

FROM “SCHOOL BUILDING” TO “SCHOOL ARCHITECTURE” – SCHOOL TECHNICIANS, GRAND SCHOOL BUILDINGS AND EDUCATIONAL ARCHITECTURE IN PRUSSIA AND THE USA IN THE NINETEENTH CENTURY*

Del «edificio escolar» a la «arquitectura escolar» - Técnicos escolares, grandes edificios escolares y arquitectura educativa en Prusia y los Estados Unidos en el siglo XIX

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Abstract. The history of school buildings is commonly written as a history of architecture, focusing on outstanding architects and buildings. However, the connection between pedagogical-administrative prescriptions and educational architecture has been studied less, particularly in the nineteenth century. This article highlights the often-overlooked agency of school technicians and proposes to interpret the nineteenth-century history of building schools as a history of implementing pedagogical-administrative objectives. The design of schools followed the inner differentiation of school curricula, at the same time being affected by the growth of school sizes prompted by school management structures and their efficiency aims. We will show how in larger cities the initial one-classroom schools developed into multiple-classroom buildings, taking on their final form in “grand school buildings”. The organizational developments tried and tested here would later become the national standard, with rural schools following with a certain delay. In order to grasp the emergence of the phenomena of these “grand school buildings” we combine the Prussian and US-American cases in their transatlantic connection

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in order to comprehend the transnational dimension of school building norms. Being closely connected through mutual observation, the US and Prussian contexts established two decisive aspects: in the Prussian case, the division into separate classrooms as functional units of school construction was implemented, while in the United States additional school rooms such as the assembly hall and specific subject-related rooms were introduced. "Grand school buildings" initiated the interest of the architectural profession, leading to negotiations between school technicians and architects.

Keywords: educational architecture; grand school buildings; school technicians; Prussia; United States.

Resumen. *La historia de los edificios escolares se presenta comúnmente como una historia de la arquitectura, centrándose en arquitectos y edificios excepcionales. La conexión entre las prescripciones pedagógico-administrativas y la arquitectura educativa ha sido menos investigada, particularmente para el siglo XIX. En este artículo se acentúa el impacto de los técnicos escolares, a menudo pasada por alto, y se propone interpretar la historia de la construcción de escuelas del siglo XIX como una historia de la aplicación de objetivos pedagógico-administrativos. El diseño de las escuelas siguió la diferenciación interna de los programas escolares. Al mismo tiempo, el diseño se vio afectado por el crecimiento de los edificios escolares impulsado por las estructuras de administración escolar y sus objetivos de eficiencia. En este artículo, se analiza cómo en las grandes ciudades las escuelas unitarias se convirtieron en edificios con múltiples aulas, tomando su forma final de grandes edificios escolares. Los desarrollos en la organización probados en las urbes se convirtieron más tarde en el estándar nacional, con las escuelas rurales siguiéndolas con cierto retraso. Para captar la aparición del fenómeno de estos grandes edificios escolares combinamos los casos prusiano y estadounidense en su conexión transatlántica para comprender la dimensión transnacional de la aparición de normas para los edificios escolares. Conectados por observaciones mutuas, los contextos estadounidense y prusiano establecieron dos aspectos decisivos y diferentes: en el caso prusiano, se aplicó la división de aulas separadas como unidades funcionales de la construcción de escuelas, mientras que en el caso estadounidense se introdujeron aulas adicionales como el auditorio y salas específicas para asignaturas específicas. Los grandes edificios escolares despertaron el interés de los arquitectos, lo que dio lugar a negociaciones entre los técnicos escolares y los arquitectos.*

Keywords: *arquitectura escolar; grandes edificios escolares; técnicos escolares; Prusia; Estados Unidos.*

INTRODUCTION

Descriptions pertaining to the relation between schooling and school architecture can usually be narrowed down to the dictum that a building's form (architecture) follows its function (education). However, in educational historiography it often seems to be exactly the opposite with research strongly highlighting the style, features, and innovative design of certain school buildings and thus the agency of specific architects. This skewed focus has in turn led to a marginalisation of the earlier school organization demands on school architecture, which we propose to revisit with this article.

In this mindset, we will highlight the agency of school technicians and discuss their influence on the construction and maintenance of grand school buildings. We will reconstruct how the goal of cost efficiency and the prescription of more elaborate norms during the nineteenth century shaped school buildings. Without dismissing the development in smaller communities, this article focuses on cities. There, partly due to industrialization, significant migration, and a growing population influential school building models were developed, which subsequently became models for smaller towns and regional school structures. We especially focus on elementary schools since their sheer number sparked public interest and later the involvement of architects. Urban centers were faced with the urgent need for school buildings and, at the same time, provided sufficient financial resources to construct them. As we will show the resulting larger and more complex city schools prompted a strong interest of the architectural profession in schools, eventually leading to architects challenging the school technicians' prerogative.

We discuss this process by looking into the developments of two relevant countries in the field of education during the nineteenth century – Prussia and the United States – as these two were very influential in the formation of educational standards and constituted a transatlantic space of discussion.¹ We show that in both countries the contribution of school technicians to questions of school buildings played a significant role. To strengthen the plausibility of our analysis and move beyond national

¹ Fanny Isensee, Andreas Oberdorf and Daniel Töpfer (eds.), *Transatlantic Encounters in the History of Education. Translations and Trajectories from a German-American Perspective* (New York: Routledge, 2020).

narratives, we will compare school building trends in both cases and take into account the numerous connections and mutual references between the two contexts.

The first part of the article shows (1) how research has addressed the involvement of the architectural discourse in the field of school buildings, drawing on current research about inter-professional cooperation and the meaning of educational architecture. We will then (2) analyse the emergence of grand school buildings in Prussia and the United States. This section also discusses specific interactions and the circulation of ideas within the transatlantic space, mainly pertaining to assembly halls. Finally, we will discuss how the involvement of the architectural profession played out historically (3) and highlight via the closer reading of one specific influential journal and, as a complement, the examination of similar findings in dispersed US-American texts, how the shift in the school building expertise constellation came into being.

SHIFTING HISTORIOGRAPHICAL NARRATIVES: THE COMPLEXITY OF CONSTRUCTING SCHOOL BUILDINGS

Review of Research Literature – School Technicians as Overlooked Stakeholders

School buildings certainly represent a subject of interest for different professions and their discourses.² Therefore, architects were not alone in the field. Specific actors that are not commonly associated with educational architecture, namely school technicians working in state and local administrations, have been largely overlooked. The term *school technicians* denotes civil servants responsible for the administration and supervision of all areas of (elementary) school structures. This group included individuals like the Berlin city school councillor Wilhelm Reichhelm (1791-1835) and the educational administrator Henry Barnard (1811-1900), who

² Heidemarie Kemnitz, "Pädagogische Architektur?", *Die Deutsche Schule*, 91 (2001): 46-57; Michael Göhlich, "Schulraum und Schulentwicklung: Ein historischer Abriss", in *Schularchitektur im interdisziplinären Diskurs*, ed. Jeanette Böhme (Wiesbaden: VS Verlag, 2009), 89-102; Franz-Josef Jelich, and Heidemarie Kemnitz, *Die pädagogische Gestaltung des Raums: Geschichte und Modernität* (Bad Heilbrunn: Klinkhardt, 2003); Heidemarie Kemnitz, "Denkmuster und Formensprache pädagogischer Architekturen im ersten Drittel des 20. Jahrhunderts", in *Das Jahrhundert der Schulreformen. Internationale und nationale Perspektiven, 1900-1950*, eds. Claudia Crotti, and Fritz Osterwalder (Berlin: Haupt, 2008), 251-281.

was most active in Connecticut, but also school inspectors and supervisors. Their work played a major role in organising, financing, and designing school buildings throughout the nineteenth century. Acting in accordance with teachers, school communities, and scientific professions³, these administrators were more executive workers than creative and professional planners. Accordingly, government authorities rather than the general public or teachers directed their work and their planning. This setting determined that their activities never reached full public visibility. In contrast, architects not only managed to become successfully involved in the discourse on building schools, but turned into the most visible public actors. Ultimately, their involvement challenged the dominant pedagogic-administrative logic.

Questioning the Emphasis on the Architectural Profession's Agency in Educational Architecture Scholarship

Research literature mostly perpetuates the unidirectional narrative of inadequate school buildings that were replaced by modern ones from 1900 onward.⁴ Overlooking other voices, historiography usually highlights architectural agency and rare cases of cooperation between architects and educators. However, – and this is the focal point of this article – earlier instances of cooperation not only existed but were actually dominated by the educators. We reconsider the narrative of architectural agency and instead propose a shift between two periods: Until 1900, the question of *school buildings* was a highly functional one, with the emphasis on *school building*; after the turn of the twentieth century, *school architecture* emerged, placing *architecture* and *schools* on an equal level. This shift highlighted one particular group – the architects – to the detriment of other actors involved in the school building discourse: teachers, doctors, and school technicians.

³ For the sake of this article's argument, we will not elaborate on the interplay between hygiene and educational buildings. For this see Karl Otto, *Über den Anteil der Hygiene an der Entwicklung des deutschen Schulhauses* (Hamburg: Boysen & Maasch, 1911); Hans-Jürgen Apel, and Jürgen Bennack, *Hygiene in preußischen Schulvorschriften* (Köln: Böhlau, 1986); Jürgen Bennack, *Gesundheit und Schule: Zur Geschichte der Hygiene im preußischen Volksschulwesen* (Köln, Wien: Böhlau, 1990); Annette Stroß, *Pädagogik und Medizin* (Weinheim: Dt. Studien-Verlag, 2000).

⁴ Some examples are quoted in footnote 2.

Putting more emphasis on officials, we follow both a recent line of work that looks more closely at administrations, their personnel, and their complex functions,⁵ as well as a newer historiography of inner school differentiation.⁶ Taking into account the influence of administrative actors on school buildings, we follow Helfenberger,⁷ who reconstructed general as well as cantonal administrative debates on norms for schoolhouses in Switzerland. Similarly, Cutler's analysis of the connections between educational movements and school architecture in Philadelphia as well as Gyure's research on transforming schoolhouses hint at the role educational administrations played in combining social, cultural, and architectural expectations.⁸

We agree with Helfenberger's review of recent research,⁹ which she criticizes for perpetuating the common assumption of a modernisation wave in school building standards around 1900, and for overlooking earlier school architecture developments. We argue that the shift in the field

⁵ Michael Geiss, *Der Pädagogenstaat: Behördenkommunikation und Organisationspraxis in der badischen Unterrichtsverwaltung, 1860-1912* (Berlin: transcript, 2014); Michael Geiss, and Andrea de Vincenti, *Verwaltete Schule: Geschichte und Gegenwart* (Wiesbaden: Springer VS, 2012); Marcelo Caruso and Daniel Töpfer, "Schooling and the Administrative State: Explaining the Lack of School Acts in Nineteenth-Century Prussia", in *School Acts and the Rise of Mass Schooling*, eds. Johannes Westberg, Lukas Boser, and Ingrid Brühwiler (New York: Palgrave, 2019), 41-66.

⁶ Antonio Francisco Canales, and Simonetta Polenghi, "Classifying children: A historical perspective on testing and measurement", *Paedagogica Historica* 55 (2019): 343-352; Daniel Töpfer, "Der Weg zur Jahrgangsklasse – Zur Implementierung von Alter als Zuordnungs- und Gliederungseinheit im Schulwesen", in *Berlin-Brandenburger Beiträge zur Bildungsforschung*, eds. Jurik Stiller, Christin Laschke, Thea Nesyba, and Ulrich Salaschek (Frankfurt am Main: Peter Lang, 2020), 139-164.

⁷ Marianne Helfenberger, *Das Schulhaus als geheimer Miterzieher: Normative Debatten in der Schweiz von 1830 bis 1930* (Bern: Haupt Verlag AG, 2013); Marianne Helfenberger, "Schulhausbau in Zürich von 1860 bis 1920 – zwischen Experten Herrschaft und öffentlicher Kontrolle", in *Gemeinden in der Schul-Governance der Schweiz*, eds. Judith Hangartner, and Markus Heinzer (Wiesbaden: Springer, 2016), 221-247.

⁸ William W. Cutler, "A Preliminary Look at the Schoolhouse: The Philadelphia Story, 1870-1920", *Urban Education* 8 (1974): 387-388; Dale Allen Gyure, *The Transformation of the Schoolhouse: American Secondary School Architecture and Educational Reform, 1880-1920* (Charlottesville: University of Virginia, 2001), 4. See also Dale Allen Gyure, *The Chicago Schoolhouse: High School Architecture and Educational Reform, 1856-2006* (Chicago: Center for American Places at Columbia College, 2011).

⁹ Helfenberger, *Schulhaus*, 13-22; see also Hermann Lange, *Schulbau und Schulverfassung der frühen Neuzeit: Zur Entstehung und Problematik des modernen Schulwesens* (Hamburg: Beltz, 1967), 9-19; Heidemarie Kemnitz, "Zwischen Unterrichtsgroßraum und Klassenzimmer - Schulbau im Wandel der gesellschaftlichen Verfasstheit von Schule", in *Räume zum Lernen und Lehren*, eds. Joachim Kahlert, Kai Nitsche, and Klaus Zierer (Bad Heilbrunn: Klinkhardt, 2013), 59-76.

of school construction did not show the advance of a more natural, child-friendly way of building school spaces. Instead, the architectural discourse effectively managed to define new and different aims and, hereby, re-arranged the established constellation of financial stability, hygienic needs, and pedagogical norms.

Broadening the Scope of the History of School Buildings

A consistent analytical shift towards processes of discursive negotiations about the aims of school buildings has not yet emerged. Though local analyses for Switzerland are available,¹⁰ extensive studies on German regions or cities are rare, with e.g. Meyn's book on Hamburg only hinting in this direction.¹¹ By relying on his database that includes schools in Hamburg, he continues a line of work that aims to collect all given information on the schools of a specific city (e.g. Spycher for Basel) – therefore, his work remains on the level of a survey.¹² This type of empirical study is helpful for research, but it does not allow for understanding discursive constellations and shifts. This also applies to Schmidt-Thomsen et al.'s work that precisely reconstructs the history of school buildings built in Berlin until 1991,¹³ but does not elaborate on the relation between the different professions' aims and rationales involved in school construction debates. Their work points out the relevance of architectural metaphors such as the *school barrack* (Schulkaserne) and the *school palace* (Schulpalast) without reflecting on their coinage and usage in the discourse. In general, architectural

¹⁰ See Elisabeth Schneeberger, *Schulhäuser für Stadt und Land: Der Volksschulhausbau im Kanton Bern am Ende des 19. Jahrhunderts* (Bern: Historischer Verein des Kantons Bern, 2005). See also Ernst Spycher, *Bauten für die Bildung: Basler Schulhausbauten von 1845 bis 2015 im schweizerischen und internationalen Kontext*. (Muttens: Schwabe, 2019).

¹¹ Boris Meyn, *Die Entwicklungsgeschichte des Hamburger Schulbaus* (Hamburg: Kovac, 1998).

¹² E.g. Architekten- und Ingenieur-Verein zu Berlin, *Berlin und seine Bauten. Vol. I* (Berlin: Ernst und Korn 1877); Architekten-Verein zu Berlin und Vereinigung Berliner Architekten, *Berlin und seine Bauten. Vol. II. and III. Der Hochbau* (Berlin: Ernst, 1896); Jörn-Peter Schmidt-Thomsen, Helga Schmidt-Thomsen, Manfred Scholz, and Peter Güttler, *Berlin und seine Bauten Teil V. Bauwerke für Kunst, Erziehung und Wissenschaft. Vol. C Schulen*. (Berlin: W. Ernst, 1991); Similar works exist for Bremen, Munich, Frankfurt am Main, Hamburg, Cologne, Düsseldorf, Danzig, Mannheim, Strassburg, and Leipzig.

¹³ Schmidt-Thomsen, et al., *Berlin*, 327-457.

and stylistic particularities still dominate in both older¹⁴ and more recent research.¹⁵

In the USA the focus on the architectural periodisation of buildings also overshadows considerations of earlier educational influences on school layouts.¹⁶ Only recently scholars have started working on connections between school architecture, public debate, and individual agency,¹⁷ continuing older, but not very widely-received works on school buildings and their shifting pedagogical uses, such as the book published by Lange in 1967.¹⁸ Lange describes the development and increasing complexity of larger schools, even taking into account transnational perspectives, and thus delivers crucial insights for a comprehensive, otherwise only nascent account of global developments in educational architecture.¹⁹ Other scholars like Da Silva focus on the connection between space and pedagogy and explore how spatial dimensions interacted with norms and modes of school organisation.²⁰

¹⁴ Rudolf Schmidt, *Volksschule und Volksschulbau von den Anfängen des niederen Schulwesens bis in die Gegenwart* (Wiesbaden: Fachschriften-Verlag, 1967); Christian Vossberg, *Der großstädtische Volksschulbau dargestellt am Beispiel Hannover*. (Techn. Hochschule Hannover: Diss., 1953); Hartmuth Böttcher, *Untersuchung zum Volksschulhaus im Landkreis Hannover* (Hannover, Univ., Diss. 1985).

¹⁵ Sonja Schöttler, *Bauen für die Bildung: die Schulbauten des Architekturbüros Parade*, 2 vol. (Köln: Kunsthist. Institut, 2008); Heidemarie Kemnitz, "Schulbau jenseits der Norm: Hans Scharouns Mädchengymnasium in Lünen" *Paedagogica Historica* 41 (2005): 605-625, Kemnitz, "Denkmuster", 251-281; Heidemarie Kemnitz, "'Architektenpädagogiken' Historische Analysen zu (Schul-)Raum und Bildung", in *Räume für Bildung—Räume der Bildung*, eds. Edith Glaser et al. (Opladen: Barbara Budrich, 2018.), 446-456.

¹⁶ Ben E. Graves, *School Ways: The Planning and Design of America's Schools*. (New York: McGraw-Hill, 1993); Jeffrey A. Lackney, "History of the Schoolhouse in the USA", in *Schools for the Future*, ed. Rotraut Walden (Wiesbaden: Springer, 2015), 23.

¹⁷ Inés Dussel, "El patio escolar, de claustro a 'aula al aire libre'. Historia de un espacio escolar, Argentina 1850-1920" *Historia de la Educación* 19 (2019): 28-63; Ian Grosvenor, and Lisa R. Rasmussen, *Making Education: Material School Design and Educational Governance* (Cham: Springer, 2018).

¹⁸ Lange, *Schulbau*; see also Göhlich, "Schulraum", 89-102, and Bernd Blanck, *Zur Schul- und Schulbauentwicklung im 19. und 20. Jahrhundert* (Berlin: Technische Universität, 1979).

¹⁹ Christian Lundahl, and Martin Lawn, "The Swedish Schoolhouse at the Centennial Exhibition in Philadelphia 1876", in *Education across Europe: A visual conversation*, ed. Catherine Burke (Berlin: EERA, 2014), 95-98.

²⁰ Joseph Da Silva, *School(house) Design and Curriculum in Nineteenth Century America* (Cham: Palgrave Macmillan, 2018), 133.

In view of the state of research, we can see that there are multiple ways of writing the history of school buildings. However, these frameworks struggle to deal with transnational spaces, although they attempt to expand on the wide range of actors involved in school construction. We also aim to shed light on the interplay between the professions while also including transnational connections. By understanding the altered constellation of professions and expertise around 1900, which implicitly became the starting point for most research on the history of school buildings, we revisit the question of entanglements between school building layout and specific educational practices.

THE EMERGENCE OF 'SPECIFIC SCHOOL BUILDINGS – SCHOOL ADMINISTRATIONS AND THE DIFFERENTIATION OF THE SCHOOLHOUSE INTO A DISCRETE EDUCATIONAL SPACE

When thinking about schools today a specific image of a building serving as a space for teaching and learning comes to mind. Yet historically, schools, particularly elementary ones, essentially denoted the teachers' houses with little differentiation between living and teaching facilities. The specific needs of schooling did not yet motivate any modifications of the building. Until the nineteenth century, most children were instructed in informal, unregulated spaces.²¹ But beginning in the eighteenth century, the interest of state administrations and educational authorities initiated attempts to govern, supervise, and sometimes, like in Central Europe, even organise schooling in close cooperation with church authorities. These schools were either situated in the churches' rooms or in spaces located within their parishes. The latter, though small and simple, represent the beginnings of discrete schoolhouses.

Similarly, following the establishment of a specific school administration, prescriptions regarding the construction of buildings intended for schooling were issued. Abbot Johann Ignaz von Felbiger's instructions on school buildings (1783) were one of the earliest and most coherent works in this respect. The famous school reformer known for his activities in the Habsburg Empire codified standards and best practices

²¹ Lange, *Schulbau*; William W. Cutler, "Cathedral of Culture: The Schoolhouse in American Educational Thought and Practice since 1820", *History of Education Quarterly* 29 (1989): 1-40; Da Silva, *School(house) Design*.

for erecting school buildings, including construction plans.²² In the following decades, these standards were mostly upheld and new aspects rarely added.²³ A central consideration in Felbiger's instructions was the possible division of the school when a certain number of pupils was exceeded. This division would go along with the appointment of a second (assistant) teacher who needed his own room for instruction: "For in the prescribed manner of teaching, two persons cannot teach at the same time in one room [...]"²⁴ When Felbiger considered how the pupils should be divided, he proposed a differentiation between curricular contents and age cohorts, stating that

the second classroom is indicated and divided in the same way as the first one, except that the latter is made up of benches, as they belong to students of writing [...]. It should also be noted that the lower classroom is always for the younger students, that is, for beginners, because in this way they can avoid the trouble and danger of climbing stairs [...].²⁵

Felbiger's plan denotes the beginning of a separate schoolhouse history for elementary schools and balances two different considerations: If more pupils attend school, a curricular differentiation or a different type of organisation is called for, while secondly the "prescribed manner of teaching" would need a separate room.

In the United States, like in many other countries, a specific planning of schoolhouses on the level of elementary schools only emerged during the nineteenth century. Here, the education reformer and school administrator Henry Barnard also noted the importance of dedicating a special building to schooling. He emphasised that "every school-house should be a temple, consecrated in prayer to the physical, intellectual, and moral culture of every child in the community".²⁶ Schools should

²² Johann I. v. Felbiger, *Anleitung Schulgebäude auf dem Lande wohl abzutheilen, wohlfeil, dauerhaft und Feuersicher aufzuführen* (Leipzig: Hilscher, 1783). This title and all German quotes were translated by the authors; the construction plans are printed in Schmidt, *Volksschule*, 63-69.

²³ Bennack, *Gesundheit*, 118.

²⁴ Felbiger, *Anleitung*, 10.

²⁵ Felbiger, *Anleitung*, 11.

²⁶ Henry Barnard, *School Architecture; or Contributions to the Improvement of School-Houses in the United States*. (New York: A. S. Barnes & Co., 1850), 55.

become a discrete space for instruction and schooling and the school-house should ultimately represent an essential factor of the learning process. Both Felbiger in Austria and Barnard in the US state of Connecticut established and directed school administrations that attempted to implement these reform ideas.

School Buildings in Prussian Berlin – From 1 to 36 Classes

To focus on Prussia is to direct attention to a specific case in elementary school development. Prussia received much admiration, among other things, for its educational administration. We focus here on the school building history of its capital, Berlin. Cities are especially relevant as they presented models of institutionalisation for rural schools: sophisticated facilities, large schools, and increasing internal differentiation.²⁷ Besides Munich and Hamburg, Berlin was one of the most visible and discussed cases of school building standards in contemporary debates. Local school administrations have been rarely focused on in this respect²⁸ and, in the case of Berlin, the city school councillors have been only treated biographically.²⁹

The formation of a communal school administration began in 1826 with the appointment of the first city school councilman Wilhelm Reichhelm, who took over the task of reorganising the until then private and parochial school system for educating the poor. His reorganisation plan of 1827 included a call for municipally-owned school buildings.³⁰ Reichhelm began by discussing the city's increasing demand for schooling with clear administrative thinking:

²⁷ Rural schools were slower than city schools in creating elaborate internal differentiation, but one can see similarities in the steps of their respective expansions, though the question of their actual school work, curricular expectations as well as processes of regional centralisation have yet to be studied in more depth. What is available is regional literature preserving local school system histories like Heinz Janßen, *150 Jahre Volksschule Küdinghoven* (Beuel: Stadtverwaltung, 1963).

²⁸ Lange, *Schulbau*.

²⁹ Michael S. Schuppan, "Überblick über die Berliner Stadtschulräte als Quelle für regionale und bildungsgeschichtliche Studien", *Bildung und Erziehung*, 62 (2009): 497-504.

³⁰ Wilhelm Reichhelm, "Genehmigter Plan für die Einrichtung des Städtischen Armen-Schulwesens in Berlin", *Jahrbücher des preußischen Volks-Schul-Wesens* 6 (1827): 169-248; see for this plan also Georg Rückriem, *Ein Bilder-Lese-Buch ueber Schule und Alltag Berliner Arbeiterkinder* (Berlin: Elefanten Press, 1981), 12-72.

The experience gained so far has led the authorities to the conviction that the best way to provide for the education of poor children is to establish public schools [...] by the community, according to a comprehensive plan, and to gradually transform the existing ones according to this plan. Only the concern that a measure of this kind would significantly increase the annual maintenance costs and would encounter great difficulties in its initial implementation, especially with regard to the procurement of the necessary school rooms, has given rise to doubts.³¹

To him the cost calculations were at the core of the solution, hence he attempted to reconcile reducing expenses *and* the need for the best possible schooling:

As complete elementary schools, with separation of sexes, we want to establish our public schools for the poor. The elementary education includes what is necessary for the poor children; the separation of the sexes is for the most part advisable. Also, this measure, which is only implemented in the existing schools for the poor with regard to the upper department, will not increase the costs either, if, as is hereby proposed, a complete boys' elementary school and a complete girls' elementary school [...] are always considered as one whole communal school for the poor for 300 children, the budgets [...] are designed according to this point of view, and the two schools that form a coherent whole are accommodated in the same building.³²

These schools were supposed to follow a prescribed curriculum that was divided into an upper and lower class, associated with specific age spans and learning outcomes.

Looking closer at the cost argument, Reichhelm elaborates on how much a child's education cost before and how much it would cost according to his plan, arguing that creating municipal schools would only be slightly more expensive: "From what has been said, it follows that if

³¹ Reichhelm, "Plan", 180.

³² Reichhelm, "Plan", 182-183.

we want to secure our school system for the poor, we have to build our own school buildings [...].³³

His mixture of lower expenses and a higher educational functionality allowed Reichhelm to argue in favour of communally-owned school buildings. Ultimately, his plan was realised and remained the standard for the following 20 to 30 years, even if the willingness to raise the necessary funds dwindled.³⁴ Although only slowly implemented, the plan displays how a communal authority replaced private entrepreneurs and introduced the administrative aim of effectiveness as a relevant category. The differentiation into separate departments is not justified by a growing number of pupils, like proposed by Felbiger, but as a more effective way of drawing as many pupils as possible into the school system. Here, considerations of the building's layout decisively followed pedagogic *and* administrative aims.

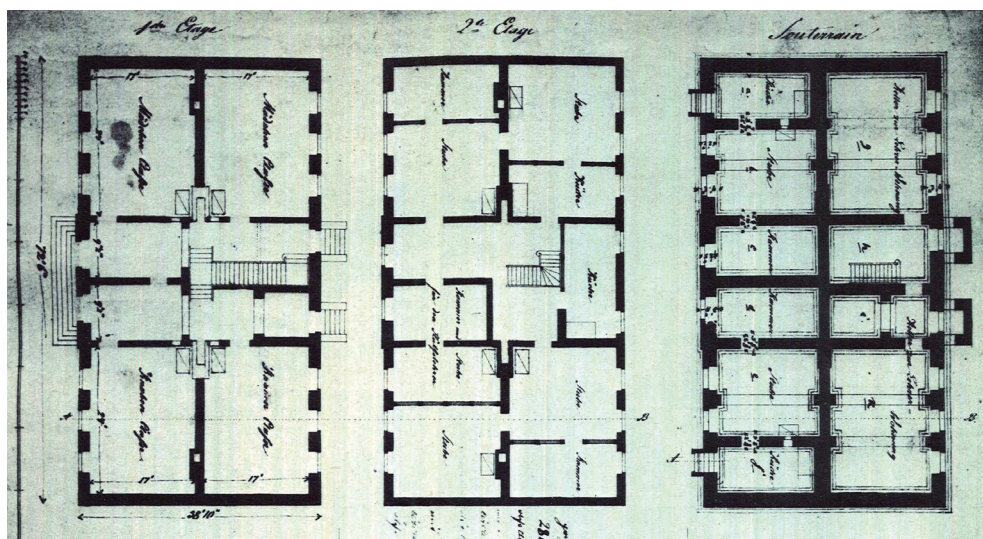


Figure 1. "Floor plan for the Berlin common schools from 1827", in *Ein Bilder-Lese-Buch über Schule und Alltag Berliner Arbeiterkinder*, ed. Georg Rückriem (Berlin: Elefanten Press 1981), 22. School with four classes.

³³ Reichhelm, "Plan", 216.

³⁴ Rückriem, *Bilder-Lese-Buch*, 22-23.

In the following decades the number of classes per school increased due to a growing number of enrolled pupils and was accompanied by a differentiation of the school curriculum, starting from four classes (see image 1) to eight classes per school (four per each gender) from 1835 onwards.³⁵ After 1850 school buildings with 12 classrooms were built, which went hand in hand with a curriculum with six differentiated classes.³⁶ This interwovenness between curriculum and school building programs before 1900 was even reflected in architectural journals:

In the elementary schools, lessons are taught in 6 successive classes [...]. The rapid growth in the number of pupils, however, made it necessary to construct ever larger buildings, so that at present it is the rule to unite 15 or 16 classes with 70, 65 and 60 pupils in the lower, middle and upper classes, respectively (a total of about 1000 pupils) as an independent school under one main teacher.³⁷

The number of six consecutive classes in Berlin remained the same well after this standard was encouraged via the famous *General Regulations* (Allgemeine Bestimmungen) for schools from 1872, the second comprehensive nation-wide decree concerning school organisation.

Nonetheless, the higher curricular expectations along with a performance-oriented promotion mode and a growing number of enrolled pupils led to an overcrowding of the lower classes. From 1863 on, this created the need to build schools with additional classes for the lower and middle levels, which were not part of the successive order of classes. Now, up to 20 classes were included in the school plans. This was also legitimised with the cost-efficiency argument as building larger schoolhouses was significantly less expensive than constructing several

³⁵ Detlef K. Müller, *Sozialstruktur und Schulsystem. Aspekte zum Strukturwandel des Schulwesens im 19. Jahrhundert* (Göttingen: Vandenhoeck & Ruprecht, 1977), 264-268, 757.

³⁶ Müller, *Sozialstruktur*, 757; "Zur Entwicklung der Berliner Gemeindeschulen", *Das Schulhaus* (hereafter *SH*) 2 (1900): 248-249.

³⁷ Architekten- und Ingenieur-Verein zu Berlin, *Berlin und seine Bauten* (1877), 199-200.

smaller ones.³⁸ This trend intensified over time, so that around 1900 the number of classes in one school building reached a standard of 36, while only eight successive classes for eight years of schooling were defined in the curriculum.³⁹ Before, a curriculum-based layout would have entailed that schools with 16 classes – eight for boys and eight for girls – would have been built. But the connection between the number of classes per building and the number of successive classes had dissolved.⁴⁰ Cost-efficiency considerations, a higher differentiation of curricula, and overcrowded lower and middle class levels allowed for the construction of larger and larger school buildings, which we label as *grand school buildings* and that furthered architectural interests and innovations.⁴¹ Arguments against this type of oversizing were more or less unsuccessful in hindering their implementation.⁴² Moreover, with the rising number of classes and pupils, and backed by pedagogical arguments, new school facilities like libraries, spaces for teachers, and gyms were added. Meanwhile, the differentiation of the curriculum allowed for more specific teaching and forms of cooperation, which then led to the incorporation of new subject-related rooms like physical science classrooms into the school building. The composition of schoolhouses, which had until then consisted of the teacher's apartment and classrooms, became more complex.

School plans also depict this development:

³⁸ "Berliner Gemeindeschulen", *SH 2* (1900): 248-249; see also Adolf Gerstenberg, "Die Gemeindeschulen der Stadt Berlin", *Zeitschrift für Bauwesen* 19 (1869): 489-518.

³⁹ "Berliner Gemeindeschulen", *SH 2* (1900): 248; the eight-class curriculum was introduced in Berlin in 1902, see Müller; *Sozialstruktur*, 262-268.

⁴⁰ Hans Winterstein, *Beiträge zur Kostenfrage von Schulbauten*. (Berlin: Boll, 1912) states that usually all new schools in the larger cities had at least 36 classes.

⁴¹ Kaestle points out that the administrators who designed urban public school systems sought "to create grand public buildings which would be permanent and prominent", thus signifying the permanence of the education system, see Carl F. Kaestle, *The Evolution of an Urban School System, New York City, 1750-1850* (Cambridge: Harvard University Press, 1973), 177.

⁴² August Lomberg, *Große oder kleine Schulsysteme?* (Langensalza: Beyer, 1893); Friedrich W. Dörpfeld, *Zwei pädagogische Gutachten über zwei Fragen aus der Theorie der Schuleinrichtung*. (Gütersloh: Bertelsmann, 1877).

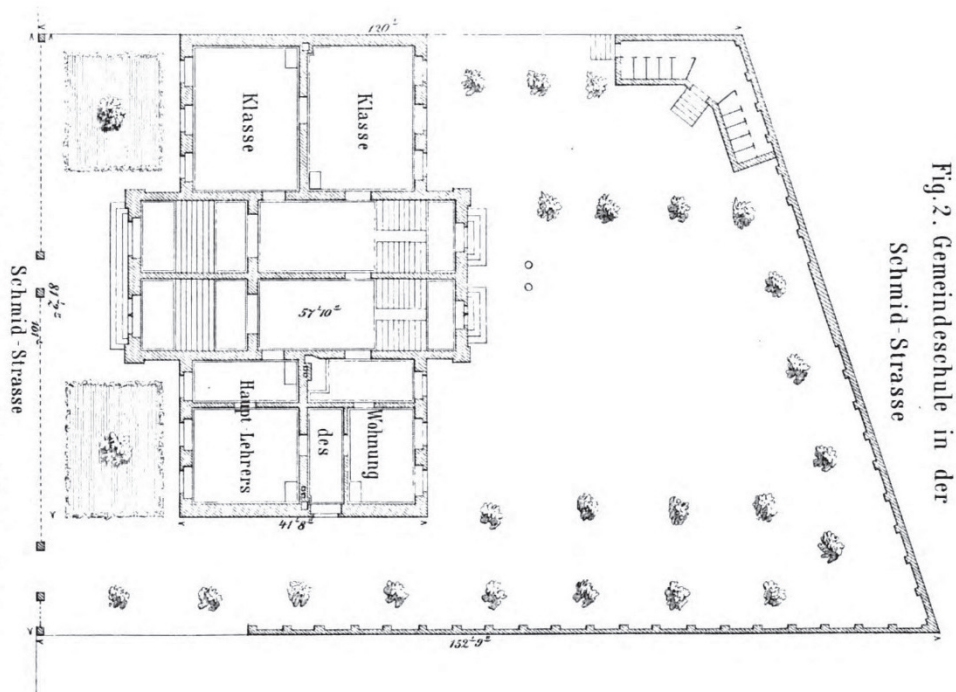


Figure 2. “Gemeindeschule in der Schmid-Strasse”, in Adolf Gerstenberg, “Die Gemeindeschulen der Stadt Berlin”, *Zeitschrift für Bauwesen* 19 (1869): Blatt P. School with twelve classes. The original school was built in 1846, remodeled and additional classes added between 1872 and 1873.

Figure 2 shows a plan of the first floor of the school building on Schmidstraße (originally built in 1846, remodeled between 1872 and 1873) depicting the earliest concept of a 12-room school. Figure 3 shows two of the three floors of the school building on Kurfürstenstraße (built between 1873 and 1874) with 14 classrooms that also included additional classes and an assembly hall. Subsequently erected buildings consisted of more and more classes (see image 4): All have at least 36 classrooms with a tendency that the later a school was built, the more rooms it had.⁴³ Thus, it can be construed that the nineteenth century introduced enormous changes to the shape of school buildings in Berlin.

⁴³ E.g. 155th/156th Community School: 32 classes (1884-85); 169th/131st Community School: 36 classes (1886-87); 172nd/185th Community School: 40 classes (1888-1889); *Berlin und seine Bauten* (1896), 315-328.

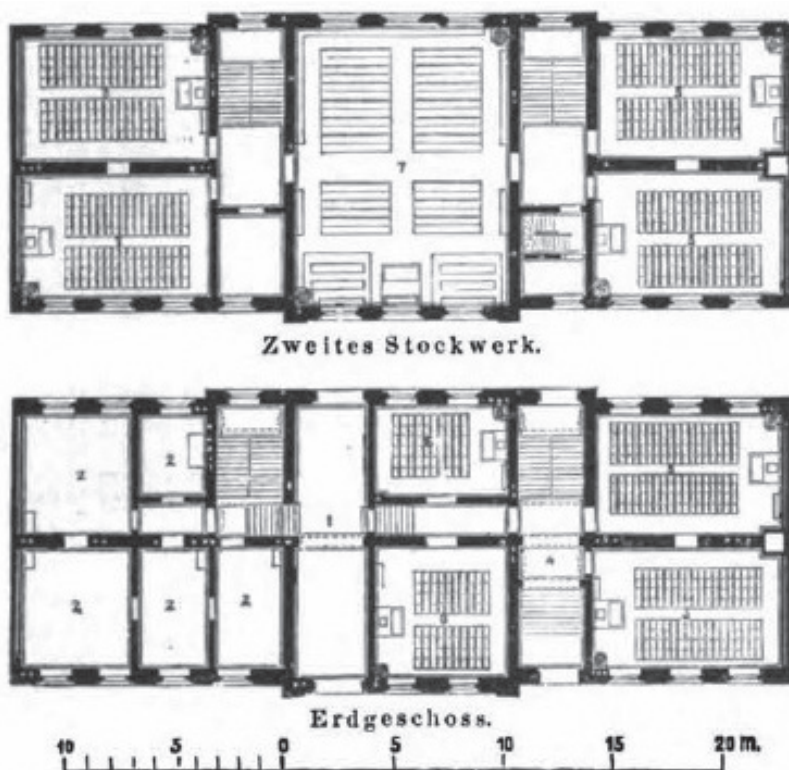


Fig. 97–98. 22. Gemeindeschule in der Kurfürstenstrasse.
(Archit. Gerstenberg.)

1. Durchfahrt und Eingang für Mädchen. 2. Wohnung des Hauptlehrers. 3 Mädchenklassen. 4. Eingang für Knaben. 5. Knabenklassen. 6. Zwei Reserveklassen. 7. Gemeinschaftliche Aula. (Im Souterrain: Wohnung des Schuldieners, Wirtschaftkeller und Räume für Brennmaterial.)

Figure 3. "22. Gemeindeschule in der Kurfürstenstrasse", in Architekten-Verein zu Berlin und Vereinigung Berliner Architekten, *Berlin und seine Bauten. Vol. I* (Berlin: Ernst & Korn, 1877), 199. The school was built between 1873 and 1874. School with twelve classes, two additional classes, and an assembly hall.

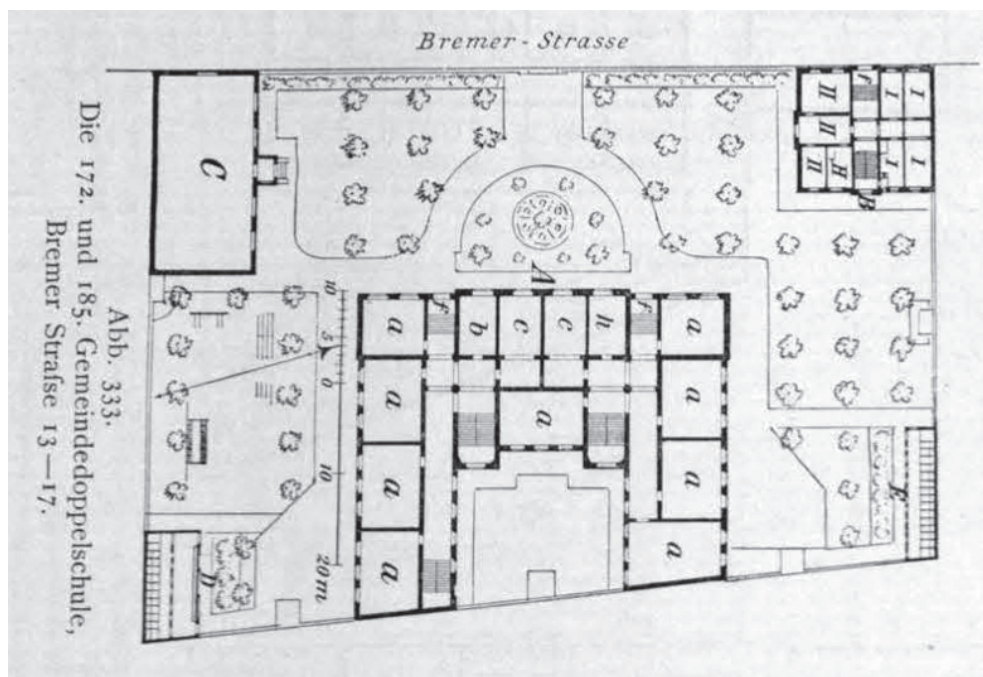


Figure 4. “172. und 185. Gemeindedoppelschule in der Bremer-StraÙe”, in Architekten-Verein zu Berlin und Vereinigung Berliner Architekten, *Berlin und seine Bauten. II. und III. Der Hochbau* (Berlin, 1896), 320. School with 40 classes. The school was built between 1888 and 1890.

The Urban Schools of the United States

The general lines of development in designing and constructing school buildings were not exclusive to Berlin or Prussia. As a complementary example which shows parallel developments, we briefly reconstruct general trends in the planning of school buildings in the United States, without focusing on the development of a particular urban school system. Prussia and the United States were strongly interconnected,⁴⁴ which especially rings true for the formation of the school system: German experts on school matters travelled to the United States⁴⁵ and

⁴⁴ Isensee, Oberdorf, Töpper, *Transatlantic Encounters*.

⁴⁵ Enno Eimers (ed.), *Die Berichte Rönnes aus den USA 1834 - 1843 im Rahmen der Beziehungen Preußen - USA 1785 bis 1867* (Berlin: Duncker & Humblot, 2013). For more on Adolf Cluss see Francisco Javier Rodríguez Méndez, “La huella de Adolf Cluss en la escuela graduada de Cartagena”, *Foro de Educación* 12 (2014): 69-89; Alan Lessoff, and Christhof Mauch (eds.), *Adolf Cluss, Architect. From*

influential education reformers from the USA travelled to Prussia for observations and inspirations.⁴⁶

Since colonial times (ca. 1650-1760), numerous schools had existed in the United States.⁴⁷ A considerable body of legislation regulated these small one-room institutions.⁴⁸ At the beginning of the nineteenth century, especially urban centers were challenged with an increasing population of children from poor families that could not afford school tuitions. In search of a cost-efficient and viable solution, municipal school boards in the USA turned to the Lancasterian school system, which was widely received due to Joseph Lancaster having visited many US-American cities and eventually relocating to the USA in 1818. The system's characteristic features were described as consisting of "economy in expense, and facility and expedition in communicating instruction".⁴⁹ Not only did Lancasterian schools provide a cost-efficient and discipline-inducing schooling environment, the system also resonated with many of the philanthropic notions and ideals that circulated at the beginning of the nineteenth century, dominating many local school boards and educational committees. These consisted in large parts of members of the Society of Friends who were especially engaged in educational efforts to further develop the public education system. In New York City, for example, the Free School Society formed in 1805 resorted to Lancaster's monitorial system as a model for providing a basic education for the growing number of children entering the city.⁵⁰

Germany to America (New York: Berghahn, 2005) or Christhard Schrenk, and Peter Wanner (eds.), *Das Adolf-Cluss-Projekt 2005. Heilbronn-Washington* (Heilbronn: Stadtarchiv Heilbronn, 2006).

⁴⁶ See for example Horace Mann, *Seventh Annual Report of the Board of Education. Together with the Seventh Annual Report of the Secretary of the Board* (Boston: Dutton and Wentworth, 1844) and Calvin E. Stowe, *Report on Elementary Public Instruction in Europe* (Boston: Dutton and Wentworth, 1838).

⁴⁷ Ellwood Patterson Cubberley, *Public Education in the United States. A Study and Reinterpretation of American Educational History* (Boston: Houghton Mifflin Company, 1919), 17.

⁴⁸ "Old Deluder Satan Law of 1647", in *The Laws and Liberties of Massachusetts. Reprinted from the Copy of the 1648 Edition in the Henry E. Huntington Library. With an Introduction by Max Farrand* (Cambridge: Harvard University Press, 1929).

⁴⁹ Free-School Society of New-York, *An Account of the Free-School Society of New-York* (New York: Collins and Co., 1814), 7.

⁵⁰ For a more detailed account of the introduction of Lancasterian schools in New York City, see Diane Ravitch, *The Great School Wars. A History of the New York City Public Schools* (Baltimore: The Johns Hopkins University Press, 2000); John Franklin Reigart, *The Lancasterian System of*

The recommended schoolhouses were constructed based on simple plans that copied those that Lancaster himself had included in the manuals. Schools consisted of a large room which could house at least 200 pupils by leaving little space between the children and their desks and seat rows (see image 5). In New York City, the first school constructed according to the Lancaster plan, “School Number 1”, could house 500 pupils at once while “School Number 2”, built two years later, could instruct 300 children simultaneously.⁵¹ A closer look at the blueprints reveals the clearly differentiated architectural structure: A large rectangular room formed the basis of the schoolhouse, which consisted of three stories. The first floor housed the infant and primary schools whereas the second story was used as the girls’ department and the third as the boys’ department. The arrangement of the desks and seats in the primary department featured long rows of benches that could fit up to 20 pupils each.⁵²

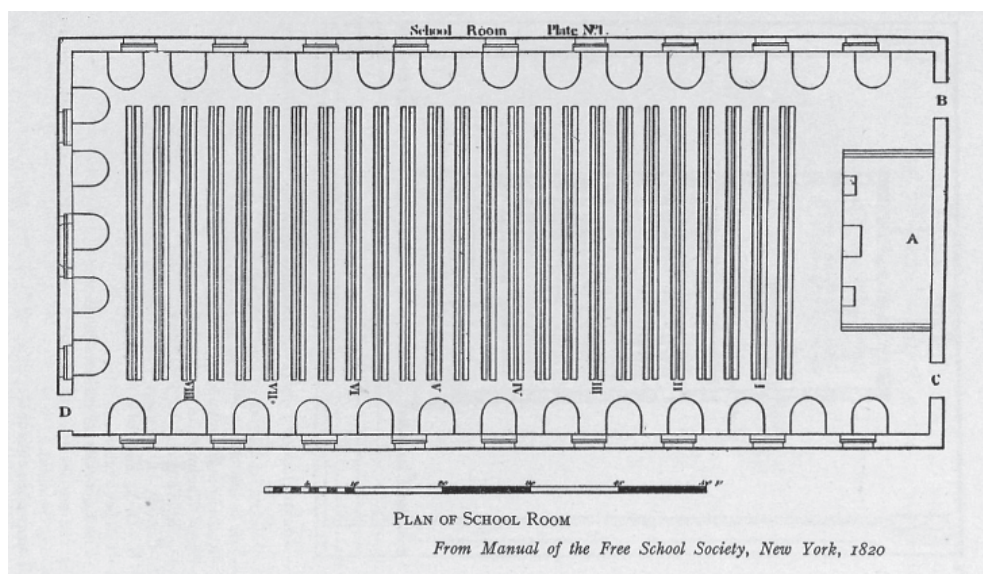


Figure 5. “Plan of Lancaster school room in New York City”, in John Franklin Reigart, *The Lancasterian System of Instruction in the Schools of New York City*. (New York: Teachers College, Columbia University, 1916), 28.

Instruction in the Schools of New York City (New York: Teachers College, Columbia University, 1916); Cubberley, *Public Education*.

⁵¹ Reigart, *The Lancasterian System*, 24.

⁵² Reigart, *The Lancasterian System*, 26.

Aside from its economical and practical construction, the monitorial plan promised to deliver an effective curriculum that could be completed in a short amount of time. A characteristic feature of instruction was the division of pupils into small groups of usually ten that were taught by a monitor, another pupil who had already acquired advanced skills in a certain curricular area. During instruction the pupils were grouped in a semicircle in front of a so-called *station* where the monitor taught a specific lesson.⁵³

New York City's mayor De Witt Clinton (1769-1828) supported the establishment of Lancasterian schools, which in turn promoted the expansion of these schools throughout the city.⁵⁴ As a result of mutual visits of school boards and administrators the Lancaster method circulated throughout US urban spaces and in turn led to the establishment of the system in most of the country's larger cities. With this plan in mind, other urban centers designed and opened their first Lancasterian schools, e.g. in 1817 (Philadelphia) and 1824 (Boston). In his study that examines the links between schoolhouses and school curricula, Da Silva points out that "with Lancaster School Houses, American education began to take seriously the idea that the *form* of a schoolhouse could support its *function*".⁵⁵ Hence, the monitorial schools modeled after the Lancaster system can be described as one of the first instances that revealed an amalgamation of ideas and concepts of schooling and the design of school buildings.

The 1830s and 1840s saw the rise of the common school movement which differed in the role attributed to education. Before, a variety of private and public school organisations provided instruction to children. Education reformers in favour of the common school idea, like Henry Barnard and Horace Mann (1796-1859)⁵⁶, criticised the existing education system for furthering a division of the United States' society into rich and poor and argued for an administration of schools by state and

⁵³ Cubberley, *Public Education*, 92.

⁵⁴ William W. Campbell, *Life and Writings of De Witt Clinton* (New York: Baker and Scribner, 1849).

⁵⁵ Da Silva, *School(house) Design*, 30, emphasis in original.

⁵⁶ Barnard and Mann were also highly influential figures in educational politics since they both served as secretaries of the school boards in Connecticut between 1838-1842 and Massachusetts between 1837-1848, respectively.

local governments.⁵⁷ Although states such as New York had already created administrative positions like that of the state superintendent of schools, state supervision and organisation of schools only became a pertinent feature of education reform in the 1830s.⁵⁸ Administrative control was initially exerted by establishing a district system which brought town and city schools under the authority of school wards. These wards were then unified under a school board during the 1860s, thus further concentrating and centralising the supervision of schools.⁵⁹

On the level of school buildings these reform efforts affected the way schoolhouses were constructed for the different branches. Now, the primary, grammar, and high school departments were no longer situated in the same building; rather, separate buildings were constructed for the different departments. Furthermore, the schoolhouses that formerly consisted of just one schoolroom were now divided into classrooms and rooms for recitation, since the mode of instruction had changed from Lancasterian times.⁶⁰ The school plan recommended by Horace Mann in 1838 illustrates the initial steps of changing the layout of school buildings (see image 6).

⁵⁷ Joel Spring, *The American School 1642-2004* (New York: McGraw-Hill, 2005), 73.

⁵⁸ Spring, *The American School*, 74-75.

⁵⁹ Cubberley, *Public Education*, 235-239.

⁶⁰ The introduction of distinct recitation rooms marks an intermediate stage between the one-room school and the graded school that is reflected in the architectural construction of the school buildings. See Antonio Viñao Frago, "El espacio escolar ¿Cómo abordar un objeto polifacético y multiforme?", in *Espacios y patrimonio histórico-educativo*, coords. Paulí Dávila Balsera, and Luis María Naya Garmendia (Donostia: Erein, 2016), 25-59.

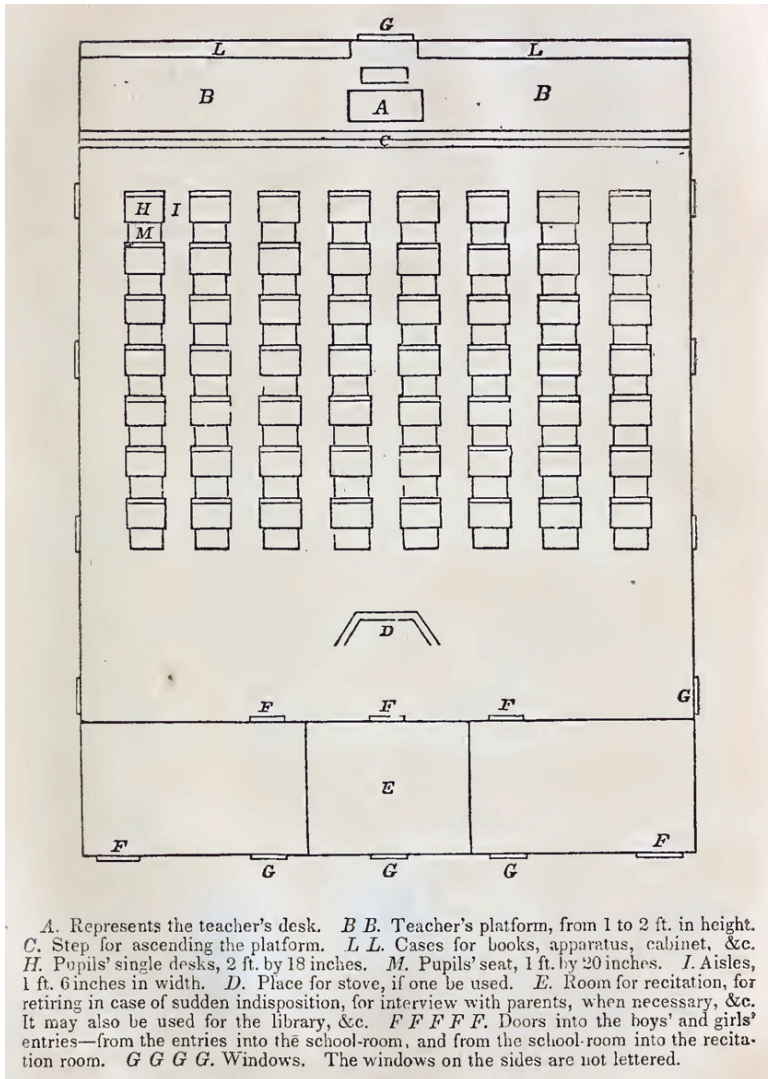


Figure 6. "School plan recommended by Horace Mann in 1838", in Henry Barnard, *School Architecture; or Contributions to the Improvement of School-Houses in the United States*. (New York: A. S. Barnes & Co., 1850), 65.

In his popular publication *School Architecture; or Contributions to the Improvement of School-Houses in the United States*, Barnard lamented the state of the schoolhouses and calls for their improvement:

Go where he would, in city or country, he encountered the district school-house, standing in disgraceful contrast with every other structure designed for public or domestic use. Its location, construction, furniture and arrangements, seemed intended to hinder, and not promote, to defeat and not perfect, the work which was to be carried on within and without its walls. The attention of parents and school officers was early and earnestly called to the close connection between a good school-house and a good school, and to the great principle that to make an edifice good for school purposes, it should be built for children at school, and their teachers [...].⁶¹

The next significant step in the history of US school buildings was marked by the emergence of the graded school⁶² as a dominant concept of school(house) organisation. Not only were these new buildings divided into distinct schools for each department, the curriculum as well as the pupils were also graded. This entailed that a consecutive course of study and the differentiation of schoolchildren by attainment and age affected the way educational administrators planned and constructed school buildings. The first proper graded school was the Quincy Grammar School built in Boston in 1848 (see image 7). It “introduced a new type of school architecture in that the building contained a small classroom for each teacher – twelve in all, with seats for fifty-five pupils each – an assembly room, a coat and cloak room off each classroom”.⁶³

⁶¹ Barnard, *School Architecture*, 6.

⁶² For the graded system in the US see e.g. William H. Wells, *A Graded Course of Instruction for Public Schools: With Copious Practical Directions to Teachers, and Observations on Primary Schools, School Discipline, School Records, Etc.* (Chicago: George Sherwood, 1862); for the graded system in Spain see Antonio Viñao Frago, “Graded schools in the urban settings: Constructions, buildings and school complexes (1898/1936)”, in *Madrid, ciudad educadora 1898/1938. Memoria de la escuela pública*, eds. María del Mar del Pozo Andrés, and Ian Grosvenor (Madrid: Ayuntamiento de Madrid. Oficina de Derechos Humanos y Memoria, 2019), 213-265.

⁶³ Cubberley, *Public Education*, 245-246.

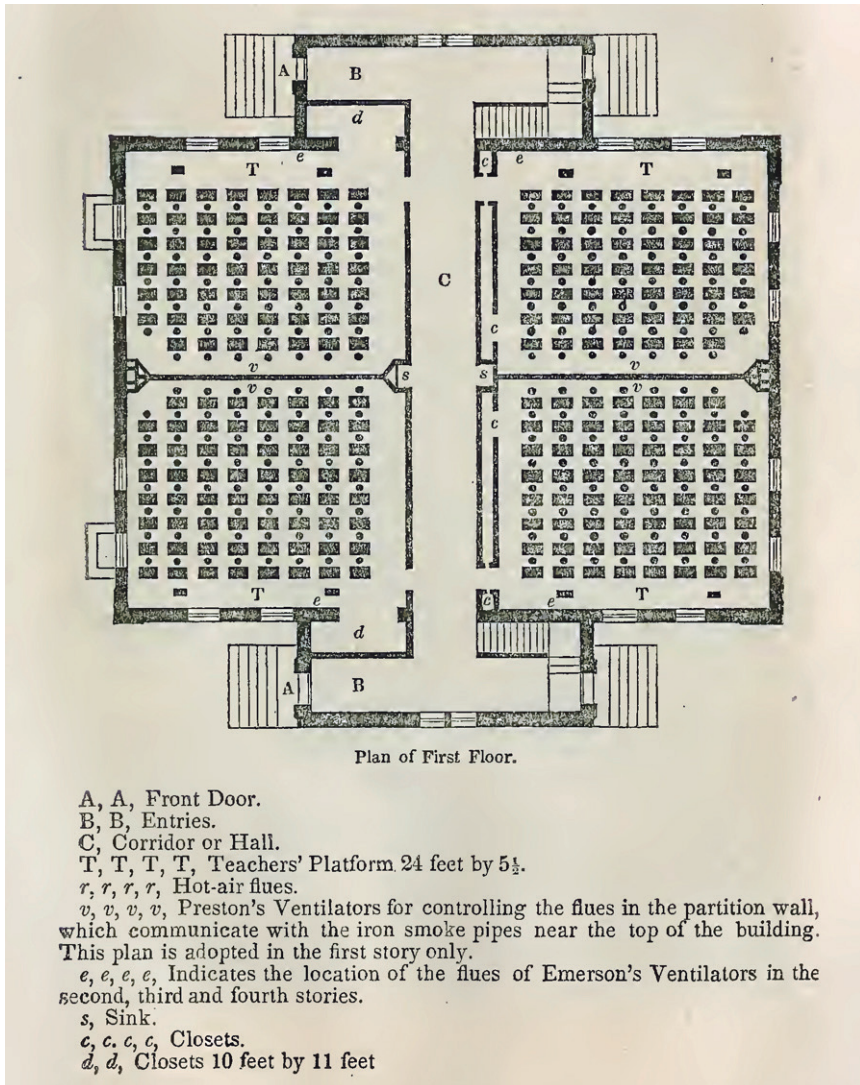


Figure 7. "Floor plan of the Quincy Grammar School in Boston", in Henry Barnard, *School Architecture; or Contributions to the Improvement of School-Houses in the United States* (New York: A. S. Barnes & Co., 1850), 209.

Key features of graded school architecture were the division into classrooms and recitation rooms, large halls that were used as assembly halls in which all the school's pupils and teachers could gather, and offices for the newly introduced administrative position of the school principal.

The beginning of the twentieth century saw the rise of the progressive movement which formulated new approaches to schooling and thus challenged the established school design by proposing a change in curriculum and organisation. These changes called for a differentiation of the established school floor plans into special subject classrooms, including laboratories and workshops.⁶⁴ Moreover, school buildings, and here especially high schools, were attributed the role of community centers that tried to further alleviate the spatial divide between school and society. This extended function of the schoolhouse opened the buildings' rooms and amenities to local community members.

Transatlantic Circulation of School Building Models – The Case of the Assembly Hall

When thinking about the transnational in the history of school buildings usually Edward R. Robson (1874) is referred to, who described different school building models from around the world, expressing that Prussia with its individual classroom structure represented the dominant model in the nineteenth century.⁶⁵ The other model mentioned by Robson, mostly attributed to the USA and England, is the large-room model, which we have described above, that put emphasis on constructing – and using for teaching purposes – an assembly hall. Assembly halls were not common in German elementary school buildings, though, as we have seen, Berlin sometimes included them in its building programs. It is noteworthy that some authors describe that in the end the “German plan” with “a classroom for every class” would succeed.⁶⁶ Though this hypothesis seems very convenient, we think it insightful to highlight the interplay between the national discourses instead of only isolating and comparing them. Thus, we look at how this interplay came into being and which reciprocal observations were at work.

⁶⁴ Da Silva, *School(house) Design*, 47-49.

⁶⁵ Göhlich, “Schulraum”, 96.

⁶⁶ T. Roger Smith, quoted after William Filmer-Sankey, “School Architecture in England in the Later Nineteenth Century”, in Franz-Josef Jelich, and Heidemarie Kemnitz (eds.), *Pädagogische Gestaltung*, 224.

At the turn of the twentieth century, the German journal *Das Schulhaus* (The Schoolhouse, 1899-1930) was solely dedicated to school buildings.⁶⁷ Among other international contexts, articles in this journal reported on developments in the United States. Carl Hinträger (1859-1913), a prolific expert on international trends and discourses and editorial board member of the journal, brought in briefings, news, and impressions of school buildings from around the world. His perspective and works also shaped the reception of developments in the US.⁶⁸ In an article from 1904 he describes the school building types of different nations, looking for similarities and specificities and attempts to describe 'normal' schoolhouses for every national context.⁶⁹ To him, the German school is characterised by: "Base, ground floor and two upper floors. Separation by gender in the vertical sense by arrangement of separate entrances, stairs, and classrooms. Predominantly single-flush layout". He then described US school buildings as follows: "Double-flush facilities with a wide central corridor that serves as a recreation room, often also as a clothes storage area [...]. Often an assembly hall is situated on the top floor" (see image 8).⁷⁰

⁶⁷ *Das Schulhaus: Zentralorgan für Bau, Einrichtung und Ausstattung der Schulen und verwandter Anstalten nach den Anordnungen der Neuzeit; technisch-hygienische Monatsschrift* (Berlin: Schulhaus-Verlag). The editor Ludwig Karl Vanselow, a life reform activist, led the journal until 1913, before a building councillor took over. First, Vanselow was supported by anonymous writers and editors. In 1901, a circle of distinguished authors and an editorial board with experts was installed (see e.g. *SH* 3 (1901): 55-56). *Das Schulhaus* developed an influential career which went along with an enlargement and expertisation of the editorial board. There is a wide range of topics in the journal: construction tenders, construction reports of new school buildings, technical papers and coverage on other national or regional areas. The journal also featured short news on congresses, meetings, public talks, and literature reviews.

⁶⁸ Hinträger was an important expert in the field of international school buildings in his time; he is also the author of the book series *Die Volksschulhäuser in den verschiedenen Ländern* (Darmstadt: Bergsträsser, 1895-1904).

⁶⁹ Carl Hinträger, "Grundriß-Typen neuzeitlicher städtischer Volksschulhäuser verschiedener Länder", *SH* 6 (1904): 20-36.

⁷⁰ Hinträger, "Grundriß-Typen", 23, 35; we shortened both accounts, focusing here on the assembly hall aspect.

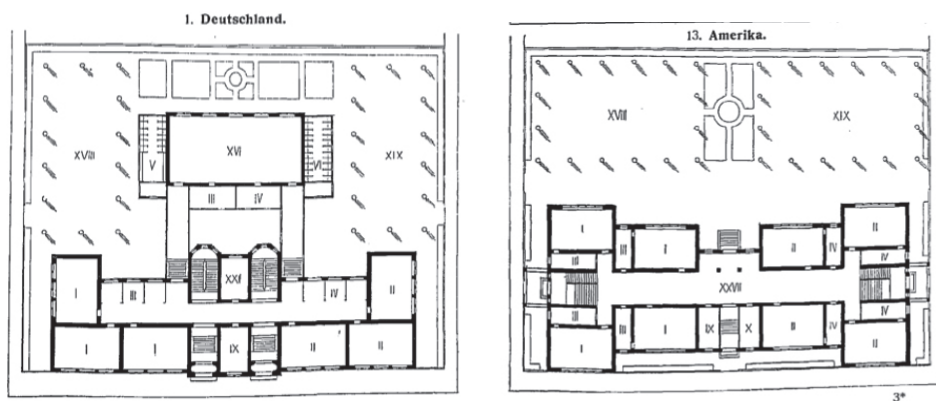


Figure 8: “German and American standard building layout”, in Carl Hinträger, “Grundriß-Typen neuzeitlicher städtischer Volksschulhäuser verschiedener Länder”, *SH 6* (1904): 23, 35.

Here, we can note a detailed observation attempting to distinguish the *normal aspects* of national styles. And – though not that strongly highlighted by Hinträger – the assembly hall is observed and stressed by describing the attempt to locate it in the upper part of the building, a solution which is later also discussed and tested in Germany. Looking for differences in building preferences, we see quite similar building structures, particularly because the graded system had also been adopted in the USA.⁷¹ Distinct national features were hard to identify. Yet, transnational observations went on and accelerated in a specific problematised feature, namely that of unused space. Buildings with many single classrooms needed long hallways to connect all rooms; however, these hallways were only used sporadically. It is here where the discussion of assembly halls – according to our reading one of the most widely discussed features in transatlantic observations – comes into play. Some actors argued that assembly hall structures could replace the hallway system and thereby avoid unused space. As we have seen, from the 1860s onwards assembly halls were gradually integrated into US school layouts for organisational and representative reasons, to support school management, and the formation of a school community. With regard to the imitation of other national models, the discussion after 1900 – when

⁷¹ Edward Robert Robson, *School Architecture. Being Practical Remarks on the Planning, Designing, Building, and Furnishing of School-Houses* (London: John Murray, 1874).

the hall school system came into the focus of Prussian debates – represents an interesting moment in the historiography of Prussian-US-American relations.

Different from British and US-American school building debates, the German discourse did not develop a specific narrative for assembly halls. The school gym managed to create a lasting impact on school architecture through lines of argument implying that it would strengthen the nation by strengthening pupils' bodies, but no such argument is known for the assembly hall: "To produce an assembly hall only for rare festivities would mean for our elementary schools just such incomprehensible luxury as the assembly halls of our higher educational institutions actually represent".⁷² The assembly hall is deemed to be too expensive, too rarely used and therefore not essential for the functioning of the schools. Yet, a so-called *hall school system* existed in some German cities after the turn of the century.⁷³ This system, attributed to different British and US-American schools,⁷⁴ is perceived as fulfilling the need for a general assembly room as well as allowing a reduction of the required space – and therefore meeting efficiency ideals. Further, the possibility to meet in the hallway or see each other from different classrooms seemed appealing.⁷⁵ Here, transatlantic observations again played a relevant role:

Last year, in this magazine it was said that the in Germany commonly used hallway system was a waste of space. In the English standard work "Modern School-Buildings" by Felix Clay, the floor plan of a German elementary school, in which the hallway area takes up 50% of the total building area, is shown [...] as a deterrent example. This example is, of course, exceptionally

⁷² Lothar Schönfelder, "Turnhallen", *SH* 7 (1905): 9. Earlier, assembly halls fulfilled the function of creating a feeling of community. Their parallel usage as drawing and singing rooms lost in strength when these rooms became distinct facilities.

⁷³ E.g. in Hagen ("Hallenbau", *SH* 13 (1910): 372), Neumünster ("Hallenschule", *SH* 12 (1909): 331) and Friedenau near Berlin ("Die Aulafrage", *SH* 14 (1912): 165-172). Still, these attempts could only create exemplary buildings and did not become a standard despite continuous positive reviews (Lothar Schönfelder, "Amerikanische Schulen", *SH* 16 (1914): 105-122).

⁷⁴ "Moderne Schulhausbauten in England. Modern School Buildings. Elementary and Secondary", *SH* 5 (1902): 215-221, 217, review of the book by Clay.

⁷⁵ Today, elaborate hall school concepts take up some of these ideas, see e.g. Wilfried Buddensiek, "Fraktale Schularchitektur", in Jeanette Böhme (ed.), *Schularchitektur*, 315-329; newer schools using this form are being constructed in Munich and Berlin.

unfavourable; [...] [still, the authors] it is [...] appropriate to raise the question of why we in Germany should not also be allowed to compare the hallway system with a better one.⁷⁶

Later, the USA is highlighted as an example when it is expressed that here

[...] the school building architects go one step further by not only giving the individual classrooms direct access to the central hall, but even making the walls of the classrooms moveable, so that by removing the classroom walls behind the central hall during festivities, a group of rooms is created that offers picturesque views [...].⁷⁷

The text includes an image capturing what is meant by a *hall school* (Hallenschule) (see image 9).

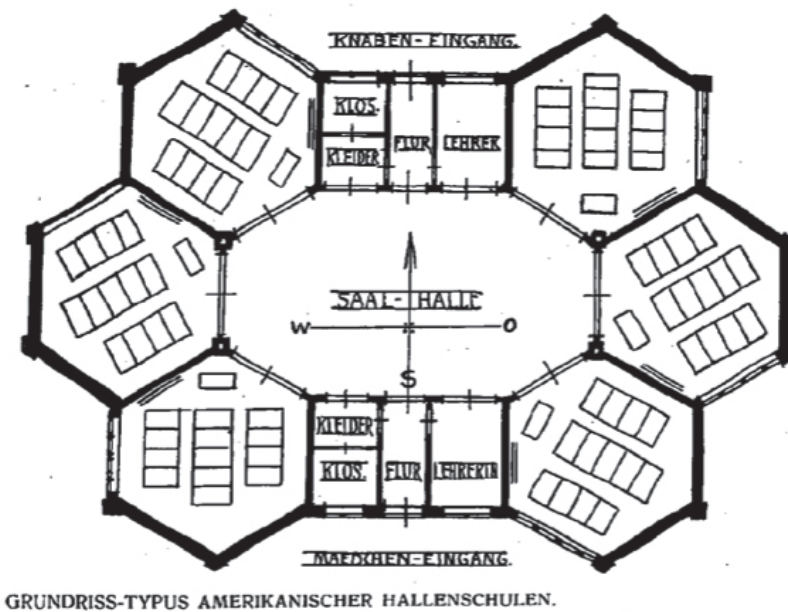


Figure 9: "Floor plan of American hall school", in G. Herman, "Hallenschulen", *SH* 8 (1906): 106.

⁷⁶ G. Herman, "Hallenschulen", *SH* 8 (1906): 99-108, especially 99.

⁷⁷ G. Herman, "Hallenschulen", 106-108.

A subsequently published article even views this system as the ideal solution for combining aesthetic aims and efficiency requirements.⁷⁸ As this example indicates, the United States are invoked in distinctive ways. Thematically, on the one hand they are often used as an example of bold, effective, and modern architecture⁷⁹ and as a site of economic planning⁸⁰; on the other hand the involvement of the educational administrators is also reported on.⁸¹ Further, the USA is brought up when large schools⁸² are discussed as well as innovative ways of creating school environments.⁸³ It is also the USA, among other countries, that is seen as one context where school buildings are centralised to include a larger group of pupils and therefore expand the school's reach, which then allows for innovations like new transportation systems.⁸⁴ Ideas like these are later on discussed in the Prussian context, mostly for rural school systems, where centralisation would allow for a more differentiated curriculum.⁸⁵ However, these observations also represent a starting point for distinctions and demarcations, like in this account:

In its products, America tends to work with giant dimensions and giant achievements, without us being inclined to follow it in this area. Even if, unfortunately, giant schoolhouses with 30, 40 and even 50 classes are still occasionally built in our country, such achievements will seldom give rise to undivided joy in

⁷⁸ Max Thielert, "Treppenhäuser, Flure und Hallen in Schulen", *SH* 14 (1912): 322-332.

⁷⁹ "New Yorker Schulwesen", *SH* 2 (1900): 408; C. Zetzsche "Kleine Schulen II. Amerikanische Schulen", *SH* 4 (1902): 75-81; A. C. Clas "Neuzeitliche amerikanische Schulhaus-Architektur", *SH* 5 (1903): 455-463; Paul Martell, "Der Schulbau in Nordamerika", *SH* 10 (1908): 274-279.

⁸⁰ Alice Ravenhill, and Margarete Weinberg, "Hygienisches aus amerikanischen Schulen", *SH* 4 (1902): 325-333.

⁸¹ G. Stradal, "Zur Hygiene der Schulhäuser in den Vereinigten Staaten", *SH* 7 (1905): 302-304; Carl Hinträger, "Bestimmungen für Schulbauten in den Vereinigten Staaten", *SH* 11 (1909): 214-217; Matthias Meyer, "Der Schulhaus-Architekt und seine pädagogischen Berater", *SH* 13 (1911): 494-501.

⁸² "Die größte Schule in den Vereinigten Staaten", *SH* 5 (1903): 566; "Amerika. Einen Wolkenkratzer für Schulzwecke", *SH* 6 (1904): 563-564.

⁸³ When e.g. a school ship "Ein Schiff als Schule", *SH* 5 (1903): 222-223 or a common room for teachers "Erholungsräume für Lehrer in amerikanischen Schulen", *SH* 5 (1903): 276 are discussed, or gardens and playgrounds on top of school buildings are presented as recent trends: "Spielplätze auf den Dächern der Schulgebäude", *SH* 9 (1907): 416-418; "Spielplatz auf dem Dache einer Stadtschule in New York", *SH* 4 (1902): 584-585.

⁸⁴ "Beförderung der Schulkinder in Amerika", *SH* 5 (1903): 277.

⁸⁵ "Landschulbauten", *SH* 8 (1906): 29-31.

Germany. We know that we are doing a disservice to the youth with such accumulations of people and should finally turn away from such attempts. It is different in America [...].⁸⁶

All in all, the US is often referenced and innovations there were observed, though direct acquisitions rarely occurred. The context is also invoked as a reference for distinction, contrast, and (de-)legitimation. One of the most interesting transfer examples is the assembly hall, but more examples than we touched on would need to be examined.

FROM SCHOOL BUILDING TO SCHOOL ARCHITECTURE

Finally, we want to shed light on the negotiations emerging between school technicians and architects around 1900. Returning to our proposed discursive shift (from period one *school buildings* to period two *school architecture*), we will now describe the rhetorical strategies invoked in the redistribution of influence between architects and school technicians. As discussed, school technicians balanced financial, pedagogic, and hygienic aims. Their practices lead to the erection of grand school buildings. Higher financial resources, social relevance, and visibility created a growing interest of architects and other actors with building expertise. Focusing school building history on architects suggests their general superiority in the matter, which – as we argue – they only started to claim around 1900. Instead, school technicians and professional architects did not come to terms as easily as historiography sometimes implies.

Architects Challenging School Technicians

Blankenburg, an influential building councillor in Berlin, reviewed a speech⁸⁷ held at an elementary school teachers' meeting in 1909.⁸⁸ One

⁸⁶ "Amerika", *SH* 16 (1914): 454.

⁸⁷ The review was published in the *Saale Zeitung*; the speech on the topic of school dust was given by teacher Heinicke.

⁸⁸ R. Blankenburg, "Über die Mitwirkung der Lehrer bei Bau und Einrichtung von Schulen (About the involvement of teachers in the process of constructing and equipping schools)", *SH* 11 (1909): 536-547. Blankenburg not only wrote contributions for the journal *Das Schulhaus* (1899-1930), but between 1907 and 1912 he acted as its editor-in-chief. As a former inspector of public buildings, he

aspect of this speech upset him: "When building a new school, however, the choice of site and interior design should always be guided by a sense of practicality and, to this end, the experience and opinions of the teachers involved should also be taken into account".⁸⁹ Blankenburg strongly disagreed: He saw no reason for involving teachers as they usually did not voice complaints about school buildings. Further,

The teacher as such is generally not able or competent to judge whether a building site is suitable for the construction of a school building; [...] the technical preconditions [...] to be taken into consideration for this purpose have nothing whatsoever to do with pedagogical experience and teacher opinions [...].⁹⁰

He also did not follow the teachers' argument that they – as the primary users of the schoolhouses – should have a say in construction decisions. For him the relevant users were the pupils, their parents, and the general public. Moreover, even if Blankenburg acknowledged the teachers' interests "[...] the interests of the users can only be safeguarded by the authorities appointed for this purpose and their technically, hygienically or pedagogically trained officials".⁹¹

Blankenburg's disapproval of any teacher involvement is telling of his self-image and confidence as a representative of the building profession. In the constellation he describes, school technicians no longer play a crucial role in shaping school buildings. Certainly, Blankenburg's invective was directed against school teachers *and* school technicians; the technicians quoted in this article were of higher administrative rank and some even held high positions on the national level. But nonetheless, Blankenburg's arguments were also directed at them.

We included this particular article as it exemplifies the changes in the discourse about school buildings around 1900 in an outspoken manner. Another indicator of a repositioning of power and definition in this field

had worked in Gumbinnen, Cologne and Świnoujście, where he was promoted to building commissioner in 1893 before leaving civil service in 1901.

⁸⁹ Blankenburg, "Mitwirkung", 537.

⁹⁰ Blankenburg, "Mitwirkung", 538.

⁹¹ Blankenburg, "Mitwirkung", 539.

can be observed in the establishment of the journal *Das Schulhaus*, among other publications. This journal filled a gap opened by the federal constitution of the German Empire. Central and regional authorities hindered the creation of unified guidelines and specifications for many aspects of social life. Therefore, the diversity of German school buildings was rather high, allowing for broad discussions about standards. Hence, the founder of *Das Schulhaus*, Ludwig Karl Vanselow (1877-1959), made an important point when he presented his idea of creating a central discussion forum for a wider audience.⁹² Starting his journal in 1899, Vanselow stated:

Even if the work of school authorities, teachers, technicians and physicians has already yielded extraordinarily rich fruits in a very short time, the area is so large and the tasks are still so many that it seems more beneficial to initially only include what is closest to practical implementation within the school building itself, and to leave the theoretical discussion of further school hygiene to others, but to deal with everything that has to do with the construction, furnishing and equipping of schools and related institutions in the sense of modern requirements with all the more thoroughness and objectivity within the once defined framework.⁹³

He repeatedly referred to the influential actors as “professionals in the *technical, hygienic and educational* fields”⁹⁴ and acclaimed their (successful) involvement. But lastly, he contrasted the given rationales with aims he aspired to integrate into the discourse:

The principle of practicality, first of all in the health, technical and pedagogical sense, should guide us in all questions. The artistic aspects of school buildings should also be close to our hearts, but we always want to maintain our view that under no circumstances should more than the most necessary means be used for

⁹² See e.g. Ministerium der öffentlichen Arbeiten, *Centralblatt der Bauverwaltung*, 21 (1901): 404; Ministerium der öffentlichen Arbeiten, *Centralblatt der Bauverwaltung*, 19 (1899): 520. The ministry did not only speak positively about the journal, but also supplied it with texts and funds and ordered it for many different administrations. See also Vanselow, “Bei Beginn des neuen Jahrganges”, *SH*, 3 (1901): 3-4.

⁹³ Vanselow, “Geleitwort”, *SH*, 1 (1899): 1-4, here 2-3.

⁹⁴ Vanselow, “Geleitwort”, 3; our own italics.

the external appearance of the school until everything that is necessary for the health and well-being of the students and for the immediate purposes of the school building itself has been taken care of in an exemplary manner.⁹⁵

Although this quote depicts a clear hierarchy between the school building's practicality and aesthetic features, it is nonetheless noteworthy that so-called *artistic aspects* are mentioned at all, since their consideration represented a fairly new development. Moreover, the quote displays a general embrace of usefulness arguments shared by the majority of school buildings experts. In the following years new aims for possible improvement were introduced that partially contrasted with, but also related to existing ones, although aspirations to center school building discussions on cost efficiency continued.

For introducing new aims of school construction an array of strategies was employed. Tentatively identifying these helps to better understand the alternations they caused. One prominent strategy that we observed in *Das Schulhaus* implies that solely saving money and being economical when it comes to the elementary schools is regarded as problematic and short-sighted. This starts immediately when e.g. the *Berliner Tageblatt* is quoted in a short note:

It is certainly desirable that all unjustified luxury is avoided in school buildings. In a number of school buildings that have been constructed in recent years, however, this laudable effort has led to the buildings appearing downright tasteless and unsightly, and the interior furnishings have become impractical and inadequate.⁹⁶

This critique of exaggerated frugality also affects the classic administrative aim to *rationalise plan making*. Tenders are demanded so that architects and building councillors are more strongly involved in school planning.

In the USA, we can observe a specialisation of architects who focused on the design and construction of school buildings at the end of the nineteenth century. Before, most school boards appointed local architects to

⁹⁵ Vanselow, "Geleitwort", 3.

⁹⁶ "Schulnot in Berlin", *SH* 1 (1899): 22-24.

design school buildings, sometimes via contests that determined the best blueprint, which was built subsequently.⁹⁷ In doing so, the school boards found a way to use a competition to determine how their construction funds could be used best. In the 1880s and 1890s many city boards of education appointed architects as their superintendents or commissioners of school buildings and thus allotted a continuation of architectural perspectives on schooling.⁹⁸

Shifting Rationales in School Architecture – Prominent Strategies and New School Buildings Ideas

One other popular strategy is to reference school building measures undertaken in other cities. For example, an article discusses a new school building in Hamburg as follows:

It is striking that apart from classrooms, neither drawing rooms nor physics rooms nor any other rooms of any kind are intended for teaching purposes. [...] it should be pointed out that the new Leipzig school buildings, for example, not only contain large school classes: There are drawing room, physics room, classrooms double in size for the possible combination of several school classes, sewing room, assembly hall [...].⁹⁹

This strategy can also be observed in the US where architects and school administrators often toured the country to examine other school construction models. Some of them, like William B. Ittner, a well-known school architect who designed over 400 school buildings, even travelled abroad to study school design in England, Spain, Italy, France, and Germany, where he met Ludwig Hoffmann (1852-1932), Berlin's principal school architect.¹⁰⁰

⁹⁷ In an 1830 prize essay, the American Institute of Instruction offered a premium for the best schoolhouse design, which was awarded to William A. Alcott of Hartford, Connecticut. The plan can be found in Barnard, *School Architecture*, 64.

⁹⁸ Gyure, *Transformation*, 56.

⁹⁹ G. Vollers, "Kritische Betrachtungen über Submissionsbedingungen und Zeichnungen für ein neues Schulhaus in Hamburg", *SH 1* (1899): 51.

¹⁰⁰ Gyure, *Transformation*, 57-58.

Still, most extensively used was the strategy of setting goals and new requirements, thus asserting and presenting them as legitimate and necessary. A significant first example is illustrated in an article by Zetzsche from 1900.¹⁰¹ After describing the general need for pupils to be aesthetically educated, the school building is presented as a possible means to achieve this. Zetzsche demands that "neither luxury nor special tricks should be included in the school building [...]. It should be simple and unadorned, but functional and dignified in layout and equipment [...]".¹⁰² Furthermore, he argues that this does not imply any additional costs. An intended side effect is hinted at in the following lines when Zetzsche argues against normal school plans:

We do not need normal school buildings with a floor plan determined by templates, [...] but rather school buildings where the easiest and simplest forms and the locally available and cheapest building materials [...] are used and arranged in a correct and heart-warming manner.¹⁰³

This text is all the more relevant as it is explicitly highlighted by the journal's editorial board:

By placing the above article at the top of this issue, we wanted to emphasise that it reflects a substantial part of our programme. [...] In the next issues we will be able to demonstrate to our readers in words and pictures the efforts that have already been made in recent times in isolated cases in larger school buildings in Berlin, Munich and Nuremberg, [...].¹⁰⁴

As promised there is a positive review of a newly built schoolhouse in Berlin in the following issue, in which Hoffmann's work is credited as "an artistically significant grasp of the task and a maturely thought-out and lovingly executed elaboration of the idea with great skill".¹⁰⁵ This specific emphasis on certain architects and their ground-breaking work

¹⁰¹ C. Zetzsche "Das Schulhaus als Lehrmittel", *SH 2* (1900): 221-228.

¹⁰² Zetzsche, *Das Schulhaus* 223.

¹⁰³ Zetzsche, *Das Schulhaus*, 223.

¹⁰⁴ Zetzsche, *Das Schulhaus*, 227.

¹⁰⁵ "Die neue Gemeinde-Doppelschule in der Glogauer Strasse in Berlin SO", *SH 2* (1900): 228-233.

is often highlighted in research literature,¹⁰⁶ but we know little concerning the ways they were involved in broader discussions and strategies of promoting architectural relevance.

In some instances, this rhetoric results in an equivalence between aesthetic and other aims. For example, a text from 1902 states that “the school building must meet the requirements of school practice, school hygiene and art”.¹⁰⁷ Aesthetic matters were quickly ascribed the status of an equal aim in school building discussions. In a later article, Meyer, chairman of the Hamburg school synod between 1896 and 1906, and a recognized school building expert, goes even further.¹⁰⁸ In “Schoolhouses or School Barracks?” he writes:

Yes, special purposes, which a house is supposed to serve, can demand a special emphasis on the external impression, on representation, and the house becomes a palace. On the other hand, however, the requirements of thriftiness, the need to provide shelter and accommodation for larger numbers of people in limited space, can push the more ideal purposes of the house into the background, and the house, the casa, becomes a barrack. [...] And so the answer to the question put at the beginning of these remarks is already given. [...] we do not demand school palaces, nor school barracks, but school buildings for our youth [...].¹⁰⁹

Meyer’s contribution frames two distinct versions and skillfully presents his position as an intermediary by criticizing, on the one hand, overly thriftiness and emphasising his distance towards a wrong understanding of architecture as an excessive project of representativeness on the other. He further claims that the label of school palaces was invented by opponents of decent school buildings:

However, the name school palaces is often enough misused by short-sighted city fathers in order to set up an inexpensive agitation against urgently needed expenditures for school buildings,

¹⁰⁶ Kemnitz, “Architektenpädagogiken”.

¹⁰⁷ “Einen Vortrag über das Schulhaus”, *SH* 4 (1902): 89-91.

¹⁰⁸ Matthias Meyer, “Schulhäuser oder Schulkasernen?”, *SH* 4 (1902): 118-131, 173-192.

¹⁰⁹ Meyer, *Schulhäuser*, 118.

which were only an attempt to satisfy modern hygienic and educational demands within modest limits.¹¹⁰

Meyer seemingly strengthens pedagogical and hygienic needs, but at the same time he uses them to question the administrative ideal of low expenses, while integrating aesthetic qualities as a relevant aim. Equally interesting is how he speaks about the aesthetic rationality by stating:

I am well aware that up to this point people will generally agree to the demands I have made for the construction of a school building. [...] But it is different when we raise the question: Is the schoolhouse, even as an elementary school, a worthy object of the art of measurement and chiseling? [...] Should it be allowed to be more than just a sober functional building [...]? In answering this question the teachers themselves unfortunately abandon us.¹¹¹

Again, we see the subtle way in which this argument brings in aesthetic qualities as an equally relevant aim while criticising the economical rationality in place before. The conflict with the teachers hinted at concerns the building site of new schools: While teachers would prefer closed quiet backyard locations, the architects would rather erect buildings facing the street. Meyer defuses and blurs the implied conflict by referring to Hoffmann, who harmonised both principles. Nonetheless, with the consolidation of architectural thinking conflicts of contesting aims arose.

We can construe that these kinds of articles were impactful by looking at articles that do not intentionally look at these topics. In 1903 the architect Friedrich Paulsen writes about the "Principles for Erecting Schoolhouses".¹¹² He notes a newly emerging interest of architects in larger city schoolhouses and discusses *aesthetic requirements* of school buildings as an integral part. This shift is depicted even more strikingly in an article from 1904, where school buildings presented at the German city exhibition in Dresden in 1903 are discussed. The beginning reads:

¹¹⁰ Meyer, *Schulhäuser*, 121.

¹¹¹ Meyer, *Schulhäuser*, 121.

¹¹² Friedrich Paulsen, "Prinzipien beim Bau von Schulhäusern", *SH* 5 (1903): 481-492, 529-543.

[The exhibition shows, the authors] that the spell has been broken, that in future it will no longer be “the” (normal) schoolhouse, “the bleak box”, which corresponds to the “tried and tested rules and principles”, but “a” schoolhouse which will take into account the special local conditions and other requirements in the best possible way for the given case and which will be a living being, having its own language, as if it were speaking to us.¹¹³

Meanwhile, the renowned architect Hinträger does not stress aesthetic aims, but also supports the new status of *technical experts*, explicitly referencing *architectural* and not *school* technicians:

If a municipality decides to build a new school building today, it chooses a technical expert to design and manage the construction, who, based on special theoretical studies and multiple practical experience, is able to produce a building that fully meets the requirements of the school and all health conditions. An impeccable building in every respect will only be possible if the architect works hand in hand with the schoolmaster and the school hygienist, and if he strives to make progressive use of all proven constructional innovations, without at the same time losing sight of the financial side of the construction management.¹¹⁴

He puts architectural technicians on an equal level with school administrators and doctors, and partly categorises them as the more relevant profession. This development of implementing architectural expertise is also visible when it is questioned, as part of a discussion of normal school plans for cities shows.¹¹⁵ After quoting norms determined by a school building commission appointed by Düsseldorf’s city authorities, suggestive critiques are voiced. We focus on two points:

1. The commission considers it right that primary schools are generally built in backyards. 2. The commission would like the building department, in agreement with the school administration,

¹¹³ “Die Schulbauten auf der Deutschen Städteausstellung in Dresden 1903”, *SH* 6 (1904): 56.

¹¹⁴ Carl Hinträger, “Das Volksschulhaus der Gegenwart in hygienischer Beziehung” (printed presentation held at the first international Congress for School Hygiene in Nuremberg in 1904), *SH* 6 (1904): 340-352.

¹¹⁵ “Das Schulbauwesen im Düsseldorfer Stadtverordnetenkollegium”, *SH* 9 (1907): 261-265.

to draw up standard building plans for single and double school systems as a guide to the size and shape of the plots of land to be acquired [...].¹¹⁶

Concerning the first point the reviewer argues that one should abide by "statements of outstanding architects", who argue for choosing prominent building sites. The second aspect asking for normal plans for city schools "would reduce the artistic motivation and creativity of the architects".¹¹⁷ Granting the adherence to standard rules on e.g. class size "in the development of the floor plan and thus also of the architectural structure, the artist [...] is to be given a free hand [...]".¹¹⁸ Rejecting the proposed guidelines the author finally wonders about an overtly strong "layman's influence".¹¹⁹

Further themes, which came into the view of the architects, are critiques of symmetry¹²⁰ or questions of interior design.¹²¹ These exemplify the extension of the architects' reach into building and classroom design, which in turn influenced pedagogic and hygienic questions. Still, in all these instances the architects managed to present themselves as well-versed actors who know, understand, and respect the rationalities of the other involved professions. Especially the financial aspect is often reflected upon. The rising financial needs (more pupils, less pupils per teacher and room, more diverse rooms and equipment) lead to considerably increasing financial strains, which were answered with attempts to calculate and compare school building investments – by architects.¹²²

¹¹⁶ "Schulbauwesen", 261.

¹¹⁷ "Schulbauwesen", 264.

¹¹⁸ "Schulbauwesen", 264.

¹¹⁹ "Schulbauwesen", 265.

¹²⁰ Hans Ungethüm, "Kind, Schule und Kunst", *SH* 8 (1906): 483-489.

¹²¹ E.g. Alexander Bennstein, "Ueber Schulbauprogramme", *SH* 3 (1901): 364-368; "Über die angemessene Schülerzahl in den einzelnen Klassen", *SH* 10 (1908): 90-92; Köhler, "Wesen und Bauart des neuzeitlichen Volksschulhauses", *SH* 10 (1908): 213-223, 267-274.

¹²² See e.g. Uhlig, "Vom Bau der Volksschule", *SH* 11 (1909): 62-79; Perrey, "Vorschläge zur einheitlichen Berechnung der Kosten der Schulbauten in den deutschen Städten", *SH* 11 (1909): 161-172, see also by the same author "Über Ersparnisse im Betrieb und in der Verwaltung der Schulhäuser", *SH* 13 (1911): 21-25, where he proposes to save money by saving water with a different toilet flush method; lastly in 1914 Winterstein, "Die Kostenunterschiede von Schulbauten und deren Erklärung", *SH* 16 (1914): 365-381, where results from a study from different cities are presented. One of the rare

This was sometimes connected with considerations of reasons for rising costs.¹²³ It seems that architects managed to understand the relevance of other aims and participate in these debates. Still, this understanding remained connected with their professional position. For example, when city building councillor Winterstein discusses reasons for rising costs in a work from 1910, one reason he identifies is that not all higher classes are completely filled – therefore, money is wasted. This suggests that these classes could be reduced to save expenses¹²⁴ – a proposal that would have probably never been voiced by either teachers or school technicians. It is this specific perspective on saving money by avoiding unused space which is also employed in the positive discussions of the hall school system that in turn seemed to allow for a reduction of the space needed for building individual hallways.¹²⁵

The Rise of School Architecture and the Consolidation of the Architects' Position

To summarize, the articles and their aspirations speak volumes about the new constellation: The order of curricular structure, school layout, and hygienic standards established and maintained by school technicians was now altered by architectural thinking. Ultimately, *school architecture* emerged. A school building no longer housed one set of successive classes, but a collection of classes and additional rooms, fulfilling a broadened scope of interests and aims. Though calls for reduced school building sizes remained on the agenda,¹²⁶ grand school buildings were eventually consolidated as the standard. Architects gained a strong voice in demands for reform due to the specific school buildings they designed and the rhetorical strategies they employed. In the following decades they consolidated their prevalent discursive position, which has dominated discussions of school architecture ever since. Looking beyond this

times when the costs of the architect was discussed can be found in “Eine neue Gefahr für den Schulbau”, *SH* 15 (1913): 230-236; Winterstein, “Kostenunterschiede”, 365-381.

¹²³ Schönfelder, “Die Grenzen der Weiträumigkeit bei Schulbauten”, *SH* 12 (1910), 379-391.

¹²⁴ Winterstein, “Kostenüberschläge für Hochbauten”, *SH* 12 (1910): 166-173.

¹²⁵ Figge, “Die Hallenschule in der Friedenstraße in Hagen i. W.”, *SH* 13 (1911): 163-171.

¹²⁶ Hinträger, “Grundriß-Typen”, 20-36; Hinträger, “Volksschulhaus”, 340-352; Carl Hinträger, “Über die Verkleinerung der Schulbetriebe”, *SH* 12 (1910), 453-456.

rhetoric allows to reconsider not only the specific discursive constellation, but also reveals the diversity of previously involved actors and underlying aims in constructing schools, thus reintegrating forgotten influences and modes of thinking about school building processes. We hope this article initiates a re-evaluation of school architecture and encourages further research on the role of school technicians and the transnational processes which have globally shaped school buildings.

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REFERENCES

- Apel, Hans-Jürgen, and Jürgen Bennack, *Hygiene in preußischen Schulvorschriften*. Köln: Böhlau, 1986.
- Architekten- und Ingenieur-Verein zu Berlin. *Berlin und seine Bauten*. Vol. I. Berlin: Ernst und Korn, 1877.
- Architekten-Verein zu Berlin und Vereinigung Berliner Architekten. *Berlin und seine Bauten*. Vol. II. and III. *Der Hochbau*. Berlin: Ernst, 1896.
- Barnard, Henry. *School Architecture; or Contributions to the Improvement of School-Houses in the United States*. New York: A. S. Barnes & Co., 1850.
- Bennack, Jürgen. *Gesundheit und Schule: Zur Geschichte der Hygiene im preußischen Volksschulwesen*. Köln, Wien: Böhlau, 1990.
- Bennstein, Alexander. "Ueber Schulbauprogramme". *Das Schulhaus* 3 (1901): 364-368.

- Blankenburg, R. "Über die Mitwirkung der Lehrer bei Bau und Einrichtung von Schulen". *Das Schulhaus* 11 (1909): 536-547.
- Böttcher, Hartmuth. *Untersuchung zum Volksschulhaus im Landkreis Hannover*. Hannover: University Dissertation, 1985.
- Buddensiek, Wilfried. "Fraktale Schularchitektur". In *Schularchitektur im interdisziplinären Diskurs*, edited by Jeanette Böhme, 315-329. Wiesbaden: VS Verlag, 2009.
- Campbell, William W. *Life and Writings of De Witt Clinton*. New York: Baker and Scribner, 1849.
- Canales, Antonio Francisco and Simonetta Polenghi, "Classifying children: A historical perspective on testing and measurement". *Paedagogica Historica* 55 (2019): 343-352.
- Caruso, Marcelo, and Daniel Töpper, "Schooling and the Administrative State: Explaining the Lack of School Acts in Nineteenth-Century Prussia". In *School Acts and the Rise of Mass Schooling*, edited by Johannes Westberg, Lukas Boser and Ingrid Brühwiler, 41-66. New York: Palgrave, 2019.
- C. H. "Erholungsräume für Lehrer in amerikanischen Schulen". *Das Schulhaus* 5 (1903): 276.
- Clas, A. C. "Neuzeitliche amerikanische Schulhaus-Architektur". *Das Schulhaus* 5 (1903): 455-463.
- Cubberley, Ellwood Patterson. *Public Education in the United States. A Study and Reinterpretation of American Educational History*. Boston: Houghton Mifflin Company, 1919.
- Cutler, William W. "A Preliminary Look at the Schoolhouse: The Philadelphia Story, 1870-1920". *Urban Education* 8, no. 4 (1974): 381-99.
- Cutler, William W. "Cathedral of Culture: The Schoolhouse in American Educational Thought and Practice since 1820". *History of Education Quarterly* 29, no. 1 (1989): 1-40.
- Da Silva, Joseph. *School(house) Design and Curriculum in Nineteenth Century America. Historical and Theoretical Frameworks*. Cham: Palgrave Macmillan, 2018.
- Dörpfeld, Friedrich W. *Zwei pädagogische Gutachten über zwei Fragen aus der Theorie der Schuleinrichtung*. Gütersloh: Bertelsmann, 1877.
- Eimers, Enno. *Die Berichte Rönnes aus den USA 1834 - 1843 im Rahmen der Beziehungen Preußen - USA 1785 bis 1867*. Berlin: Duncker & Humblot, 2013.
- Dussel, Inés. "El patio escolar, de claustro a "aula al aire libre". Historia de un espacio escolar, Argentina 1850-1920" *Historia de la Educación* 19 (2019): 28-63.
- von Felbiger, Johann I. *Anleitung Schulgebäude auf dem Lande wohl abzutheilen, wohlfeil, dauerhaft und Feuersicher aufzuführen*. Leipzig: Hilscher, 1783.

- Figge. "Die Hallenschule in der Friedenstraße in Hagen i. W.". *Das Schulhaus* 13 (1911): 163-171.
- Filmer-Sankey, William. "School Architecture in England in the Later Nineteenth Century", In *Die pädagogische Gestaltung des Raums: Geschichte und Modernität*, edited by Franz-Josef Jelich, and Heidemarie Kemnitz, 221-230. Bad Heilbrunn: Klinkhardt, 2003.
- Free-School Society of New-York. *An Account of the Free-School Society of New-York*. New York: Collins and Co., 1814.
- Geiss, Michael. *Der Pädagogenstaat: Behördenkommunikation und Organisationspraxis in der badischen Unterrichtsverwaltung, 1860-1912*. Berlin: transcript, 2014.
- Geiss, Michael, and Andrea de Vincenti, *Verwaltete Schule: Geschichte und Gegenwart*. Wiesbaden: Springer VS, 2012.
- Gerstenberg, Adolf "Die Gemeindeschulen der Stadt Berlin". *Zeitschrift für Bauwesen* 19 (1869): 489-518.
- Grosvenor, Ian, and Lisa R. Rasmussen, *Making Education: Material School Design and Educational Governance*. Cham: Springer, 2018.
- Göhlich, Michael. "Schulraum und Schulentwicklung: Ein historischer Abriss". In *Schularchitektur im interdisziplinären Diskurs*, edited by Jeanette Böhme, 89-102. Wiesbaden: VS Verlag, 2009.
- Graves, Ben E. *School Ways: The Planning and Design of America's Schools*. New York, NY: McGraw-Hill, 1993.
- Gyure, Dale Allen. *The Transformation of the Schoolhouse: American Secondary School Architecture and Educational Reform, 1880-1920*. Charlottesville: University of Virginia, 2001.
- Gyure, Dale Allen. *The Chicago Schoolhouse: High School Architecture and Educational Reform, 1856-2006*. Chicago: Center for American Places at Columbia College, 2011.
- Helfenberger, Marianne. *Das Schulhaus als geheimer Miterzieher. Normative Debatten in der Schweiz von 1830 bis 1930*. Bern: Haupt, 2013.
- Helfenberger, Marianne. "Schulhausbau in Zürich von 1860 bis 1920 – zwischen Expertenhegemonie und öffentlicher Kontrolle". In *Gemeinden in der Schul-Governance der Schweiz*, edited by Judith Hangartner, and Markus Heinzer, 221-247. Wiesbaden: Springer, 2016.
- Herman, G. "Hallenschulen". *Das Schulhaus* 8 (1906): 99-108.
- Hinträger, Carl. *Die Volksschulhäuser in den verschiedenen Ländern*. (Darmstadt: Bergsträsser, 1895-1904).
- Hinträger, Carl. "Grundriß-Typen neuzeitlicher städtischer Volksschulhäuser verschiedener Länder". *Das Schulhaus* 6 (1904): 20-36.
- Hinträger, Carl. "Das Volksschulhaus der Gegenwart in hygienischer Beziehung". *Das Schulhaus* 6, (1904): 340-352.

- Hinträger, Carl. "Bestimmungen für Schulbauten in den Vereinigten Staaten". *Das Schulhaus* 11 (1909): 214-217.
- Hinträger, Carl. "Über die Verkleinerung der Schulbetriebe". *Das Schulhaus* 12, (1910), 453-456.
- Isensee, Fanny, Oberdorf, Andreas, and Daniel Töpfer, *Transatlantic Encounters in the History of Education. Translations and Trajectories from a German-American Perspective*. New York: Routledge, 2020.
- Janßen, Heinz. *150 Jahre Volksschule Küdinghoven*. Beuel: Stadtverwaltung, 1963.
- Jelich, Franz-Josef and Heidemarie Kemnitz, *Die pädagogische Gestaltung des Raums: Geschichte und Modernität*. Bad Heilbrunn: Klinkhardt, 2003.
- Kaestle, Carl F. *The Evolution of an Urban School System: New York City, 1750-1850*. New York: Hill and Wang, 1973.
- Kemnitz, Heidemarie. "Pädagogische" Architektur?". *Die Deutsche Schule* 91 (2001): 46-57.
- Kemnitz, Heidemarie. "Schulbau jenseits der Norm: Hans Scharouns Mädchengymnasium in Lünen". *Paedagogica Historica* 41 (2005): 605-625.
- Kemnitz, Heidemarie. "Denkmuster und Formensprache pädagogischer Architekturen im ersten Drittel des 20. Jahrhunderts". In *Das Jahrhundert der Schulreformen. Internationale und nationale Perspektiven, 1900-1950*, edited by Claudia Crotti, and Fritz Osterwalder, 251-281. Berlin: Haupt, 2008.
- Kemnitz, Heidemarie. "Zwischen Unterrichtsgroßraum und Klassenzimmer – Schulbau im Wandel der gesellschaftlichen Verfasstheit von Schule". In *Räume zum Lernen und Lehren*, edited by Joachim Kahlert, Kai Nitsche, and Klaus Zierer, 59-76. Bad Heilbrunn: Klinkhardt, 2013.
- Kemnitz, Heidemarie. "'Architektenpädagogiken' Historische Analysen zu (Schul-)Raum und Bildung", In *Räume für Bildung – Räume der Bildung*, edited by Edith Glaser, Hans-Christoph Koller, Werner Thole, and Salome Krumme, 446-456. Opladen: Barbara Budrich, 2018.
- Köhler. "Wesen und Bauart des neuzeitlichen Volksschulhauses". *Das Schulhaus* 10 (1908): 213-223, 267-274.
- Lackney, Jeffrey A. "History of the Schoolhouse in the USA". In *Schools for the Future*, editado por Rotraut Walden, 23-40. Wiesbaden: Springer, 2015.
- Lange, Hermann. *Schulbau und Schulverfassung der frühen Neuzeit: Zur Entstehung und Problematik des modernen Schulwesens*. Hamburg: Beltz, 1967.
- Lessoff, Alan, and Christhof Mauch, *Adolf Cluss, Architect. From Germany to America*. New York: Berghahn, 2005.
- Lomberg, August. *Große oder kleine Schulsysteme?* Langensalza: Beyer, 1893.
- Lundahl, Christian, and Martin Lawn, "The Swedish Schoolhouse at the Centennial Exhibition in Philadelphia 1876". In *Education Across Europe: A Visual Conversation*, edited by Catherine Burke, 95-98. Berlin: EERA, 2014.

- Mann, Horace. *Seventh Annual Report of the Board of Education. Together with the Seventh Annual Report of the Secretary of the Board*. Boston: Dutton and Wentworth, 1844.
- Martell, Paul. "Der Schulbau in Nordamerika". *Das Schulhaus* 10 (1908): 274-279.
- Meyer, Matthias. "Schulhäuser oder Schulkasernen?". *Das Schulhaus* 4 (1902): 118-131, 173-192.
- Meyer, Matthias. "Der Schulhaus-Architekt und seine pädagogischen Berater". *Das Schulhaus* 13 (1911): 494-501.
- Meyn, Boris. *Die Entwicklungsgeschichte des Hamburger Schulbaus*. Hamburg: Kovac, 1998.
- Ministerium der öffentlichen Arbeiten. "Das Schulhaus". *Centralblatt der Bauverwaltung* 19 (1899): 520.
- Ministerium der öffentlichen Arbeiten. "Das Schulhaus". *Centralblatt der Bauverwaltung* 21 (1901): 404.
- Müller, Detlef K. *Sozialstruktur und Schulsystem. Aspekte zum Strukturwandel des Schulwesens im 19. Jahrhundert*. Göttingen: Vandenhoeck & Ruprecht, 1977.
- "Old Deluder Satan Law of 1647". In *The Laws and Liberties of Massachusetts. Reprinted from the Copy of the 1648 Edition in the Henry E. Huntington Library. With an Introduction by Max Farrand*, Cambridge: Harvard University Press, 1929.
- Otto, Karl. Über den Anteil der Hygiene an der Entwicklung des deutschen Schulhauses. Hamburg: Boysen & Maasch, 1911.
- Paulsen, Friedrich. "Prinzipien beim Bau von Schulhäusern". *Das Schulhaus* 5 (1903): 481-492, 529-543.
- Perrey. "Vorschläge zur einheitlichen Berechnung der Kosten der Schulbauten in den deutschen Städten". *Das Schulhaus* 11 (1909): 161-172.
- Perrey. "Über Ersparnisse im Betrieb und in der Verwaltung der Schulhäuser". *Das Schulhaus* 13 (1911): 21-25.
- Ravenhill, Alice, and Margarete Weinberg, "Hygienisches aus amerikanischen Schulen". *Das Schulhaus* 4 (1902): 325-333.
- Ravitch, Diane. *The Great School Wars. A History of the New York City Public Schools*. Baltimore, London: The Johns Hopkins University Press, 2000.
- Reichhelm, Wilhelm. "Genehmigter Plan für die Einrichtung des Städtischen Armen-Schulwesens in Berlin", *Jahrbücher des preußischen Volks-Schul-Wesens* 6 (1827): 169-248.
- Reigart, John Franklin. *The Lancasterian System of Instruction in the Schools of New York City*. New York: Teachers College, Columbia University, 1916.
- Robson, Edward Robert. *School Architecture. Being Practical Remarks on the Planning, Designing, Building, and Furnishing of School-Houses*. London: John Murray, 1874.

- Rodríguez Méndez, Francisco Javier. "La huella de Adolf Cluss en la escuela graduada de Cartagena". *Foro de Educación* 12 (2014), 69-89.
- Rückriem, Georg. *Ein Bilder-Lese-Buch ueber Schule und Alltag Berliner Arbeiterkinder*. Berlin: Elefanten Press, 1981.
- Schmidt, Rudolf. *Volksschule und Volksschulbau von den Anfängen des niederen Schulwesens bis in die Gegenwart*. Wiesbaden: Fachschriften-Verlag, 1967.
- Schmidt-Thomsen, Jörn-Peter, Helga Schmidt-Thomsen, Manfred Scholz, and Peter Güttler, *Berlin und seine Bauten Teil V. Bauwerke für Kunst, Erziehung und Wissenschaft. Vol. C Schulen*. Berlin: W. Ernst, 1991.
- Schneeberger, Elisabeth. *Schulhäuser für Stadt und Land: Der Volksschulhausbau im Kanton Bern am Ende des 19. Jahrhunderts*. Bern: Historischer Verein des Kantons Bern, 2005.
- Schönfelder, Lothar. "Turnhallen". *Das Schulhaus* 7 (1905): 9.
- Schönfelder, Lothar. "Amerikanische Schulen". *Das Schulhaus* 16 (1914): 105-122.
- Schönfelder. "Die Grenzen der Weiträumigkeit bei Schulbauten". *Das Schulhaus* 12 (1910), 379-391.
- Schrenk, Christhard, and Peter Wanner, *Das Adolf-Cluss-Projekt 2005. Heilbronn-Washington*. Heilbronn: Stadtarchiv Heilbronn, 2006.
- Schöttler, Sonja. *Bauen für die Bildung: die Schulbauten des Architekturbüros Parade*; 2 vol. Köln: Kunsthistorisches Institut, 2008.
- Schuppan, Michael S. "Überblick über die Berliner Stadtschulräte als Quelle für regionale und bildungsgeschichtliche Studien". *Bildung und Erziehung* 62 (2009): 497-504.
- Spring, Joel. *The American School 1642-2004*. New York: McGraw-Hill, 2005.
- Spycher, Ernst. *Bauten für die Bildung: Basler Schulhausbauten von 1845 bis 2015 im schweizerischen und internationalen Kontext*. Muttenz: Schwabe, 2019.
- Stowe, Calvin E. *Report on Elementary Public Instruction in Europe*. Boston: Dutton and Wentworth, 1837.
- Stradal, G. "Zur Hygiene der Schulhäuser in den Vereinigten Staaten". *Das Schulhaus* 7 (1905): 302-304.
- Stroß, Annette. *Pädagogik und Medizin*. Weinheim: Dt. Studien-Verlag, 2000.
- Thielert, Max. "Die Aulafrage". *Das Schulhaus* 14 (1912): 165-172.
- Thielert, Max. "Treppenhäuser, Flure und Hallen in Schulen". *Das Schulhaus* 14 (1912): 322-332.
- Töpper, Daniel. "Der Weg zur Jahrgangsklasse – Zur Implementierung von Alter als Zuordnungs- und Gliederungseinheit im Schulwesen", In *Berlin-Brandenburger Beiträge zur Bildungsforschung*, edited by Jurik Stiller, Christin Laschke, Thea Nesyba, and Ulrich Salaschek, 139-164. Frankfurt am Main: Peter Lang, 2020.

- Uhlig. "Vom Bau der Volksschule". *Das Schulhaus* 11 (1909): 62-79.
- Ungethüm, Hans. "Kind, Schule und Kunst". *Das Schulhaus* 8 (1906): 483-489.
- Vanselow, Karl. "Bei Beginn des neuen Jahrganges". *Das Schulhaus* 3 (1901): 3-4.
- Vanselow, Karl. "Geleitwort". *Das Schulhaus* 1 (1899): 1-4.
- Viñao Frago, Antonio. "El espacio escolar ¿Cómo abordar un objeto polifacético y multiforme?" In *Espacios y patrimonio histórico-educativo*, coordinated by Paulí Dávila Balsera, and Luis María Naya Garmendia, 25-59. Donostia: Erein, 2016.
- Viñao Frago, Antonio. "Graded schools in the urban settings: Constructions, buildings and school complexes (1898/1936)", In *Madrid, ciudad educadora 1898/1938. Memoria de la escuela pública*, edited by María del Mar del Pozo Andrés, and Ian Grosvenor, 213-265. Madrid: Ayuntamiento de Madrid. Oficina de Derechos Humanos y Memoria, 2019.
- Vollers, G. "Kritische Betrachtungen über Submissionsbedingungen und Zeichnungen für ein neues Schulhaus in Hamburg". *Das Schulhaus* 1 (1899): 51.
- Vossberg, Christian. *Der großstädtische Volksschulbau dargestellt am Beispiel Hannover*. Technische Hochschule Hannover: Dissertation, 1953.
- Wells, William H. *A Graded Course of Instruction for Public Schools: With Copious Practical Directions to Teachers, and Observations on Primary Schools, School Discipline, School Records, etc.* Chicago: George Sherwood, 1862.
- Winterstein, Hans. *Beiträge zur Kostenfrage von Schulbauten*. Berlin: Boll, 1912.
- Winterstein. "Kostenüberschläge für Hochbauten". *Das Schulhaus* 12, (1910): 166-173.
- Winterstein. "Die Kostenunterschiede von Schulbauten und deren Erklärung". *Das Schulhaus* 16 (1914): 365-381.
- Zetsche, C. "Das Schulhaus als Lehrmittel". *Das Schulhaus* 2 (1900): 221-228.
- Zetsche, C. "Kleine Schulen II. Amerikanische Schulen". *Das Schulhaus* 4 (1902): 75-81.