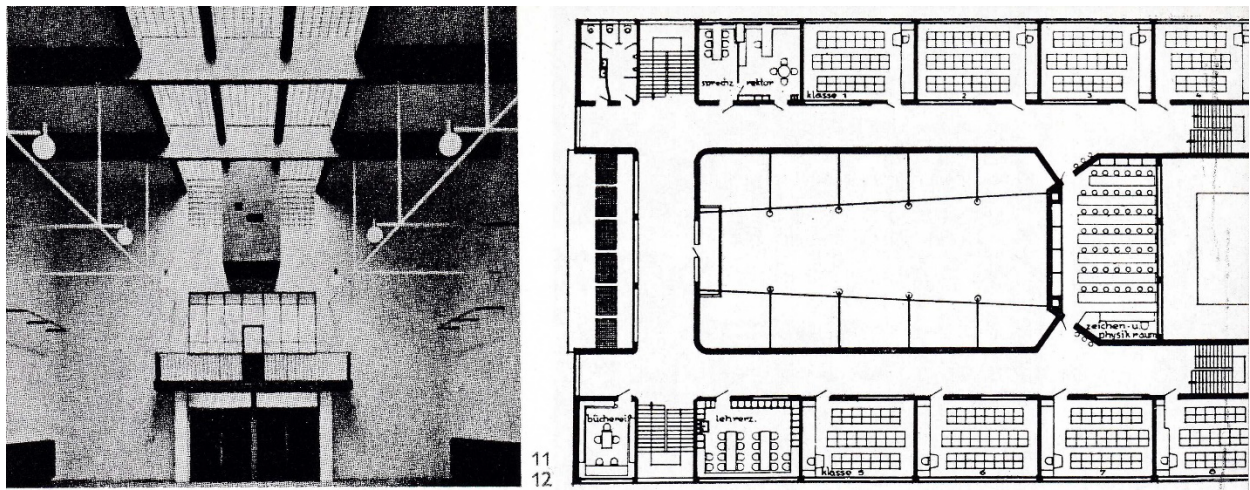


Figure 2: Interior of the hall/gymnasium and floor plan, primary school Celle. Source: Viktor Hufnagl, “Internationale Tendenzen in Schulbau: Ihre Auswirkungen in Österreich,” *Der Aufbau* 11/12 (1973): 425.

Staircase Access and Schools within Schools

The New Frankfurt program contributed two additional typological innovations that would, in turn, influence Victor Hufnagl in the early postwar era.⁹ One novel feature can be found in a primary school built by the Austrian architect Franz Schuster in 1928 in Niederursel, a suburb of Frankfurt am Main. The school consists of four separate wings forming a large inner courtyard. The two-story classroom wings contain four pairs of classrooms on each floor (see fig. 3). The school type, later designated the “Schuster type,” projects two classrooms on each floor connected by a hall with a staircase leading to the second, and with the hall also serving as a cloakroom. The four classrooms form a small school within the school, with a covered open-air passageway on the ground floor interconnecting them and no corridors on the upper floor.

⁷ Hufnagl: “Internationale Tendenzen,” 425

⁸ Hufnagl: “Internationale Tendenzen” 425.

⁹ The program focused on social housing and school buildings in urban expansion areas.

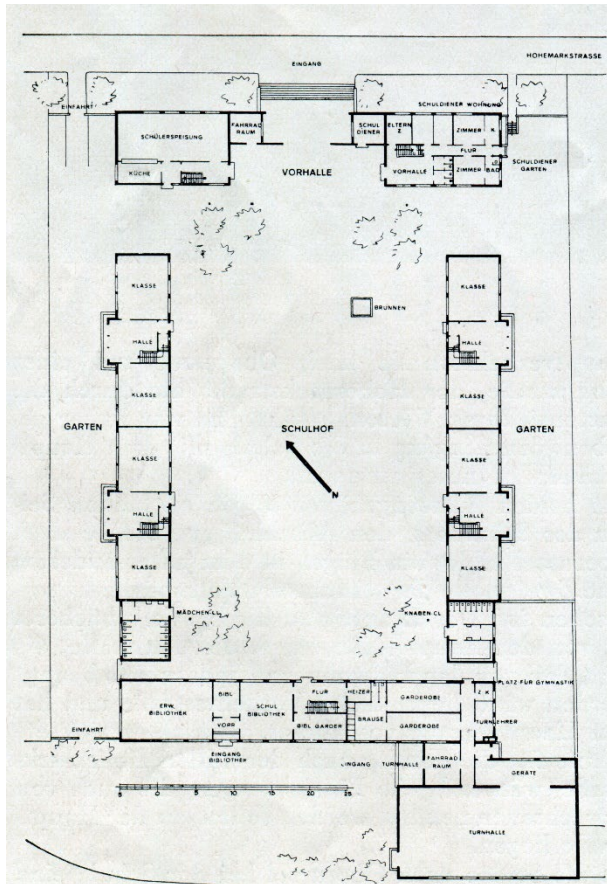


Figure 3: First floor, primary school in Niederursel, Frankfurt am Main. Source: *Frankfurter Schulbauten* (Frankfurt a. M.: Englert & Schlosser, 1929), 26.

Stillman and Cleary's *The Modern School* describes this scheme as "staircase access."¹⁰ This circulation scheme enables bilateral lighting in two- and three-story school buildings, but unlike the Schuster type, there is no hall. Alfred Roth, who was to become a preeminent expert on the school design of the postwar era, deployed such a staircase-access solution, including a small hall on the upper floors, in 1932 in a competition submission (fig. 4).

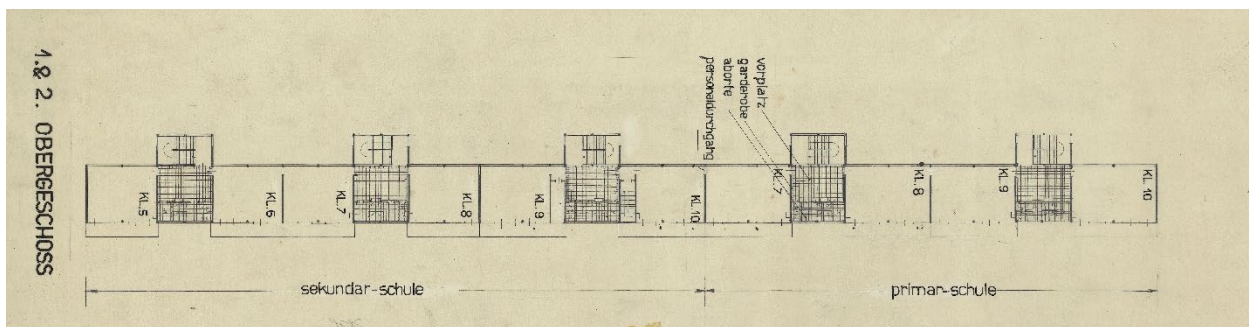


Figure 4: Roth's competition project in Altstetten, 1932. Source: gta Archiv/ETH Zurich, Alfred Roth.

Roth classified this specific spatial organization as "a fundamentally new concept in school planning on an international as well as a national level" and wrote that "the concept makes it possible to illuminate and ventilate classrooms from two sides even in multi-story buildings by leaving out the corridors and placing the staircases between the classrooms."¹¹ While Roth describes the building as

¹⁰ C. G. Stillman and Castle R. Cleary: *The Modern School*, London 1949, 71–72.

¹¹ Alfred Roth (ed.): *Alfred Roth: Architect of Continuity = Architekt der Kontinuität*, Zurich 1985, 102.

a “corridorless type of school,”¹² floor plans reveal that the design for Zurich Altstetten is, in fact, a finger-type school with classroom wings attached to a long corridor on the ground floor. The upper classroom levels have no corridors, and the classrooms feature an open loggia (see fig. 4). Roth later implemented this type of staircase-access scheme in the Holy Ghost Primary School in Berkeley, California (1951–1952); the Schulhaus Riedhof, a primary school in Zurich (1961–1963); and the Heinrich Pestalozzi secondary school in Skopje, Yugoslavia (1966–1969). The competition project and the school in Berkeley have larger lobbies connecting the two classrooms, a scheme similar to the Schuster-type hall.

Some ideas that seem novel to their creators emerge more than once in different settings. As I will elaborate upon, Viktor Hufnagl’s method of assembling various typal components and imitating and recombining existing typological schemes is a process that can spur architectural innovation. Hufnagl deployed the Schuster-type circulation scheme in the annex to the primary school in Gschwandt, while adapting this scheme in his schools in Strobl, Altmünster, and Bad Ischl.

Loggia as a Classroom Extension

The second New Frankfurt innovation that inspired Viktor Hufnagl is the indoor “open-air” classroom with a glass-door folding front, developed by Wilhelm Schütte and tested in an experimental school pavilion in 1928.¹³ Like Hufnagl’s first innovation, foldable glass elements lining one or more of a classroom’s outer edges were not an entirely a new idea. At the open-air school in Uffculme (UK), built in 1911 by Cossins, Peacock, and Bewlay and depicted in Vischer’s 1931 handbook, classrooms were equipped with three foldable glass fronts. Schütte subsequently added a loggia to adapt the indoor–outdoor classroom for use in multistory schools (see fig. 5). Hufnagl first put the loggia classroom extension into practice in his design for the primary school in Strobl (1958).

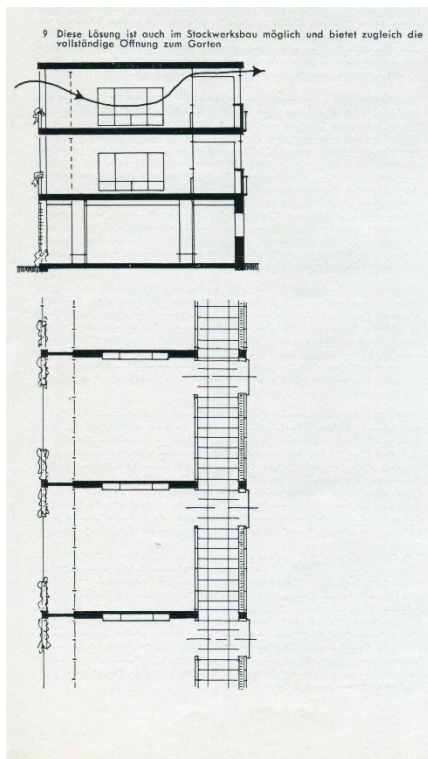


Figure 5: Schütte’s indoor-open-air classroom with a loggia. Source: ÖGFA Wilhelm Schütte archive.

¹² Roth: *Alfred Roth*, 102

Strengthening Educational Form: The Classroom Unit

But back to the leading figure of postwar school expertise, Alfred Roth. In addition to editing the influential Swiss architectural magazine *Werk*, in 1950 Roth published a seminal trilingual handbook on school architecture entitled *The New Schoolhouse / La Nouvelle Ecole / Das Neue Schulhaus*.¹⁴ He organized an exhibition of designs for school buildings in Zurich in 1953, became the first president of the UIA (an international school-construction commission) in 1951, and lectured extensively on modern school architecture across Western Europe and in Yugoslavia. Roth was inspired by British and American school buildings. He endorsed one layout in particular: the classroom unit (*Klassenzimmerereinheit*) consisting of a classroom with a niche for group work, a cloakroom, and outdoor space. Stillman and Cleary attribute the introduction of such extended yet self-contained classrooms to Richard Neutra.¹⁵ Consistent with the principle of child-based teaching, the classroom unit is intended for use by one class of pupils, thus reinforcing the spatial separation of forms. An examination of the classroom layouts in Hufnagl's schools in Strobl and Hallstatt reveals that he implemented the classroom-unit concept, though not all classrooms in Hufnagl's schools have a group-room extension.

Viktor Hufnagl's School Buildings: Innovation through Typological Composition

Between 1952 and 1978, Viktor Hufnagl designed nine schools.¹⁶ His first school, the primary school in Reiterndorf, was constructed from 1952 to 1954. His distinctive approach to adapting and combining modern school elements to form a novel type began in 1955 with the extension to the primary school in Gschwandt, where he used the Schuster-type staircase access in the new three-story classroom annex. The two-story wing connecting the old and the new buildings contains a central wardrobe on the ground floor and a multifunctional hall on the second floor (fig. 6).

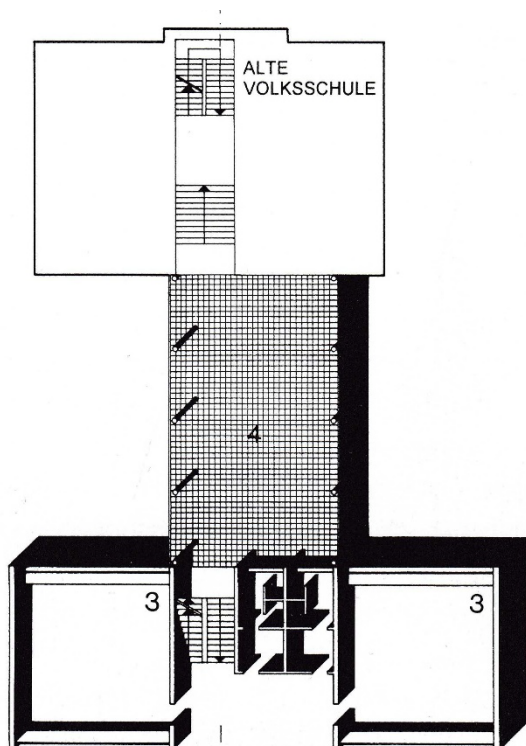


Figure 6: Floor plan annex to primary school in Gschwandt. Source: Hufnagl archive.

¹⁴ Alfred Roth: *The New School = La Nouvelle Ecole = Das Neue Schulhaus*, Zurich 1950.

¹⁵ Stillman and Cleary: *The Modern School*, 72

¹⁶ One of these—the secondary school in Mattighofen—was a competition project.

The *Hauptschule* in Strobl was designed in 1955 and was often described as the first Hallenschule in Austria.¹⁷ This compact building with two separate, identical schools for boys and girls in one long slab was constructed in two stages.¹⁸ Each school has a central hall with a gallery on the second floor. Hufnagl introduced classroom units that feature group rooms with foldable partition walls and loggias adjacent to group rooms. Unlike Schütte's indoor open-air classroom, in which one front can be opened entirely, Hufnagl's loggias are conceived as spaces for leisure, accessible only through single doors.

In 1957, Hufnagl designed the primary school in Hallstatt. The school consists of two wings—one containing a gymnasium, the other classrooms and administration spaces—linked by a hall with a central cloakroom. The classroom-administration wing takes the concept Schuster devised one step further. The upper-floor circulation is based on single-run stairs integrated into a wide indoor corridor serving four instead of two classrooms. Four of the classroom units are also classroom units equipped with a group-room alcove (fig. 7).

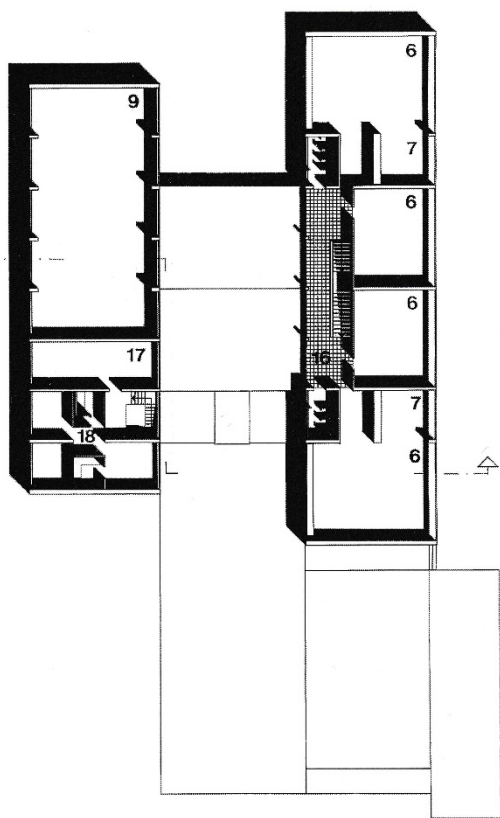


Figure 7: Floor plan primary school in Hallstatt, with two classroom units and two regular classrooms on the upper floor. Source: Hufnagl archive.

The facility in Bad Ischl—a combined primary and special-education school—designed in cooperation with Heinz Karbus in 1957, is likewise based on separate buildings for the gymnasium wing and the classroom-administration wing, connected by a bridge. The fact that the gymnasium wing is separate reflects the fact that in smaller towns, gymnasiums were typically designed to allow external use. The classroom wing is divided into two separate schools, one for girls and the other for boys. In each school wing, a small hall is surrounded by classrooms that feature glass elements to admit indirect light, thereby adhering to the principle of bilateral lighting (fig. 8).

¹⁷ A *Hauptschule* serves children aged 10 through 14. This type of school was later renamed “new secondary school” and “secondary school.”

¹⁸ In Austria, mixed-sex education was introduced statutorily in 1975.

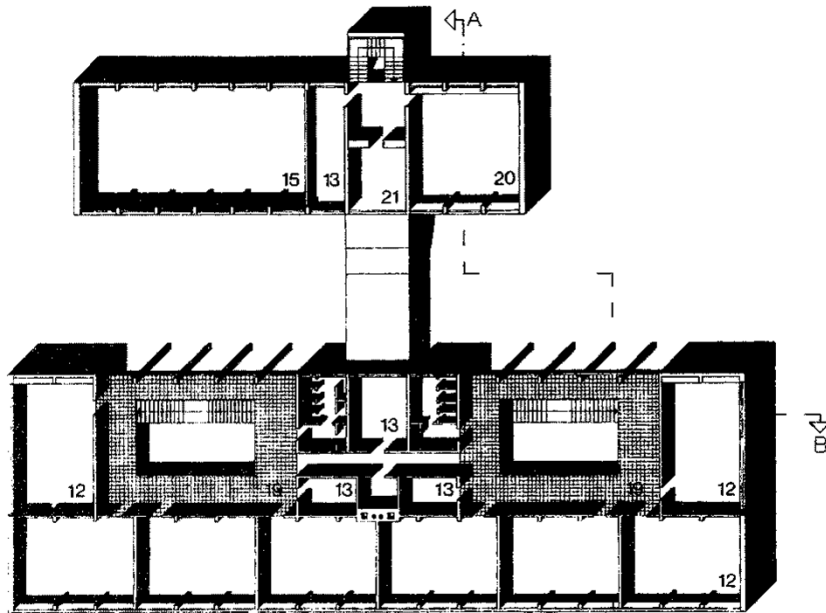


Figure 8: Bad Ischl primary school. Source: Hufnagl archive.

In Altmünster (planning phase: 1959–1962), the long sides of the hall are flanked by stairs (fig. 9). When events are held here, the wider steps in the middle are used as seating. The space is reminiscent of a theater lobby (fig. 10). On the second floor, the interstitial hallway space connects the classrooms directly to the hall, and on the third floor, a system of corridors and bridges with stairs interconnects the classrooms with the hall. When events are held, the circulation spaces double as theater galleries.



Figure 9: Altmünster *Hauptschule*, the hall in the center. Source: Hufnagl archive.

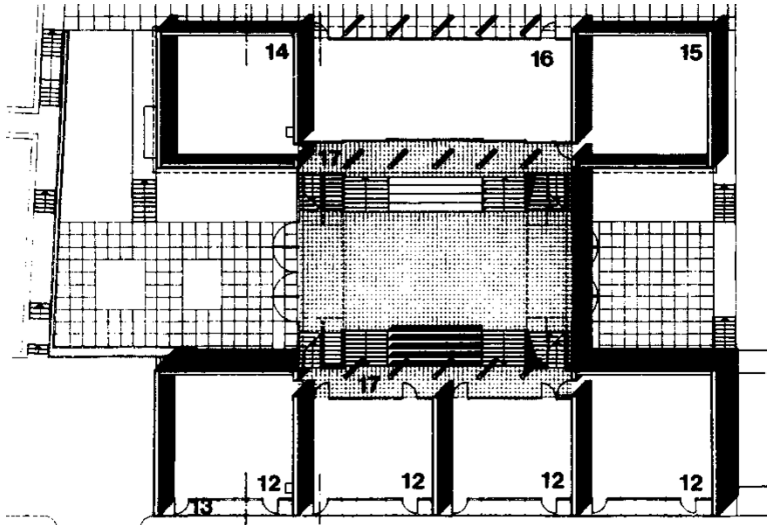


Figure 10: Central hall in Altmünster secondary school. Source: Hufnagl archive.

Designed in 1964, the school center in Weiz consists of two schools (a *Hauptschule* and a *Bundesgymnasium/Bundesrealgymnasium*¹⁹) and a sports hall: a central courtyard connects the three buildings. In the layout of the *Hauptschule*, two adjoining classrooms share a group room, thus forming a classroom unit (fig. 11). The structural concept—a reinforced-concrete frame topped by a coffered roof—allows for the removal of non-load-bearing walls, and the building can be transformed into what might be called an open-plan school.

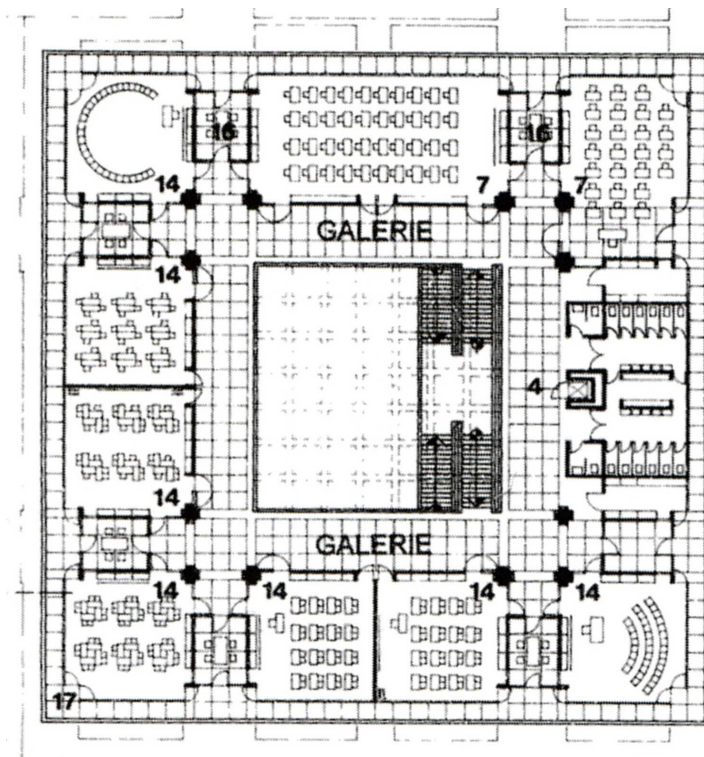


Figure 11: Floor plan *Hauptschule* Weiz with adjoining classroom sharing group rooms. Source: Hufnagl archive.

¹⁹ In Austria, *Gymnasium* designates a type of noncomprehensive secondary school with more prestige than a *Hauptschule*. During the initial stage in 1964, both schools were planned as *Hauptschulen*. The *Bundesgymnasium* in Weiz was built almost a decade later, but adheres to the original master plan.

The first of Hufnagl's two schools to be erected in Weiz—the Hauptschule—is the physical embodiment of the Hallenschule concept. Surrounded by classrooms and gangways, as well as by gallerias and stairs, the hall takes center stage. Through the design of the Weiz school center, in which the reinforced-concrete frame allows for an open-plan layout, Hufnagl was once again able to anticipate and integrate contemporary pedagogical developments and discussions in his work. In 1969, Hufnagl and Fritz G. Mayr designed the school center in Wörgl. Here two different school types (a *Bundesrealgymnasium* and a *Handelsakademie*, or commercial college), each with its own classroom wing, share a central aula and a separate classroom wing designated for joint use. Each classroom wing also has smaller communal areas and, on the ground floor, outdoor atriums (fig. 12). Again, the skeleton construction allows the subdivision of space into self-enclosed classrooms and, if needed, an open-space arrangement.

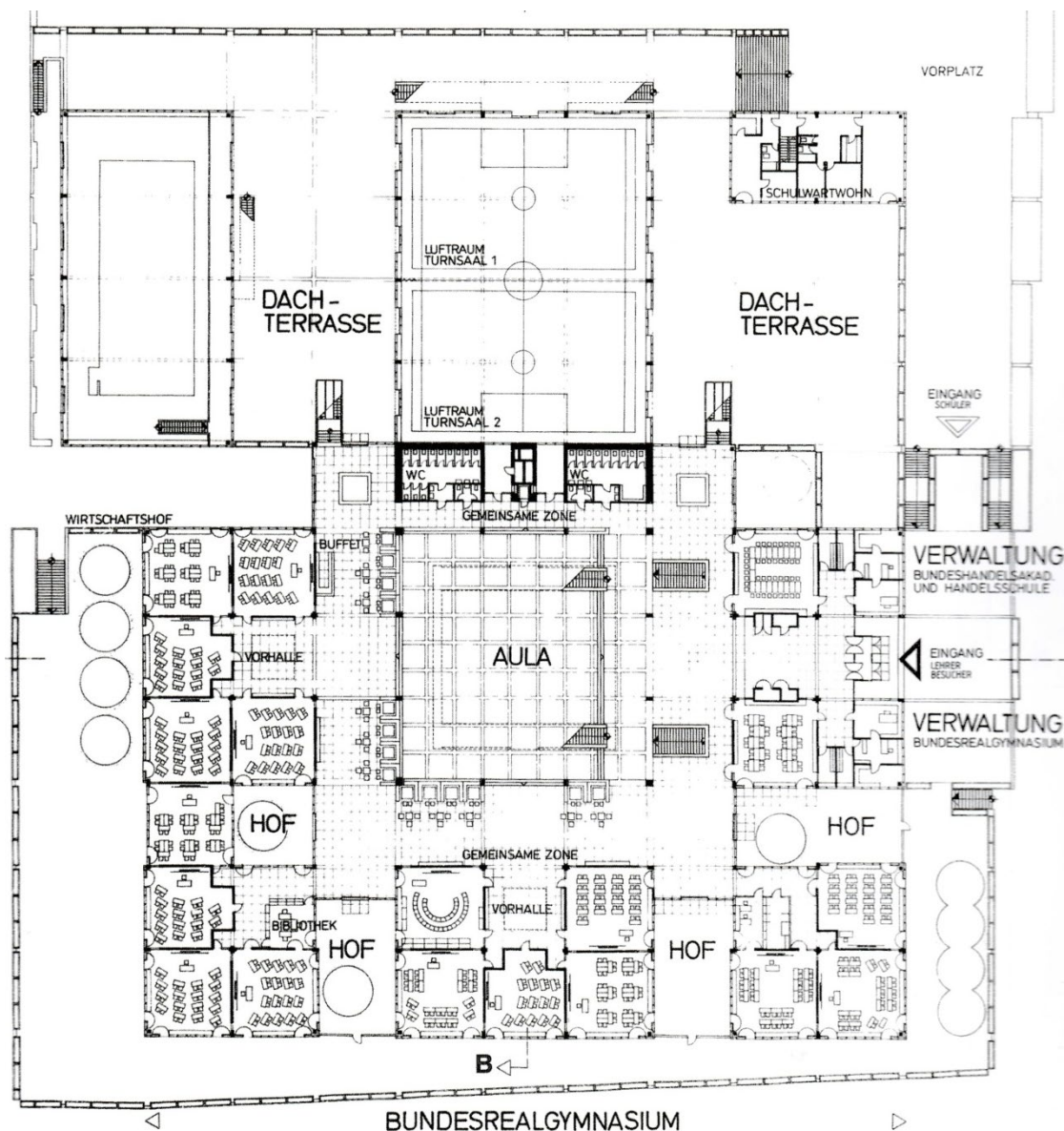


Figure 12: Floor plan ground floor. School center in Wörgl, Tyrol. Source: Hufnagl archive.

Mobilities of School Architecture in the Postwar Context

The transformation of school architecture over the course of the twentieth century mirrors pedagogical ideas and reforms of the era and the changing role of schooling in society. The educational reforms developed by interwar theorists prompted a shift towards child-centered learning, a novel approach to teaching that would change the scale of school buildings and the

shape of classrooms. After WWII, ambitious school-building programs in many countries were launched. During the golden age of the welfare state, schools and education were believed to function as vehicles to promote democracy and peace. The aim was to provide bilaterally lit, square-cut classrooms and transportable furniture that would create the same conditions for each child. With these measures, the protagonists sought to convey notions of modernity, democratization, and social mobility in progressive schools of the interwar and early postwar era. In light of expanding education and lifelong learning promoted by international organizations during the 1960s, the structure of the school system and corresponding spatial arrangements were modified once again. In the United States, school buildings increased in scale, becoming extensive factory-like facilities, and in German-speaking countries, school centers and *Hallenschulen* took hold. In place of secluded serial classrooms, central foyers accommodate the school collective and surrounding community, while open-plan settings encouraged autonomous learning. To offer additional cost-efficient and flexible space, architects and educational planners explored and implemented prefabricated modes of construction and adaptable layouts.

Like most building types, school buildings reveal the economic, political, cultural, and institutional context in which they were designed and constructed. Viktor Hufnagl's school buildings bear testimony to the maelstrom of 1960s ideas being explored in education and the design of schools. His work was influenced by the long-term traditions inscribed in the Austrian school system, twentieth century innovations in school architecture, and the increasing influence of international organizations establishing transnational standards for school construction. An examination of his research on prefabricated school construction reveals that at the time pedagogical practices were perceived as transitional and highly unpredictable, and that this drove the demand for flexibility of use. Hufnagl's method of designing schools relied on taking up typical components circulating globally and pairing them with traditional school settings to come up with several distinctly novel interpretations of the *Hallenschule* type.

Acknowledgements

This research was funded in whole by the Austrian Science Fund (FWF), grant number: P 33248-G. An edited version of this manuscript was published in: Feiersinger, Elise, Gabriele Kaiser, Gabriele Ruff, and Österreichische Gesellschaft für Architektur, eds. *Geometrien des Lebens: Materialien zu Viktor Hufnagl (1922–2007)*. Zürich: Park Books, 2022.

I thank Elise Feiersinger, Gabriele Kaiser and Gabriele Ruff for their support. Many thanks to Helga Mankel for her permission to use plans and photographs from the estate of Viktor Hufnagl.

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