ARCHITECTURE OF ACADEMIC INNOVATION: PROGRESSIVE PEDAGOGY, MODERNIST DESIGN, & PERKINS & WILL’S HEATHCOTE ELEMENTARY IN POST-WAR AMERICA

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**Introduction**

Public education is one of the central tasks of a democratic society. The buildings that house this important task not only shape the way we teach, but stand as icons and symbols for the values we hold common as a society. Perhaps unsurprisingly, this context has placed school buildings squarely at a crossroads of debate and innovation since our nation began, and school buildings continue to be the subject of careful study and debate today. Political and social movements, new technologies, and the growing awareness of what makes us learn better are constantly changing, and thus our notion of what makes a great school is constantly shifting and adapting to new ideas.

Between 1945 and 1960, the time period examined in this thesis, a great number of changes to school design and unprecedented school in America (fig. 1). This period was also the beginning of a new age of innovation in educational architecture, giving rise to a new typology of school building: The post-war Progressive Modernist school. The “Progressive” part of the name refers to the progressive pedagogy established by John Dewey in the early twentieth century. The “Modernist” part refers to the architectural style, seen in all examples of the type, which was integral as the physical expression of the schools. This typology incorporated the tenets of a progressive pedagogy built on the ideas of John Dewey, which put the focus of educational practices on shaping the child to better function in society, rather than force upon students an education defined by a rigid teaching model. It also incorporated the language of the Modernist style, by then better understood and more widely recognized in America that it had been before the war. A

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combination of these factors saw the creation of suburban public elementary schools built to accommodate the new teaching methods, which better fit the children of a rapidly changing society from 1945 onwards.  

One of the major examples of this style of school is Heathcote Elementary, located in Scarsdale, New York, built in 1953 (fig. 2). The school, designed by Perkins & Will, an architecture firm out of Chicago and central characters in the field of school architecture in the twentieth century, exemplified the school typology widely produced through the post-war period. Heathcote was reflective of the major movements going on in education and architecture in the post-war period.

Specifications of even the smallest details made a difference, as architects and firms like Perkins & Will focused on developing a space where children could feel at home and want to learn, and where educators could effectively carry out teaching under a new educational paradigm. Lawrence Perkins, founder and principal at Perkins & Will in the post-war period, paid special attention to the convergence of new educational philosophies and architecture. “Whatever the educational philosophy, however, two facts are clear. First, that the student can learn much from his environment, from the world around him. And second, that the school structure can do much to express and implement whatever teaching methods are followed. Nowhere else in the school is this as evident as in the classroom.”

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Twenty billion dollars was spent on new educational facilities from the end of World War II through 1964.\footnote{National Council on Schoolhouse Construction (Ed.), \textit{NCSC Guide for School Plants}, (1964), 96.} The student population rose by 2.3 million students in just the decade between 1958 and 1968. With the massive increase in population (fig. 3), a large number of new students were entering the American academic system, making the timing suitable to enact a widespread societal change. Taken together, all these elements affected the design and planning of schools between 1945 and 1960, thus defining the building type as an extremely valuable reflection of significant developments across a range of subjects (fig. 4). Yet only 14 schools built between 1945 and 1960 are listed on the National Register of Historic Places. The number is low, considering that the Modernist school movement impacted so many of the baby-boomer generation and beyond, and gave rise to so many fine examples of school design.

The post-war wave of public school construction across the United States sought to provide adequate classroom space for the seemingly ever-increasing student body of the post-war baby boom. American cities began a period of intense change with the end of World War II. By the 1950s American cities had gone through twenty years of neglect, with both the Great Depression and World War II largely halting construction projects. At the same time, America was experiencing a population boom. This brisk growth introduced questions of how the nation’s education system would support the massive increase in students, and set off a level of school construction that had not been seen since the 1920s. The necessity to build so many schools gave architects an opportunity to
improve how to design schools. These building programs brought modern design to school architecture for the first time on a widespread scale.\(^5\)

The post-war Progressive Modernist school, like the historical Little Red Schoolhouse, has become a recognized type. Moreover it became a movement involving work from both architecture and education professionals. A succession of books directed at laymen – parents, teachers, administrators, school board members – showed cost benefits, plans, and photographs of prominent schools. Most were written by architects, or published by architectural presses, and consistently recommended the low-rise profile, bilateral lighting, and self-contained classroom. These schools have won national awards and critical attention, and elements of their design were adapted in school districts around the country.\(^6\)

Methodology

This thesis involves research into the Progressive Modernist school typology built up in the post-war period, from 1945 to 1960, and the classroom design of those schools. My method of analysis will combine social history and formal design analysis. I will study the then newly developed pedagogies originating from American educator John Dewey and his writings in the early 20\(^{th}\) century as well as Modernist classroom design, which sought to incorporate Dewey’s philosophies to create a child-centered learning environment. This background information will inform the reader of the efforts to change school design and teaching methods during the post-war period, when the “baby


“boomers” were entering elementary schools, and increased construction of elementary schools resulted in the creation of innovative academic buildings. I have collected both primary and secondary texts and articles about the topics stated above from historians, educators, architects, and designers.

In addition to the social history and formal design analysis of the Modernist style, I have chosen one case study to analyze to demonstrate and understand the principles in physical form. The case study is the 1953 school Heathcote Elementary. The school was designed by architecture firm Perkins & Will. Heathcote expresses the important aspects of progressive pedagogy in the Modernist design idiom in a critically acclaimed result, and is therefore an important example of the post-war Progressive Modernist school typology. Additionally, the proximity of the school to New York City allows for visitation, photography, and closer study to analyze the building and its effectiveness. Because I have only examined one case, in the appendix of this paper I included a glossary with other examples of notable schools to provide visual context of buildings from the time period. The schools included are by noted architects like Marcel Breuer, John Lyon Reid, William Caudill, and Richard Neutra, who were all active in the post-war period.

Finally, as this is a thesis on Historic Preservation, I will use the background information, how progressive pedagogy and modernist design comes together at Heathcote Elementary, to determine what are the important elements to look for in a Progressive Modernist school. It is a form that was widely created throughout the post-war period. Since the Modernist period is now firmly within the age range required for National Register of Historic Places inclusion, its buildings are becoming increasingly
important in the preservation landscape. A lack of wide-spread study and protection in
the preservation field suggests that perhaps preservationists largely overlooked these
buildings, despite the recent critical attention to other forms of post-war architecture. My
thesis will illuminate the importance of critical buildings, architects, and ideas of the
period to provide context and significance for the important typology. The paper will
highlight the necessary qualities a school should have for both historical and aesthetic
significance in order to reflect this period of school design – a newly developed style
springing from progress in pedagogy and the creation of learning environments.

Social and Historical Context

While every period of school innovation has had the goal of making education
better, the post-war period reflected learning environments that responded to numerous
developments in American society. Advances in educational theory made by John Dewey
and William James were stymied by the Great Depression in the 1930s and World War II
in the 1940s, but could fully express themselves in the post-war period after 1945. These
schools combined this expression of Dewey’s child-centered educational philosophy with
the Modernist style, which transformed in America from a niche style done by European
masters to something more universal. Perkins & Will, founded in 1935, just before the
boom in school construction became well versed in designing innovative academic
buildings.7 Their numerous school designs laid the groundwork for many schools in the
following years.

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Post-war elementary schools, more commonly built in suburban and rural areas between the mid-1940s and mid-1960s, reflected both ongoing educational debates and the unique circumstances of the post-war era. Nineteenth-century American schoolhouses already constituted a distinct architectural type closely tied to educational theory. Schools were designed to accommodate the rigid “lecture and listen” teaching style widely used in the nineteenth century. Post-war questions about the school and its mission, however, made space, materials, and pedagogy the concern of government officials, school board members, architects, designers, and parents as the focus moved to a progressive pedagogy.  

The seeds for this change had been present before the war, but there had been less money for building and no urgent need for new schools like there was after the war. The pre-war modernist preoccupations with building research and technology, along with a social romanticism in the form of education progressivism, were resurgent in American school building campaigns after World War II. Together they transformed the spatial, material, and aesthetic qualities of the post-war elementary school.

Architects like Perkins & Will and educators like Archibald Shaw, hoping to make school seem friendly to a new generation of young children, designed colorful, open spaces to activate learning. The open physical spaces mirrored the open curriculum used in progressive education. These schools reflect interpretations and debates of larger social questions in built form. They reveal how designers wrestled with creating optimal plans and explored the possibilities of materials, new technologies for lighting and

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10 Shaw became Superintendent of the Scarsdale Board of Education in 1946 and acted as such during the firm’s work at Heathcote in 1953. He resigned from the position in 1959.
cooling, and furniture. Perhaps most importantly though, they show how a wide
constituency of designers, planners, and local citizens believed that architecture could
affect and improve the lives of the students who used the school buildings. The growth of
the post-war school building opened up a vital debate about the meaning of environment
to the lives of young children, and to the nation. As a reflection of post-war American
society, the Progressive education methods, and Modernist design, these schools stand as
beacons that mirror the multi-faceted nature of their construction and the time period they
were built in.

Modernist Progressive schools’ designers like Perkins & Will, John Lyon Reid,
Caudill Rowlett Scott, Richard Neutra, and many more worked to transform teaching and
learning practices through innovative school building. It was, however, a communal
effort. The design of successful post-war Progressive Modernist schools often involved
input from educators or members of the various school boards, to help to refer to the
educational methodologies espoused during the post-war period and transfer those ideas
into the physical form. Architects like Perkins & Will worked together with educators
like Archibald Shaw to design schools that could house the new generation of elementary
school students.

These post-war schools are standouts in a larger narrative of measured school
architecture that shows that design supports and gives form to ideals of child-centered
education. School design becomes part of the educational method, used to construct and
shape experiences and relationships. The environments and ambience, flow and

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12 Frith, Kellee, & Whitehouse, Denise, “Designing Learning Spaces that Work: A Case
movement, notions of time and place, and group identities are all physical elements that are part of the everyday education of students. Crucial design features of post-war schools include spatial organization, furniture design and selection, choice of furnishings and fittings, incorporation of technology, access to tools and resources, and the use of color, texture, materials and light – both natural and artificial. Design becomes mindful of the nature and value of childhood, children’s development and place within society, the nexus of nature, technology and progress, modernity, function and comfort, all which are integral parts of a child’s education. The important factor here is a collaborative design process between designers and educators involving a shared vision of child development and creative inquiry that drives the development of appropriate learning spaces.¹³

The distinguishing feature of progressive school design is the holistic development of democratic child-centered environments through detailed consideration of design. Modernist architects, particularly Perkins & Will, had strong ideas about education, and many of the exemplary schools produced during the period, like the firm’s Heathcote Elementary, factored in organic functionalism with every aspect, down to the door handles, light fittings and toilets, all designed with consideration to child development. But before the physical could be created, the design had to grow from the inside out – the design process began by identifying the community’s needs before working outwards to shape the architectural form. These architects prioritized the importance of the environment, natural and designed, to children, education and creativity.¹⁴ A feature of this movement is the linking of design innovation and

progressive pedagogies, and education reform. Common to all progressive educational notions is the central idea of ‘work’ – expressed in their design as “learning through doing,” where “doing” includes construction, experience, exploration and play. This signals a relationship between child and teacher that is fundamentally different to that of master and pupil. Instead, guided by the teacher, the learning journey is one that child and teacher share.

The careful consideration and interpretation of the societal and educational changes occurring after World War II reveals architects playing a key role in designing not just a school, but also a new mode of education. Advancements in understanding, technology, and style led to a new, innovative building stock that placed the creation of a functional learning environment at the heart of the building rather than detail and craftsmanship. Both aesthetic and form revolved around the creation of a space fit for learning, one that could best fulfill the needs of a changing educational model and society.

The waning of the post-war era in 1960 brought with it significant social and economic changes related to education and architecture, which also significantly impacted the design of schools. The 1960s saw the beginning of a slowdown in school construction as the children of the post-war era moved to higher rungs of the educational system. Fewer schools were being constructed, and, in response, many of the large

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architectural offices that had specialized in school design followed the demographic trend toward higher education, diversified in other ways, or disappeared altogether.\footnote{Hille, R. Thomas, Modern Schools: A Century of Design for Education (Hoboken: Wiley, 2011), Part I, Chapter 5.}

**Preservation Challenges Today**

While these schools are coming of age for formal preservation protection, they have been an understudied resource and their designs are often unappreciated. Paul Rudolph’s Chorley Elementary in Middletown, New York (fig. 5) and Charles Colbert’s Phillis Wheatley in New Orleans (fig. 6) as well as Clarksville Elementary in Clarksville, New York (fig. 7), included on the National Register, were all examples of post-war Progressive Modernist schools that have been thought to be outdated and demolished. My thesis is an attempt to raise awareness to garner some level of protection for these schools.

There is a dearth of these buildings accounted for on a national scale. The National Register of Historic Places, which defines itself as “the official list of the Nation's historic places worthy of preservation,” includes very few of this meaningful building type.\footnote{National Register of Historic Places, “National Register of Historic Places Program: About Us,” \url{http://www.nps.gov/nr/about.htm}.}

The National Register intends to cover the buildings in America worth gaining recognition as worthy of preservation. Within the National Register, roughly 2,100 schools are on the list. A great number of these schools are from before the 20th century, mostly aesthetically remarkable academies and college buildings or one-room schoolhouses. Even in the 20th century, the vast majority of the schools are from the first
three decades, mainly art deco or revival-style, not falling within the parameters of this thesis.\textsuperscript{19}

Given the fifty-year minimum required to be included on the Register, Modernist architecture is still a recent style to appear on the list. At 14 schools from the period this thesis covers, the number is low, considering that the Modernist school movement was experienced by so many of the baby-boomer generation and beyond. And even among the 14 schools that I found in the list, only two were found to be exceptional due to their modern design within the time period: Clarksville Elementary built in 1949, and Walt Disney Elementary in Levittown, Pennsylvania (fig. 8) built in 1955. The other 12 schools were noted because of their cultural ties to desegregation or the African-American community in the Southern United States, not because of their architectural style.

The first of the two Modernist schools on the Register, Clarksville, closed in 2011. That leaves just one school from the post-war period remaining that is noted for its exceptional design on the nationwide list of buildings worth of preservation. This is a surprisingly low number for this building type, considering the value of the time period and building style in American history. There needs to be more coverage of Modernist buildings in general, but the school buildings of the era especially incorporated developments from education, design, and social history, and resulted in the construction of a large number of schools to accommodate the best-known population boom in America’s history.

\textsuperscript{19} National Register of Historic Places, “National Register of Historic Places Program: List of Registered Places.”
The number of schools on the National Register is just one way to observe the status of post-war Progressive Modernist schools within the preservation field. It is by no means the complete look at how many of these schools are recorded as being significant. Still, as the “official list” on a nationwide scale, the National Register covers a great amount of the building stock in the nation. Considering how widespread the post-war school construction boom was, it is a valuable type across the whole country and should merit more respect.

There is another reason why looking at these types of schools is important: at the same time as the age requirement for inclusion on a major preservation resource has passed, the importance of progressive education is coming back into American society. Knowing what to look for and what to value is an important step in appreciating these post-war Progressive Modernist schools.

Crow Island (fig. 9), built in 1940 in Winnetka, IL. designed by Perkins & Will, is well known as an icon in the Modernist Progressive school movement. The school was an immediate sensation in education and architecture circles, establishing a model for primary education architecture in the United States that would endure for decades.20 The school’s date of construction puts it outside of the post-war period as I have defined it, but remains as one of the few Modernist schools on the National Register, added in 1989. Considering how much the school stood as a model or even a template for other schools during the construction boom, it seems obvious Crow Island should be recognized by school boards and architects for its Modernist design and progressive education implementation in the classroom. Crow Island is often regarded as the quintessential

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example of the Progressive Modernist school style, but there is value in many of the other school buildings built in the post-war period as well. Perkins & Will’s Heathcote Elementary, stands as an equally important example of how architects, educators, and a school board can work together to design a school that reflects the ideals of the post-war Progressive Modernist school type.

Another challenge to preserving progressive classrooms is that they are outdated, an issue now for both architects and educators. Today’s teachers want larger classrooms, better technology, and interdisciplinary meeting space. Most 1940s to 1950s-era school’s faults are now all too apparent, including roof overhangs that have shed chunks of concrete, inadequate wiring, outdated lab facilities, lack of ADA and fire-code compliance, poor air and lighting quality, and the presence of asbestos.21 Schools from 1945 to 1960 have had major renovations due to growth, the need to adhere to codes, and issues of modernization, even if the schools were well built and maintained. In the process, their valuable characteristics may have been altered or even eliminated.

The need for change in schools has been a battle preservation has fought for a while, as the need for preservation and education are occasionally put at odds. These schools are important because of the academic process that happens inside; pedagogy, teaching methods, technological advances, and health and safety requirements evolve over time. As a result, some of the historic schools that exemplify fine design may not be sufficient for the building’s primary purpose.

The advancement of the education system leads to a monumental struggle between education and historic preservation, both social goods that intend to benefit the

community at large. But the timing is important as progressive educational methods are returning to the classrooms. Examining these old classrooms and schools may well be useful for future planning. So why have these schools been overlooked? What should we look for when picking out the valuable Progressive Modernist schools from the post-war period?

**Literature Review**

There has been a good deal of literature focused on exploring the design and history around post-war Progressive Modernist schools. One of the major contemporary writers on these schools is Amy Ogata of The Bard Graduate Center for Studies in the Decorative Arts, Design, and Culture. Her 2008 article, “Building for Learning in Postwar American Elementary Schools” explores the how the modern American elementary school, as a cultural and architectural form, emerged from a complex interaction of technical concerns, educational theory, and larger historical forces of post-war expansion. The book details the age in which these schools emerged, with a clear focus on the social, educational and historical themes influencing the Progressive Modernist schools. Ogata’s article provides an excellent overview of the significant changes to schools in the post-war period. She highlights the cultural shifts at the time that led to changes of schools and cites a number of examples of schools that incorporated and reflected those changes. However, as an overview piece, the detail of each school or each significant factor isn’t as well developed as the overall conveyance of the importance of the period. My thesis will involve more discussion of specific design elements and the precise changes made to build for the new age of schools.

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Lindsay Baker wrote in 2012 “A History of School Design and its Indoor Environmental Standards, 1900 to Today.” As the title indicates, the article focuses on the technical improvements in classroom design through the 20th century. Baker’s piece outlines the development of lighting, HVAC, and other systems and how they function within the new styles in the 1900s. Baker’s article goes into good detail about the technology and the developments of each phase she picks out. She also cites a few characters who were important to the innovations of each period. Baker also makes an attempt to write a small amount about the overall design changes, but is not as thorough as she is in discussing lighting and other systems. My thesis includes a section of the technological aspects of design, but is more thorough in its coverage of the formal design.

David Hutchinson’s A Natural History of Place in Education, written in 2004, does address topics like classrooms and schoolyards (physical “place”), but the book is actually a wide-ranging examination of “place” in education from the literal physical space of the classroom to the conceptual place of education in society and everything in between. Hutchinson’s book does relate the school to its architecture in Chapter 3, but mostly his text traces the development of the meaning of school and its function in society. This discussion of place is important when looking at schools in the 1940s and 1950s as the nature of schools became more about space than exterior building. Hutchinson doesn’t reflect too much on the formal reflection of these ideas, which my thesis does.

R. Thomas Hille’s Modern Schools: A Century of Design surveys Modern schools from 1900 until the present. The 2011 book highlights important projects from the 20th century while Hille gives a short physical description of the school. All of these
contemporary analyses of the post-war Progressive Modernist schools have been useful, but have not covered anything in preservation. Additionally, the writing Hille does on each period and school is quite basic. My case study on Heathcote Elementary is deeper and the context set up in the previous chapters frames the period and developments within more fully.

All of the above authors come from different disciplines, Ogata from the Arts and Art History profession, Hutchinson from History, and Hille and Baker from Architecture and Design. Additionally, not all of these texts precisely cover the exact topic as I discuss in this paper, although some include it in a long historical narrative. The most significant difference, though, is the lack of a preservation angle about the topic. Little has been published in article or book form about the preservation of post-war Progressive Modernist schools, which I strive to add with this thesis.

Historically, as the phenomenon was occurring, designers were writing and discussing post-war school design. Architectural Forum was at the fore as a periodical discussing the post-war building movements. The magazine broadly discussed the state of architecture in the 1940s and 1950s and how the range of societal changes like population boom and the pinnacle of modernism affected the architectural field. H.R. Luce’s 1949 article entitled “Schools” for Architectural Forum is just one example of the number of articles discussing the hot-button topic after World War II. Reviewing these articles is helpful to understand the historical perspective, but these writings do not have the encompassing “macro” sense of more contemporary pieces that benefit from reviewing the entire movement. Additionally, the writers at the time had no marked concern for preservation of these buildings. (This may be due to the state of the preservation field in
in the 1950s and the impossible idea of preservation on a building or style that had not been completed yet.)

Planning Boards and Councils were also discussing and writing about how to handle school construction with the new Progressive Modernist language. The American Association of School Administration published a report in 1960 entitled “Planning America’s School Buildings.” This report from the AASA’s School Building Commission discussed how to proceed incorporating new educational methods into the nation’s school buildings. The National Council on Schoolhouse Construction produced two “Guides for School Plants”, one in 1946 and one in 1964. Both of these reports came from the proceedings of meetings of the National Council, again, discussing the way to design and build schools that factor in a progressive pedagogy.

Architects in the 1940s and 1950s published their thoughts on appropriate school design for the new typology. In 1947 John Lyon Reid wrote You Want to Build a School? along with Charles Wesley Bursch, the Chief of Schoolhouse Planning in California, breaking down the important “who”, “what”, “when”, and “how” of school buildings. The text discusses the detailed factors to put together a school, but focuses more on the formal design, not including much about the education methods. William Caudill, another architect working in the period, published a few articles about the development of the school plant in the post-war period. Most notably was his book Towards Better School Design in 1954. The article, published early on in the period of these schools, highlighted the multi-faceted nature of school construction and the design’s impact on a range of issues, like the pupil, education, the environment, and the economy. Each chapter relates the school plant to one of the above mentioned elements. Ray Hamon published an article
through the *Review of Educational Research* in 1948 entitled “Needed Research in the School-Plant Field.” The title indicates the subject, as Hamon wrote about the development of a new style of school to reflect changes in education and society. Lawrence Perkins wrote about both his own projects and the cooperation of education and architect. In his 1957 book, *Work Place for Learning*, Perkins lays out his ideas on how he has designed schools in the past that can account for the needs of the students and teachers. The book goes through the component parts of a school, step by step, and explains the important pieces if a school is to function in Perkins’ eyes. The book is useful as Perkins was an experienced architect, having designed a vast number of schools in the post-war period, many of which, like Heathcote and Crow Island, were lauded for their successful implementation of progressive educational philosophy.

Articles came from a variety of sources at the time, as educators, agencies, architects all contributed to the field. Many of the architectural and agency writings were speculative, pushing their ideas about the Progressive Modernist movement, so are narrowly focused. Aside from that, the articles provide a voice from the post-war period that contextualizes the work and thinking done today.
America was coming out of a rough period in the 1930s and early 1940s with the Great Depression and World War II. After these events, America was ready for a fresh start. American society began a period of intense change with the end of World War II. The period saw change in many facets of society, with somewhat of a post-Depression restructuring happening after World War II. There were noticeable improvements across the nation in quality of life, jobs and education. After the war, the United States Government enacted bills and projects to better society in the aftermath of much hardship. Passed in 1949, Title I of the Federal Housing Act, entitled “Slum Clearance and Community Development and Redevelopment” was instituted to induce private investors to clear slum areas and increase residential housing. The Housing Act provided for a loan fund of one billion dollars, available over a five-year period, and for a $500 million capital grant program. Grants were made available to local public agencies to finance the initial cost of planning a project; acquiring clearing or preparing the land for sale; and selling or leasing the land.

At the beginning of the 20th century, fewer than 1,000 colleges, with a total of 160,000 students enrolled, existed in the United States. Rejecting liberal calls for large-scale aid to education, Congress in 1944 passed a more conservative program of aid limited to veterans who had served in wartime. Nevertheless, the GI Bill made college education possible for millions by paying tuition and living expenses. The government provided between $800 and $1,400 each year to these veterans as a subsidy to attend college, which covered 50-80% of total costs. This included foregone earnings in addition to tuition, which allowed them to have enough funds for life outside of school. The GI
Bill helped create a widespread belief in the necessity of college education, opening up higher education to ambitious young men who would otherwise have been forced to immediately enter the job market.  

After the initial hurdles of the 1945-48 period were overcome, Americans had more cash from wartime work, although there was a scarcity of consumer goods to buy for several years. Increasing numbers enjoyed high wages, larger houses, better schools, more cars and home comforts like vacuum cleaners and washing machines – labor saving devices to make housework easier. Educational outlays were greater than in other countries, as a higher proportion of young people were graduating from high schools and universities in the United States than elsewhere in the world. Hundreds of new colleges and universities opened every year and tuition was kept low.

Along with all this new affluence, America experienced a population boom which quickly impacted its public schools. During the 1949-50 school year, enrollment in U.S. elementary and secondary schools was 25.1 million. By 1959-60, it had increased by almost 11 million, before peaking in 1971 at 46 million. At the same time, the post-war demand for classrooms collided with an outdated and limited stock of school buildings, which had not been renovated or well maintained during the Depression and wartime. During the Great Depression and World War II, very few schools were built, due to the small numbers of children being born in the period and unavailability of money. The first wave of baby boomers, the children of the post-war generation, was entering elementary

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23 Forest, James J.F., & Kinser, Kevin, Higher Education in the United States: An Encyclopedia (Santa Barbara: ABC-Clio, 2002).
24 Forest, Higher Education in the United States.
school by 1952, which triggered a boom in school construction. Twenty billion dollars was spent on new educational facilities from the end of World War II through 1964.\textsuperscript{26}

Not only were these schools different, but there were a large number of them. Thousands of schools were built to meet post-war needs. A report from the National Center for Education Statistics from 1999 highlighted that 45 percent of all public schools standing in the United States were built between 1950 and 1969.\textsuperscript{27}

In 1955, editors at the \textit{Architectural Forum} worried, “every 15 minutes enough babies are born to fill another classroom and we are already 250,000 classrooms behind.” The rising population of young American children made school building, together with housing, one of the most widely discussed architectural challenges after World War II. To deal with the shortage of school seats, children often attended school in split sessions, overcrowded classrooms, rundown buildings, or hastily built temporary quarters. Furthermore, the population migration to areas in the West and to developing suburban towns created a need where there was little existing provision for school-aged children and nothing that could match the ever-growing numbers. Even in small districts a new classroom had to be ready for occupancy every third day of the year just to keep up with fresh enrollments.\textsuperscript{28} With a sizeable percentage of the population moving to the suburbs, well-designed schools were no longer specific to urban areas. The suburban location was a significant part of the schools design, as the forms interacted with the landscape. The

presence of a primarily wealthy white population in the suburbs in the mid-twentieth
century factored into the ability to construct public schools that could implement new
design techniques from noted architects that incorporated innovative educational
methodologies.

Meanwhile, the economic prosperity of the post-war period triggered a great emphasis on education as an important part of a child’s life, from kindergarten all the way to university. This baby boomer generation was education quite differently from previous generations, with many new developments in a myriad of fields. These changes will be discussed later on in this chapter. These myriad factors set the scene for schools like Heathcote Elementary to get built. The Scarsdale community had the money to fund a school for the new generation.

Unfortunately, many school boards missed the opportunity to create better school facilities as they struggled to cope with ever-increasing enrollments. The 1950s saw the use of standardized plans and facades that have characterized educational architecture of that period. For some, the growth in population which spurred on the building boom was dealt with by building schools that could effectively accommodate the number of students but did not respond to the progressive teaching methods in an innovative and interesting way. It was those schools that did which are considered fine examples from the period.

In October of 1949, Architectural Forum magazine published a special issue dedicated to school design that included articles about acoustics, lighting, heating and

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ventilating, and many more aspects of school design. In the introduction to the
Architectural Forum issue, the editor notes:

Children, not tanks, planes or bombs, were the greatest output of the U.S. during World War II. These war babies, seven million of them, began hitting the first grade last year, have taxed every school facility, are giving school men, parents and taxpayers alike a major problem concerned with the future of America. Ten billion dollars, so the experts believe, must be spent for new school construction during the next 11 years... Further complicating the problem is the fact that school building standards have risen steeply during the past decade, outmoding the 1940 classroom. This need bespeaks the spending of four times as much money as went into school buildings during the last 11 years.  

Richard Neutra, the influential Austrian Modernist architect, noted in his writings about Progressive School design that:

Wars always have been periods of intensely quickened obsolescence, not only of material, but also of mental investments. With a speed greater than normal, the past is being removed into a farther background and a new generation of citizens must urgently be conditioned to fit the new constellation.  

Progressive Pedagogy

The Progressive movement arose, at least in part, as a response to the demands being placed upon the rapidly expanding public schools between 1870 and 1910. As waves of immigrants entered the United States to find work in an expanding industrial economy, most schools used factory-like methods to assimilate large numbers of linguistically and culturally diverse children. The rigid structure of those schools at that time required children to learn content that was irrelevant to their lived experiences, and

to do so in overcrowded, anonymous classrooms. Teachers often looked at students as passive vessels in which to pour knowledge.32

Historically, traditional educators believed that the role of schools was to transmit the values and past knowledge of our society. As agents of the community, teachers were expected to infuse pre-selected skills into the students, often through a subject-centered, discipline-oriented, standards-based education. In practice, then, as today, the traditional methodologies often resulted in a strict and controlling classroom where children were taught to learn by rote methods and were expected to memorize information to demonstrate mastery of subject matter.33

Growing numbers of progressive thinkers began to believe that traditional approaches to education were not developing thoughtful, capable, well-rounded citizens. These educators urged that learning should be based on experiential education, a curriculum that responded to both the needs of students and the times, child-centered education, freedom and individualism, and the relativism of academic standards in the name of equity.34

The Progressive philosophy of school reform that prevailed among waves of educational innovators throughout the 20th century, has been associated historically with John Dewey and has prided itself on implementing his ‘child-centered’ principles. Dewey says:

Education should take into account that the student is a social being. The process begins at birth with the child unconsciously gaining knowledge and gradually developing their knowledge to share and partake in society. A child’s own instincts will help develop the material that is presented to them. These instincts also form the basis of their knowledge with everything building upon it. Knowledge is a social condition and it is important to help students construct their own learning.\(^{35}\)

As Dewey framed it, progressive educators placed the fundamental purpose of education on preparing students to function productively as adults in a democratic society that could afford equal opportunity for all, regardless of social class, race, or gender.\(^{36}\) Democratic social arrangements promote a better quality of human experience, one which is more widely accessible and enjoyable, than do non-democratic and anti-democratic forms of social life.\(^{37}\) The overall goal is for education to make all students problem solvers employing intelligent thinking.

Educational progressivism impacted the way American students learned. In the early decades of the twentieth century, John Dewey, in publications like “The Child and the Curriculum” (1902) and “Experience and Education” (1938) challenged traditional learning methods focused on the retention of knowledge through memorization and recitation. The recovery from World War II saw a new society emerging, and children had to be molded to fit it, molded through the educational system. According to Dewey, “the curriculum in the schools should reflect that of society. The center of the school curriculum should reflect the development of humans in society.”\(^{38}\) Though the


movement was multifaceted, many progressive education advocates promoted, among other things, experiential learning through individual and collaborative activities.39

One of the key philosophies for Dewey was constructivism. Constructivist education argues that humans generate knowledge and meaning from interaction between their experiences and their ideas, and emphasize the importance of the environment – spaces, teachers and technologies -- to experiential learning, often termed ‘learning by doing’.40 By focusing on the relationship between thinking and doing, Dewey believed his educational philosophy could equip each child with the problem-solving skills required to overcome obstacles between a given and desired set of circumstances.41

Another overarching objective of Dewey’s educational theory was the establishment of an integrated and coordinated curriculum. Diverse subjects were united around a common theme, the “web of life” concept, in which things were examined in terms of their interrelations.42 Here, Dewey drew inspirations from the ideas of William James, who was considered the first American psychologist to address issues on education.

Progressive pedagogy does a number of things to improve the process of learning. It reflects self-consciously about teaching methods and the teacher-student relationship. It encourages disagreement and celebrates difference – and treats the classroom as a place

where differences can be articulated and analyzed. It treats students as participants and not as spectators. It emphasizes praxis: active inquiry and investigation. It seeks to develop a critical awareness of problems, power, and inequalities.

All good teachers strive to create a nurturing and inclusive classroom environment. Looking to Dewey again, we see a vision of progressive methodologies. He states:

The curriculum in the schools should reflect that of society. The center of the school curriculum should reflect the development of humans in society. The study of the core subjects (language, science, history) should be coupled with the study of cooking, sewing and manual training. Furthermore, he feels that “progress is not in the succession of studies but in the development of new attitudes towards, and new interests in, experience.”

The Progressive movement was founded on the premise that children were growing and changing beings that required active learning experiences. However, along with this view of the child, the movement paid special attention to the organization of subject matter in the curriculum. Dewey himself took the position that curriculum must always be a question of the child’s experiences and the ability of the child to connect experiences with subject matter. Archibald Shaw progressive had outlook on education when he led Scarsdale School Board. Scarsdale was known (and still is) for its dedication to the education of its community, and Shaw was instrumental in incorporating progressive ideas into the design of Heathcote.

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43 Columbia University Graduate School of Arts & Science Teaching Center “Progressive Pedagogies” (New York: Columbia University).
Teachers are challenged to create “educative experiences,” inspiring the active engagement of the learner with content. An orderly yet dynamic balance must be struck between the social needs of the learner and the subject matter to be learned – a balance between the teacher’s control over traditional subject matter and the child’s expression of personal understanding.46

However, over time the phrase “child-centered” came to refer to a range of educational philosophies and practices, which primarily emphasized the interests and needs of the child but varied in several aspects: teacher-initiated curriculums, logically organized subject matter, and learning from experience.47 Architects acknowledged this shift in education as well, as Lawrence Perkins, architect of Heathcote Elementary along with many school buildings in the 1940s and 1950s, wrote, “[There is] more than one avenue…this is the key to today’s theories of education. It recognizes that children are individuals who respond in different ways to the same stimulus.”48 The “child-centered” philosophy, however, remains a core component of the progressive educational model from the time of Dewey and his contemporaries. The core piece of Dewey’s approach to education was recognized and discussed by architects (which is covered more in Chapter 2). John Lyon Reid, an architect who designed schools John Muir Elementary and Hillsdale School in California, wrote, “The pupil is the keystone of the whole planning and building program for a school plant.”49

47 Weiss, “Progressive = Permissive?” 4-5.
48 Perkins, Work Place for Learning, 30.
Formal Reflection of Progressive Pedagogy

The United States was just emerging from the Great Depression, and very few new schools had been built for a decade. The Progressive Education Movement had flowered in the 1920s and developed further during the 1930s, but it had few new schools to physically embody its philosophies. Architects and educations were ready for something new to write about. Architects fully embraced the shift towards a new style and a new approach to designing school buildings.

By the late 1930s, the modern school was poised and ready to take form. As project-based, hands-on pedagogies gained favor throughout the 1920s and 1930s, architects like Perkins & Will responded by transforming the traditional classroom, especially elementary classrooms. The standard rectangular plan with rows of seats facing a teacher’s desk and chalkboard and a bank of windows along one wall was replaced. L-shaped classrooms (fig. 10), first notably used at Crow Island in 1940, afforded natural light from two directions while multiple zones and flexible, movable furnishings could support a wide array of learning-by-doing lessons. This new classroom would become an influential model following the Second World War when more than 50,000 American public schools were constructed between 1950 and 1970. Through the post-war period, architects developed many ways of designing classrooms to fit with progressive pedagogy.

50 National Register of Historic Places, Crow Island School, Winnetka, Cook, Illinois, National Register #89001730.
Expanding on the flexible classroom model, post-war elementary classrooms drew upon recent research into lighting, color, and airflow and their impact on learning to create self-contained, multi-purpose interiors. New materials and technologies – many of which were developed as part of the war effort – helped create this new classroom paradigm.

Lawrence Perkins was experienced in designing schools that reflected progressive pedagogy. He wrote about the shift from the traditional classroom towards the preferable new open planned classroom:

Traditional classroom design, with its rigidly arranged seating, high-silled windows on the left, and authoritarian location of the teacher, was based on several assumptions: That all students were right-handed. That daylight beamed on just a few rows was enough for the whole room. That neither teacher nor students should ever move into groups, or change location. That teacher-to-student lectures, recitations and at-desk study were the sole activities in the classroom. That the world around the classroom had nothing to teach the student. Of course, some, if not all of these assumptions are still debated. Today’s classroom design is based on other principles, most basic of which is flexibility – flexibility to keep pace with changing concepts of the education’s role in society, and of the teacher’s role in the learning process. Also, the classroom must reflect the teaching methods of the school; it must be an efficient tool and a suitable atmosphere for education regardless of the educational approaches used. So we open the classroom on both sides to daylight. We give both right-handed and left-handed students adequate lighting in all parts of the room. We use movable seating, so students can work individually, in groups, or as a class, depending on the teaching plan of the day or of the school. We provide space and facilities for individual and group project work when the program calls for it. And, most important, we open the classroom to the world outside, whether the environment around the school is a wooded glen or a busy city street. We make the world part of every student's curriculum.”

Post-war school architects efficiently incorporated the needs of teaching tactics.

Post-war era schools are highly regarded in their period because of their efficient design and positive reflection on both progressive ideology and the modern design movement. These progressive schools draw on constructivist education ideologies which place the child at the center of learning and emphasize the importance of the environment – spaces, teachers and technologies, to experiential learning, often termed ‘learning by doing,’ and design had to accommodate this methodology.\(^5^4\)

William Caudill, considered a leading researcher in the school design field, wrote:

> Broadly speaking, these basic needs of the school child may be dichotomized into physical needs and emotional needs. The physical needs are those which are taken care of by safe structures, proper sanitation, sound-conditioning, good lighting, adequate heating, proper ventilation, and of course, sufficient sheltered space for him to carry on his work and play. Though there is some overlapping of function, the emotional needs are those administered to by pleasant and non-confining surroundings, inspiring environment, friendly, restful, and secure atmosphere, and colorful spaces. We want schools that serve all of the needs of our youngsters...They are happier and learn better in a school not so brutally different from the environment they have grown in. They need intimate, cozy schools with welcoming entrances and cheerful, friendly classrooms.\(^5^5\)

John Dewey also recognized the importance of the physical plant on portraying pedagogical ideas, “A curriculum plan had no integrity unless the material setting required to realize its objectives was created. This included careful thinking on the positive of the rooms within the school building, their size, their relation to other rooms,

\(^{5^4}\) Duffy “Constructivism,” 8.

the equipment and furniture, the lighting and ventilation.” Without an appropriate reflection of developed teaching methods in a physical space, the methods’ efficacy is useless.

Progressive education philosophy was the driving force that promoted the creation of these conscientious learning environments. Thanks to the availability of money after World War II, the post-war phase of school building met the need and opportunity for a great number of new schools to accommodate the new generation of students. The American educational system could integrate the progressive ideas of John Dewey in a widespread and more efficient manner with educators, architects, and parents all supporting the transition away from archaic pedagogical practices. The shift towards a progressive model needed a different type of construction as well, and in the 1940s and 1950s the modern style was soon associated with the concepts espoused in the earlier 20th century. The architectural aesthetic could incorporate the educational and technological needs first and foremost while still creating a pleasing environment the children would actually enjoy learning in.

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Chapter 2 – Design History

After 1945, most school districts followed new progressive trends in school design. New school buildings of that era were no longer classical or colonial, Georgian or Gothic in architectural style but were modern in that they were one-story, flat-roofed structures enclosed in either glass and metal window wall systems or brick and concrete wall systems (fig. 11). The concept and design of educational facilities became a part of the post-war cultural conscience, along with a collective sense of anticipation at the post-war boom in population and economy.

In 1945, three esteemed architectural journals, Architectural Forum, Architectural Record, and Progressive Architecture, printed special school issues as the end of the war approached, and continued producing special issues in the following years. Modernist architects were mostly confident in the logic and efficiency of school construction during this era; its considerably different appearance from past styles may have contributed to this confidence. Lawrence Perkins, who designed Heathcote Elementary, highlighted the importance of considerate design, “To design for learning is to seek fitness, order and beauty, and to place them in the service of those who learn, as well as of those who teach.”

In practical terms, the modern school as it developed in the United States at this time had a number of practical and functional advantages over the traditional two- or three-story brick school-house. To begin with, its lightweight construction, which utilized new building technologies, was less expensive and easier to build. Although its life expectancy was shorter, it was argued that schools needed to be rebuilt periodically

57 National Council on Schoolhouse Construction, 96.
58 Perkins, Work Place for Learning, 62.
anyway. The standard façade was comprised of continuous full-height ribbon windows that provided natural light from the outside along the outer walls (fig. 12), with doorway access from individual classrooms directly to the outside. The single-story model had another practical advantage: Multi-story buildings are more difficult to evacuate than single-story buildings.\textsuperscript{59}

School types from early 20\textsuperscript{th} century Europe were also influential on the post-war construction boom in America. Two major styles were the Open Air Schools (fig. 13) and the Pavilion Schools (fig. 14). The Open-Air School, developed in Germany. Created to prevent the development of tuberculosis in children, it combined medical surveillance with pedagogy adapted to students with pre-tuberculosis. The first of these schools was built in 1904 near Berlin, developed by a German doctor, Dr. Bernhard Bendix, and pedagogue, Hermann Neufert, to accommodate sick children who still needed to learn.\textsuperscript{60}

The Pavilion style, designed primarily by Dr. George Reid, a country medical officer from Staffordshire, England, was developed to address the requirement for better ventilation and lighting in schools in the first decade of the 20\textsuperscript{th} century. The pavilion principle included verandas and a detached central hall with an abundance of windows for better lighting and ventilation.\textsuperscript{61} The style, which embraced open-air conditions, was considered the ideal type for the future. The single-story pavilion school with detached hall, as compared with the more typical central hall school, was a far less costly type of building and would also result in lower administrative charges because of its adoption of

\textsuperscript{59} National Council on Schoolhouse Construction, 96.
new mechanics like cross-ventilation. These school types, designed with health in mind, created new ways to design schools with views to the outside and flexible spaces, two conceits used in the post-war period in America.

In the 1930s, growing attention was focused on the need to standardize school facility management and construction. This decade saw the creation of the National Council on Schoolhouse Construction, which would become today’s Council of Educational Facility Planners International, a trade group for those who design and maintain school buildings. The 1930s also produced interest in the psychological effects of school buildings, as open-plan school designs heralded the importance of child-centered design. Essentially, the movement spurred the need for research, as was mentioned by Holy, in the first of a set of regularly published reports on The Needed Research in the Field of School Buildings, saying, “[p]erhaps most people would agree that there is a relationship between the quality of the school plant and the character of the educational program, but little evidence of this relationship is available.”

The distinguishing feature of progressive school design is the focus on creating flexible, child-centered environments through detailed consideration of the interior design. Modernist architects like Perkins & Will and Richard Neutra, who worked on many of the exemplary schools produced during the period, like Heathcote, Crow Island, and Kester Avenue School, factored in organic functionalism with every aspect

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65 Materials, motifs, and basic ordering principles continue to repeat themselves throughout the building as a whole. The idea of organic architecture refers not only to the
designed with consideration to child development. But before the physical could be created, the design had to grow from the inside out. The prominent school architects of the time, Perkins & Will, John Lyon Reid, and others, had design processes that began with the identification of the community’s needs before working outwards to shape the architectural form. These architects privileged the importance of the environment, natural and designed, to children, education and creativity.66

Modernism’s promise of efficient, economical, and functionalist architecture was particularly attractive in the 1950’s, when the post-war population explosion began to overburden school systems across the country. While aesthetic and pedagogical considerations affected the design of post-war public schools, construction methodology also had a hand in promoting modernism in school architecture. With the advent of the curtain wall an internal skeleton could carry the building’s load and the building’s façade could act as a mere skin. This facilitated the flexibility and expansibility that was sought by both the architect and post-war educators. For example, instead of pre-war school’s lath and plaster, hollow concrete blocks were being used for interior corridor spaces. Use of concrete framing systems and hollow concrete block walls were economically feasible too, as it saved on time and labor.67

After World War II many of the theories promulgated by progressive educators in the 1920s were put into place in public schools. To effectively utilize the newly imposed curriculum, educators demanded flexible classrooms and teaching spaces. In building the post-war schools, architects advocated modernism’s inherent flexibility. The term

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66 Brosterman, Inventing Kindergarten, 33.
67 Wilcke, Mid-Century Modern Schools, 18-19.
flexibility represented the ability to allow for different educational activities within the same space, the building’s capacity to adjust to significant expansions or reductions in student populations and the capability of configuring the same space in different ways to accommodate different uses.\textsuperscript{68}

**New Styles/Forms**

As architects faced the problem of designing new school buildings, they quickly rejected the multistory prewar structures from earlier school building campaigns. The relatively standardized plans of these monumental four- or five-story brick buildings usually had a central entrance, symmetrically planned classrooms on either side of a long corridor, and a large auditorium. Embellished with Greek pediments, Neo-Gothic parapets, or Colonial Revival urns, elementary schoolhouses were designed to embody venerable traditions of learning. In these buildings, the plan of the classroom was predictably rectangular (fig. 15). With blackboards on one or two walls, a band of windows on one long side, desks in rows, and the teacher’s desk located in the front, these classrooms emphasized order, desk work, and the teacher’s authority.\textsuperscript{69}

Several schools designed by architects working in the United States during the late 1930s and early 1940s offered a competing ideal. These schools were small, one-story buildings with expansive windows and access to outdoor space just beyond the classroom, a set-up which was echoed in the post-war schools.\textsuperscript{70} Some well-publicized single-story schools promoted the style which soon became the preferred design in the

\textsuperscript{68} Wilcke, Mid-Century Modern Schools, 18-19.

\textsuperscript{69} W.W. LaChance, *Schoolhouses and their Equipment with Plans and Illustrations of the Newest Schoolhouse Architecture* (Niagra Falls, NY, 1925), 19.

\textsuperscript{70} Building for Learning in Postwar American Elementary Schools, 564.
United States. These avant-garde buildings gave a formal and spatial identity to progressive educational ideas. Deriving in part from John Dewey’s emphasis on cultivating democracy and “learning by doing,” progressivism at the elementary school level was always imprecise. It implied a child-centered classroom, rather than earlier designs which were teacher-centered. Now children could move freely around the room, use materials other than textbooks, sit in the moveable furniture that could be easily rearranged, and explore the physical world through hands-on projects (fig. 16). Historians of education are still divided on the real impact of progressivism on American education, but its effect on the architectural discourse was profound and enduring.\(^71\)

After guidelines were developed by a few already constructed innovative schools, there was a certain standard for Modernist schools. Low-rise schools became common in the post-war era. One benefit of one-story schools was expansibility, often more beneficial for suburban or rural settings. Administrators embraced low-rise, rigid-frame construction and continuous fenestration in the hope of building the much-needed schools quickly while allowing for modifications in the future.\(^72\) The output of the government-supported war industries made materials like steel ubiquitous in post-war school building.\(^73\)

Schools like Crow Island gained the attention of architects and educators for their innovation and value as a new form of educational building, but were also noticed by the broader public for their ingenuity. Since the burden of building, outfitting, and running

\(^{71}\) Cremin, *The Transformation of the School*, 238.
\(^{72}\) National Council on Schoolhouse Construction, *Proceedings of the 22\textsuperscript{nd} Meeting, Part II*.
schools fell to local communities, the concept and design of educational facilities became a highly public project. The primary source of funding for school building came from local budgets, especially from property taxes, which would vary depending on the community, but reached as much as $1 million at Heathcote Elementary in Scarsdale, New York. Between 1951 and 1957, 79 percent of total funds came from local district resources. This was easier for the suburban schools, like Heathcote, due to the generally more affluent make up of the community after flight to the suburbs in the mid-twentieth century.

Giving pedagogy a fundamental role in the design of schools, post-war architects like Perkins & Will made formal choices about classroom design, such as self-contained classrooms, indoor-outdoor teaching areas, glass walls, and colorful homelike spaces, because of their educational implications (fig. 17). Learning by doing was replacing learning by listening as the scope of the curriculum broadened. The school was meant to envelop many and varied activities. Because of the large overhaul due to progressive teaching methods, traditional school structures could not be as satisfactorily used as the new purpose-built modernist schools. Educators needed modern structures, structures that were flexible enough to conform to the needs of education.

Pedagogy and Design

The broadening curriculum, the more active methods of learning, and emphasis upon doing and working with things rather than merely studying books – all focused

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attention upon the importance of the physical environment and the supply of materials necessary for this changed type of work.

Educationally at this time, new experimental teaching methods were implemented that had broad implications for school design. Most notable of these were the team-teaching concept, which resulted in further development of the open-plan school, and distance learning, which brought television into the classroom for the first time. Carpeted floors in school, which became common at this time, were a response to the more informal direction schools and education were headed in. It also marked a move to accommodating children and considering their comfort. Also introduced during the time were more sophisticated technical systems for air conditioning, lighting, and audiovisual support.76

Archibald Shaw, who was Superintendent of the Scarsdale School Board in the years leading up to Heathcote’s construction, wrote about the school building’s role in creating a pleasing learning environment. In a 1949 report he writes, “The specific functions of any school building grow out of the education philosophy of the community and the school staff… We want our school to be flexible so that it may serve both children and the community. In general, we want a cheerful, friendly home-like atmosphere in a school plant which has been efficiently designed to promote learning, to help build healthy useful citizens, today and many tomorrows.”77

Richard Neutra remarked in a lecture on the impact of the classroom’s design on the child:

77 *Planning an Elementary School: A report to the Board of Education, Scarsdale, New York* (Scarsdale, NY, 1949), 5-54.
The job of the architect is to foster the teaching methods and child-centered approach through physical design. The most successful classrooms did so. You can see how the educational process and the philosophy of explaining things and of engaging the active participation of the student has very much to do with the planning of a school.  

Building on the awareness of how the physical environment affects the social environment, how teachers facilitate learning activities, and how students learn, educators continued to question the assembly line approach to education where school buildings were fashioned like the factory model. This model organized the school through its horizontal and vertical circulation routes. Students moved along these routes to instructional spaces to acquire knowledge. Within the assembly line approach to learning, students were likened to containers ready to be filled with new information. Furthermore, they were advanced each year according to the amount of information they had retained. The progressive perspective, in contrast, recognized that non-traditional modern learning environments encourage students to fully participate in activities with others as they acquire knowledge for themselves. With this understanding, the following criteria for the modern classroom are:

- It has to accommodate the formation and functioning of small learning groups while providing a sense of separation, because groups working together will experience distractions and non-productive interaction.
- It has to be flexible enough to allow the continual reorganization of the whole class into various sizes and number of small learning groups.

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• The space must be as free as possible of permanent obstructions. It has to be manageable by a single teacher who has command of the entire space. This means the space must be compact and open.  

• The classroom may be understood as a behavior setting, an entity in and of itself, within the context of the school environment, conventionally designed in the shape of a square or a rectangle.

The notion of school as an enchanted experience of discovery, a core belief of progressive education, had implications for both pedagogy and architecture. The progressive values that expanded in the post-war era, especially at the primary level, endowed the material and spatial qualities of the post-war schoolhouse with social and psychological importance. An architect in a 1957 advertisement mentioned:

The environmental influence of a school building blends into the entire landscape. As a child approaches, he feels a kind of structural welcome. The transparent features of the entrance and rooms seem to beckon. He sees what and who are within, a perception that becomes more interesting with each step. There is an unconscious transition as the child’s personality merges psychologically with the school and its visible activities.

Unlike pre-war public school buildings that embodied discipline, the post-war elementary school was designed to be friendly. In a 1947 handbook for school building, John Lyon Reid and Charles Wesley Bursch, Chief of the Division of Schoolhouse

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Planning for the California Department of Education, described the material and psychological qualities of the new educational environment.\textsuperscript{82}

School plant architecture must start off with its basic conception in terms of the child occupants; it must recognize that its forms, dimensions, color, materials, and texture are capable of creating an environment which either attracts or repels the child; which can influence his attitude and stimulate him. The school plant designed for the child is unpretentious, open, colorful; spread out planning permits him to blow off steam and breathe fresh air; doors can be opened without a major struggle against the strength of the door checks; the walls are built to be surreptitiously kicked; the general environment is not forbidding and monumental but as informal as devoid of affection as the child himself.\textsuperscript{83}

Functional Design in Schools

Throughout the 1930s and 1940s, most schools were still built using the metrics and design principles of earlier decades, although there was increasing interest in newer models for education. As these attitudes were changing, a new generation of school reformers was emerging, through the leadership of such figures as John Dewey in the U.S. These scholars supported the notion of child-centered learning, and developed educational theories that form the basis for much current educational thought to this day. These schools came to be known for emphasis they placed on air, light, and easy circulation through the school buildings. Interestingly, the architect R. Thomas Hille calls these schools “functionalist”, because they emphasized the importance of fresh air, outdoor activity and physical health as fundamentals of mental well-being. However, they look rather less functional than many of the school buildings of that day, in which

\textsuperscript{82} Ogata, “Building for Learning in Postwar American Elementary Schools,” 569.
\textsuperscript{83} Bursch, Charles Wesley & Reid, John Lyon, \textit{You Want to Build a School?} (New York, 1947), 7.
students were kept in neat rows of desks and lectured to by teachers for much of the school day.\textsuperscript{84}

John Lyon Reid and Charles Bursch discussed the nature of school design in their book \textit{You Want to Build a School?} in 1947:

School buildings are designed to answer highly specialized needs; skilled experts are essential in solving school design problems; architects, lighting engineers, mechanical engineers, educators and teachers, are only a few of them and they are sources which can be tapped to the ultimate benefit of the proposed building.\textsuperscript{85}

Perkins & Will also wrote about creating a functional learning environment. “A successful project aligns architecture with the widest definition of the client’s interest. It responds to the functional, societal and dynamic institutional elements of the particular project.”\textsuperscript{86} The firm also believed that the post-war progressive schools they were widely known for in the 1940s and 1950s ought to be “a beautiful, practical architectural embodiment of an educational philosophy.”\textsuperscript{87} Lawrence Perkins, one of the principals at the firm, met with students and teachers ahead of designing Crow Island in 1938 to learn about the needs of the students and teaching philosophy.\textsuperscript{88}

Richard Neutra, also experienced in creating classrooms which reflected the progressive educational model, saw function as the key component to the schools:

A fundamental thought in designing this progressive schoolplant was to divert the available funds to the fulfillment of purely educational needs. It

\textsuperscript{85} Bursch, \textit{You Want to Build a School?}, 2.
\textsuperscript{86} Perkins & Will, \textit{Perkins & Will}, 7.
\textsuperscript{87} Burke, Catherine and Ian Grosvenor, \textit{School} (London: Reaktion Books, 2002), 100.
\textsuperscript{88} Burke, \textit{School}, 100.
is a building created as far as possible for the benefit of the significant activity of the educator and of the children from which the next generation will recruit itself.  

Neutra’s thoughts show that designers acknowledged the changes happening in the educational system, which had to be reflected through design. He was one of the earliest designers who incorporated progressive educational ideas into schools in his 1935 Corona School, and wrote about the development of school architecture extensively. Neutra pinpoints the purpose of progressive schools not only as aesthetic landmarks, but also as environments for learning. “If we now speak of architectural beauty we do no longer mean a beauty entirely apart from what the building contains. The worthy functions of the building must be helped by its layout.”  

The true beauty is found in the function, the aspect of which creates the successful student and citizen.

The purpose-built and functional design was at the core of school architecture in the post-war period. Lawrence Perkins recast the role of the architect as an active member of the educational process. He wrote, “The architect who designs a school building cannot only think in terms of shelter or blueprints, or brick and stone and steel. He must think about the individuals who will use the building. He must think about the job the building should help to do: the full development of all of each student’s potentials.”


91 Perkins, Work Place for Learning, 62.
In the 1949 *Guide for Planning School Plants* by the National Council on Schoolhouse Construction, the report outlines the intent of a well-designed school:

> It [a school] should be designed to provide the facilities required for housing the school and community programs which have been determined as the functions of the schools in each community. The building should not be primarily a monument to the architect of school authorities. It should be a learning laboratory for all members of the community.\(^2\)

**Key Features of Post-War Progressive Modernist Schools**

The methods of building and profile of elementary schools changed significantly in the post-war period. After Crow Island’s construction in 1940, many of the design features and construction techniques used by Perkins & Will and Eero and Eliel Saarinen were used as a template for schools around America. The use of poured-concrete slab for low-rise structures, lightweight steel frames with exposed trusses and joists, radiant heat floors, and expanses of glass became normal in these types of schools. The desire for flexibility, a key term for post-war building, enhanced the popularity of new materials and finger or cluster plans for schools. Flexibility was a desirable quality for the structural aspects of the building – embodied in open corridors, non-load-bearing partitions, and zoned ventilation and heating systems – but it also included the provision of folding walls, moveable cabinets, and lightweight furniture deemed vital to new methods of instruction.\(^3\)

Arguments were made that schools, especially at the elementary level, could answer the child’s psychological needs through planning, materials, and new methods of

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teaching. The dissemination of a low-rise school plant with single- or double-loaded corridors and bilaterally lit, self-contained classrooms with lowered ceilings was the result of ongoing critical praise, as well as the availability of inexpensive building technology and new ideas about lighting and furnishing. The latest development in elementary school architecture embodied the intimate and personal qualities of the little red school-house of our forefathers.

One of the major benefits of the new one-story school style was expansibility. This allowed for schools to be built quickly, due to its low-rise rigid-frame construction and continuous fenestration, and to be adaptively reused, allowing for modifications in the future. The output of the government-supported war industries made materials like steel ubiquitous in post-war school building. Developments within the steel industry, moreover, allowed one-story, steel-framed schools to be cost-effective, rapidly built, and flexible.\textsuperscript{94} At Heathcote, this proved very valuable as an additional wing was built a few years after the initial construction was completed to accommodate more students.

To meet the curricular needs of modern educational methods, William Caudill developed a series of architectural guidelines for the design of new schools in the 1950s. In the classroom, he pressed for space that could be partitioned, semiprivate areas for individual instruction, large open areas for projects, moveable furniture for creating informal reading circles, space for drama and painting, bookshelves and bulletin boards, and rooms designed for film, radio, and phonograph technology. Looking beyond the individual classroom, Caudill also called for conference rooms, health clinics,

\textsuperscript{94} Ogata, “Building for Learning in Postwar American Elementary Schools,” 567-568.
gymnasiums, and gardens. Schools extended far beyond rows of desks and blackboards, now prepared to cover a physical, mutable, and expansive educational range to best educate the children.

Architects carefully reconsidered every aspect of school design in terms of the child. They used a scientific approach to articulate the physical and emotional needs of the pupil and the way light, air, sound, and time affect the child. This child-centered approach was applied to all aspects of the design, and designers, notably Perkins & Will, took children’s height into account in relation to the height of desks, chairs, sight lines, and more. Perkins believed that the school building must be a setting which makes the work or play going on in and around it more effective. It must contribute to, and intensify the appropriate mood for each activity – be it exhilarating or serene – and it must do this intentionally. This was a stark contrast to the one-size-fits-all approach of traditional classroom design. Great depth went into these studies, so much so that even in just one aspect of design – classroom size – architects and designers modeled ten distinct classroom configurations based on activity. A traditional arrangement with desks in rows and teacher at the front, small group work, reading circles, a dramatic performance, and other activities are all modeled, with the required room dimensions for each. All the configurations and aspects of design were combined to show the ideal size and shape of a classroom.

An emphasis on flexibility within each classroom was factored into the design as educators urged architects to embrace and include progressive educational ideas into their

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96 Perkins, Work Place for Learning, 5.
97 Wilcke, Mid-Century Modern Schools, 14-15.
designs. Easily expandable spaces used folding partitions to be divided for multiple uses. All spaces were designed to be friendly and homelike, with informal classrooms incorporating new concepts in color and lighting to foster happy, well-behaved students. In Toward Better School Design, Caudill articulated the idea that classrooms should be domestic spaces that are comfortable for children. “The good school is more than a legally constructed shell around a certain amount of space and equipment. It is also a second home for the school child for a good part of his time—an enclosed little world managed by teachers but designed, built, and operated for the child.” Scale was important to creating an adequately sized space for children to feel comfortable in while at school. Scale relates to the dimensions of the human body, but in another way it relates to the mind (fig. 18). The scale of the building can produce either an intimate or an aweing atmosphere.98

Temporary activity settings could be created by the arrangement and rearrangement of the furnishings in the classroom by teachers and their students for the purpose of working on the task at hand. Activity settings within the classroom are circumscribed zones that afford:

- Access to peers of greater, equal, and lesser ability;
- Transactions between students and teachers, verbal and otherwise, that occur in the daily routine;
- Opportunities to investigate an array of activities permitted within the settings;
- Opportunities to design, redesign, and react to self-generated changes as they work through their goal-directed activities;
- Low levels of adult guidance, supervision, and considerable freedom for what students accomplish and how they accomplish it.99

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While furniture and furnishings may be rearranged, these conventional shapes limit what can occur within the layout. Desks may be arranged in clusters so that collaborative learning activities are encouraged. Although these arrangements afford small group learning, the layout of the classroom does not provide defined areas in which separate activities might occur simultaneously without disrupting the flow of learning between groups. In addition, depending on how the classroom is arranged, these areas may afford individual, one-to-one, and small group learning.\textsuperscript{100}

It was during this building boom that the concept of the finger-plan school (fig. 9) gained popularity. The concept is centered on a plan in which corridors spread out forming fingers off of which each classroom extends. This configuration allowed each classroom to have access to maximum amounts of fresh air and light, and allowed for many classrooms to have direct access outside through exterior doors.\textsuperscript{101}

One of the classroom designs used in the Progressive Modernist language that was widely used in the post-war period was the “L-Shape” classroom (fig. 19), which provided advantages over the typical, more rigid classrooms of periods before. Unlike a traditional square shape classroom, the L-Shape may be understood as a learning center that has been designed to support multiple activity settings. Not only does the L-Shape Classroom allow teachers to have their class meet as an entire group to review and discuss projects, but also, the physical layout of the space includes five corner zones which may be used as five unique activity settings, where small groups of four and five

\textsuperscript{100} Hildebrand, G., \textit{The Wright Space: the pattern & meaning in Frank Lloyd Wright’s houses} (Seattle,: University of Washington Press, 1991).
students can work simultaneously. Corners afford students both prospect and refuge.\textsuperscript{102}

The corner is a permanent feature open to the setting as well as contained. It is a circumscribed place where two walls come together perpendicularly. Within this activity setting, students may view others and at the same time are afforded a place in which they can perform the task-at-hand. Since this is a circumscribed place within the physical environment, it provides for the students a sense of place where interactions are allowed to occur with fewer distractions. While a corner is a permanent feature that can be used as an activity setting within the physical environment, activity settings may also be understood as temporary.

There were fewer significant strides made in the development of indoor environmental quality standards during this era, likely due to the Depression and the difficulties the building industry was going through at that time due to economic problems and then the start of World War II. However, significant changes were about to hit, as the nation (and indeed, the world) emerged from the war in 1945.\textsuperscript{103}

**Technology**

Technological innovation contributed greatly to the creation of a new style and increased comfort for the student. With the desire to create a learning environment that the student and teacher enjoyed, various advancements were developed and included in post-war schools.

\textsuperscript{102} Hildebrand, *The Wright Space*.
Lighting

There was a paradox in modernist schools where vast glass walls conflicted with the use of new fluorescent lighting technology. During the 1940s and 1950s, the emergence of inexpensive fluorescent lighting was creating the opportunity that schools had not had previously, to artificially light classrooms rather than rely on natural sources of light through windows. It was a transitional time when lighting standards for classrooms were shifting, and perspectives were changing rapidly on how classrooms should be lit. (Incidentally, lighting standards have remained largely the same since this transition in 1959.) However, school designs during the 1940s and 1950s tended to provide ample natural light along with the newly added artificial light. Although little evidence exists to know whether teachers at that time preferred natural or artificial light, there was clearly growing interest in ensuring a quality visual environment through the mixture of these two modes. As artificial light became an option, teachers may have been more inclined to use the more evenly distributed light from overhead fixtures, but would not necessarily have had the ability to screen out natural light. This was also the era when slide projectors emerged as a learning tool in classrooms, necessitating the periodic darkening of classrooms to show slides, which may have had an impact on the need for more control over natural light sources.\(^\text{104}\)

Ray Hamon, Chief of the School Housing Section of the U.S. Office of Education, outlined his perception of this area of research in the following way:

There has been some research and a great deal of pseudo-research in the field of school lighting. The field is still very confused by conflicting opinions, commercial claims, and half-truths. The shift of emphasis from

foot-candles to good seeing conditions has made much of the earlier lighting research obsolete. School lighting involves three factors which must be studied in their relationship to each and their effects on balanced brightness within the total visual environment. These factors are fenestration, surface finishes, and artificial illumination. Following are some of the major subjects on which fundamental research should be undertaken: ... (b) amount and placement of areas designed as natural light sources under different climatic conditions; ... (d) shading and shielding devices for reducing glare from natural light sources...  

Hamon draws attention to a number of notable issues in this passage. First is the note regarding the shift from the measurement of daylight purely using foot-candles or illuminance levels to a more comprehensive consideration of visual comfort, including glare and attention to surface finishes. This may have been a problem that was exacerbated by the opportunity for artificial lighting, which may have produced additional glare issues itself, or may have simply allowed designers to worry less about even natural light distribution, leading to less visually comfort-able spaces. It may have also simply been a problem of the increasing amounts of fenestration that were going into schools during that time, inspired by the open air schools of the 1930s. Regardless of the reason, Hamon was right to point out this issue in school buildings; many schools built in the 1950s have natural light from one side only, to the effect of providing very uneven distribution in classrooms.  

Lawrence Perkins, architect at Heathcote and noted for designing a large number of schools in the post-war period, echoed Hamon’s sentiment that lighting should focus on the individuals it is reflecting rather than fitting some pre-determined number (similar

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to the new outlook on education). “Lighting can make the classroom come alive. But it
must be treated as something more than so many foot-candles evenly distributed. For
classroom lighting is more art than science. Naturally, the first job is to provide proper
seeing conditions, but this is not the only goal. Lighting must also contribute to the mood
for learning, to the psychological well being of the student.”

Heating and Ventilation

In a 1949 Architectural Forum issue, thermal comfort is introduced as a
particularly difficult area of school design (fig. 20), with the author noting, “there are few
types of work in which the static analysis that is the basis of most heating design comes
into such open and obvious conflict with the everyday realities as in the school
classroom.” This was another instance where the changes in standards were more
related to technological advances, rather than our understanding of human needs and
comfort. The development of the technology used in the post-war schools factored
directly creating a comfortable, domestic-feeling environment for elementary school
students.

Ventilation was a major component to creating a comfortable learning
environment. At this point in the evolution of ventilation standards for classrooms,
required cubic feet per minute (cfm) per person had been lowered to 10 (from 30 cfm in
the 1920s). This was a result of research conducted for the American Society of Heating,
Refrigerating and Air-Conditioning Engineers (ASHRAE) then known as the American
Society of Heating and Ventilating Engineers (ASHVE), by Yaglou and his colleagues in

107 Perkins, Work Place for Learning, 37.
the late 1930s which measured olfactory sensation in rooms, where they determined that air was not perceptibly bad until ventilation rates were lower than 10 cfm.\textsuperscript{110}

The large expanse of windows, common in modernist schools and classrooms, can cause significant thermal discomfort in occupants, especially those sitting near a window. Inversely, the cold surfaces of windows can be offset by heating panels placed below the windows and on the ceiling above windows, to help combat this problem. In general, as can be seen from the writings of this period, thermal comfort was becoming an increasingly technical and complex field, and expertise was growing ever more specific as mechanical engineers took on greater responsibilities in providing narrow temperature bands and specific humidity levels for classrooms. This was another instance where the changes in standards were more related to technological advances, rather than our understanding of human needs and comfort.\textsuperscript{111}

Acoustics

As school construction and basic geometries of classrooms became more standardized throughout the 1950s and 1960s, architects began devoting more attention to designing classrooms for acoustic performances. In addition, as educational models were expanding to allow for other modes of learning, there was more of a need for acoustic control.\textsuperscript{112} This was explained by Hamon, in noting:

\begin{quote}
[s]ound control has become an important problem in schools because of more informal school procedures and a greater use of non-sound-
\end{quote}

absorbent building materials. There are many acoustical materials available for many purposes. Research is needed to determine the amount of sound control necessary for various areas of the school building, and the types and amounts of materials required for satisfactory results in different areas.\textsuperscript{113}

In the \textit{Architectural Forum} issue on schools, acoustics received equal billing with ventilation and lighting as a key performance area to focus attention on when designing schools. School designers were taking these issues into consideration in fundamental design decisions. The accompanying article discusses the need for attention to sound isolation, low background noise and other standard principals of good acoustical design.\textsuperscript{114} In introducing the topic, the authors note, “the field of architectural acoustics is concerned primarily with the provision of both satisfactory acoustic environment and good hearing conditions.\textsuperscript{115} They go on to explain these two concepts, the first of which deals with the exclusion of outdoor noise and noise transmission through interior walls, while the second addresses acoustics at the classroom level. In this latter area, the authors go on to point out many of the same acoustical variables we consider today, saying, “to provide good hearing conditions in any room requires the satisfaction of four basic requirements:

1) Sufficiently low level of background noise.
2) Adequate separation of successive sounds (reverberation control).
3) Proper distribution of sound within the space.
4) Sufficient loudness of sounds.\textsuperscript{116}

\begin{footnotesize}
\begin{enumerate}
\item\textsuperscript{113} Hamon, “Needed Research in the School-Plant Field,” p. 6.
\item\textsuperscript{114} Baker, “A History of School Design and its Indoor Environmental Standards,” 16.
\item\textsuperscript{115} Luce, “Schools,” 152.
\item\textsuperscript{116} Luce, “Schools,” 152.
\end{enumerate}
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A Watershed Era

The post-war period was a watershed moment at which many significant steps were made to improve the quality and design of academic buildings. A changing perception of education saw a shift away from classically designed buildings towards functional and practical schools. The classroom forms reflected the changes made to progressive pedagogy, as the modernist designs incorporated the essential elements of new teaching methods. From the common L-Shape, used most notably in Crow Island, we see the creation of a space that allows for all of the function necessary to a successful progressive classroom in the 1940s and 1950s. For instance, a major addition was the implementation of a “workspace” area where children could engage in hands on work rather than just seated lessons which provided another approach to education commonly used under progressive education ideas. Technological discoveries also enhanced the classroom space as improvements in HVAC, lighting, and acoustics led to the installation of better and more efficient systems into the post-war buildings. The period after World War II was truly a time for discovery and creation in the realm of school architecture.
Chapter 3 – Heathcote Elementary School

Heathcote Elementary School in Scarsdale, New York, was designed in 1953 by the firm Perkins & Will. When it opened, the Heathcote School, was considered one of the most lavish and expensive public elementary schools built in the United States.\(^\text{117}\) Still in use today, the school serves students from Kindergarten to 5\(^{\text{th}}\) Grade, and was originally designed to accommodate 322 students. In 1958, the school was expanded with the addition of a fifth wing by the original architects to accommodate 414.\(^\text{118}\) Located in the wealthy New York City suburb of Scarsdale on a 22-acre site, the school plant sprawls across the rolling hilltop in a cluster plan of isolated pavilions connected by long glazed corridors to a central building with offices, art and music rooms, a shop room, and an auditorium (fig. 21). In plan and details, the school was designed to stimulate the senses, thus embodying the progressive ideals of post-war education to promote learning by engaging the child physically and psychologically.\(^\text{119}\) This emblematic Progressive Modernist school is a symbol of Progressive pedagogy in the Modernist style. Heathcote stands as an important example of the post-war Progressive Modernist school typology.

Heathcote’s architects, Lawrence B. Perkins and Philip Will of Perkins & Will, were known for their school designs based around progressive values of discovery, aesthetic appreciation, and a wholesome sense of security. Starting with Crow Island, their first major project in 1940, the firm gained respect for being school specialists. In the years following World War II, Perkins & Will were designing many institutional

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buildings, most of them schools across the nation. Almost a decade after Crow Island, in 1948 Perkins & Will designed Blythe Park School in the suburbs of Chicago. In 1953, the same year the firm was designing Heathcote, Perkins & Will were completing work on Keokuk High School in Iowa and Central Elementary in Westchester County, New York. A year later, the firm completed their first healthcare project, Rockford Memorial Hospital, near their Chicago headquarters in Rockford, Illinois. The firm finally completed their first high-rise office building in 1957 in Minneapolis, Minnesota, the Lutheran Brotherhood.\textsuperscript{120} The firm’s focus on schools in the period after World War II is well documented through their myriad projects during the stretch between 1945 and 1960.

The Scarsdale School board, headed up by Archibald Shaw at this time, was progressive itself. Superintendent Shaw steered the community to support a new kind of program in which one large building would be subdivided into smaller, more personal, units for student coursework, counseling, and dining. The House System was one of the first of its kind and a model for other districts.\textsuperscript{121} A report to the town’s Board of Education on Planning an Elementary School says, “The modern architect must have much information about what sorts of activities will take place in the building he is planning, what general atmosphere it should help to create, in short, what will be its specific functions.”\textsuperscript{122} Scarsdale’s Board of Education was forward thinking and had the local funds to hire a renowned architecture firm. Its goal was to create an elementary school that would reflect all the progressive pedagogies that molded the new teaching

\textsuperscript{120} “Perkins Will Historical Timeline,” http://history.perkinswill.com/.

sdale.k12.ny.us/Page/6.

\textsuperscript{122} Planning an Elementary, 5.
methods in the post-war period. Building on a nineteenth-century kindergarten tradition of learning through the senses, post-war public elementary schools in wealthy suburbs like Scarsdale adopted a progressive outlook to cultivate the individual and preserve their town’s character through the construction of a unique and well-designed school. The plan of the school reinforces autonomy and community espoused by progressive educators like John Dewey and enacted by Archibald B. Shaw.123

Perkins & Will’s work at Heathcote is a substantial part of the school’s importance. The firm made its name designing schools that deliberately eschewed a cold institutional image in favor of intimate buildings constructed to reassure and please children. The architects were keenly aware of the psychological research of the period, which suggested that young children often felt overwhelmed in large spaces. In this, they were typical of their, in which many school architects throughout the post-war period embraced the low-rise model, experimented with efficient steel-frame construction, used vast amounts of glass in their buildings, and acknowledged the importance of the children’s experience.124 Perkins noted emphatically that Heathcote the focus of the school was on “the in’ards of the child.”125

Heathcote was not just the product of a well-to-do community which wanted a great school building. It would equally be a mistake to regard it as the natural, predictable result of adequate building funds, a pleasant site, and skillful designers. It is the result of careful planning on the part of educators, the school board, citizens’ committees, teachers, parents, and architects all motived to produce a schoolhouse that would provide

123 Ogata, “The Heathcote School,” 1
efficient and great learning. Archibald Shaw was committed to two fundamental principles of education – one dealing with the conditions under which children learn best, the other dealing with the process of learning. Everything about the building, from its physical attractiveness to the quantity and arrangement of its spaces, flows from these two educational principles.\textsuperscript{126}

As a school district with a dedicated and wealthy group of parents and progressive director, Heathcote had the funding and dedication to embody all of the Progressive ideals discussed by influential educators like Dewey. Because of this, it is an excellent example to study as it, more than most schools of the age and style, reflects the changes going on. It is a well regarded school in the New York City area, still has a committed group of teachers and parents, and was designed by one of the great firms designing progressive schools in the Modernist style.

Reflection of Progressive Pedagogy

What is most important about Heathcote is that the design of its building has had a significant effect on the program it houses. The design was created with the careful consideration of this program. The clusters with their shared central spaces have encouraged teachers to confer and work out cooperative uses of their teaching time and their individual talents. The cluster arrangement makes it possible to move children from one class to another, crossing grade lines depending upon each child’s needs and capacities at a given moment, with far greater ease that is possible in a traditional building. The flexible plan shows this (fig. 22). Thus Heathcote’s design has made

\textsuperscript{126} Weinstock, “Heathcote Elementary School,” 3.
possible – and actually encouraged – a move in the direction of ungrading the classes, and the establishment of a team approach to teaching (fig. 23). For instance, a second grader who is more advanced than his peers would be placed for a short trial period in a third grade class. If he was not able to fit in with the students, academically or maturity-wise, he was returned to his second grade class, but to keep him intellectually challenged, he was assigned to work in the skills lab.  

In a time of developing educational ideas, methods and values, Heathcote embraces a unique style that places the child at the center, forming an environment around the ideas that best benefit children. With its various spaces, the school can enjoy a cheerful confidence that whatever new ideas may become important in pedagogy, the building can be adapted to keep step.  

Even today, schools are striving to ameliorate an issue that is pervasive throughout the education system: the variation of academic level in students within the same classroom. The cluster classroom design resolves this issue by inherently including flexibility and openness in its design. Literature has been written in the past five years that explains the power of learning with your peers, students of similar skill levels, not just based on age. Shaw and Perkins & Will were already accounting for this goal sixty years previous in Heathcote. The value of the cluster design and its educational benefits is needed in contemporary education.

The flexible design of the uniquely shaped classrooms shows that the designers were mindful of the ideas espoused in the educational movements in the 1950s (fig. 24). Flexibility and modularity were key points that educators and thinkers like Shaw pushed

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in the post-war era, ideas which are distinctly reflected in the Perkins & Will design for the Heathcote School. The intimate scale of the school’s classrooms also enhance the learning experience by making classes more focused on the specific students in attendance, rather than a cookie-cutter design to apply to a widespread archetypal student. The attention paid to scale and the specific needs of primary school students echoes the desire for smaller class sizes, specialized classes, and more one-on-one and informal teaching structure. Post-war schools are often lauded for their focus on the scale of a child rather than a large “educational factory” school from the turn of the century. The informal arrangement promotes flexibility for everyday use. Although the cluster design may seem inefficient in its spread, the use of open space allows for the appropriate cluster to be specialized for the grades or ages of students that use the learning space. The workrooms also prove that the educational theories of the age turned towards the active, rather than the passive, or lecture-and-learn style that was typical in pre-war schools. The workrooms are efficiently shared, but also provide a space where young students can work with their hands, build with blocks, or experiment with something physical and tactile, which greatly enhances the educational experience and perhaps even waylays boredom (fig. 25).

One of the themes that inspired Perkins & Will’s design of Heathcote was the idea that receptivity is a cornerstone of the learning process. When a child is receptive or open to learning, progressive educators posited, he does so on his own level, with relative ease. When he is resistive, the task becomes more difficult. They thought a child’s attitude toward learning could be molded by the atmosphere in which learning takes place. If it is good, if it expresses acceptance, warmth, and recognition of his individual identity, he
will be well disposed and respond positively. School buildings have a way of generating their own atmospheric electricity. This can operate as a force powerful enough to close the doors of a child’s mind as he approaches or, like an electric eye, to open those doors.

With these core education concepts in mind, Perkins & Will set out to manipulate the school’s physical environment so that it could be used as an educational tool, to create a receptive educational ecosystem and make the children want to learn. By creating a schoolhouse the children would love, a place where they would feel at home and want to be, the architects could create this environment.\textsuperscript{130}

The second theme around which Heathcote was built is that each child differs from the next. He is an entity unique unto himself, with his own rate of growth, and his own pattern of learning. Heathcote was conceived as a school that would recognize the individual learning patterns of children. Thus, each child could be grouped in a way that was best suited to his own needs. In recognition of this, Heathcote’s planners wanted a building that would not force children to be lumped together all day every day for all purposes. The school building had to provide ample, fluid spaces to allow great variety and range in grouping children for different purposes.\textsuperscript{131}

According to architect John Lyon Reid, “School plant architecture must recognize that its forms, dimensions, color, materials, and texture are capable of creating an environment which either attracts or repels the child.”\textsuperscript{132} While the technological standards of schools were advancing, Heathcote kept its focus on the child’s experience rather than incorporating new systems for air and lighting. Heathcote expressed the

\textsuperscript{130} Weinstock, “Heathcote Elementary School,” 3-4.

\textsuperscript{131} Weinstock, “Heathcote Elementary School,” 5-7.

\textsuperscript{132} Bursch, You Want to Build a School?, 6.
progressive ideals that the color, sound, and feelings of materials, space, and the natural landscape could engage a pupil’s senses and focus his or her own subjective experience. At the same time, however, it was an unusually complex and refined statement of these post-war values.\textsuperscript{133}

Formal Design of Heathcote Elementary

Perkins & Will worked closely with the teachers and the Scarsdale Board of Education to design Heathcote in a manner that would incorporate all of the key aspects of progressive education that Shaw and the town desired. The physical specifications developed by Shaw and the town’s Board of Education were these:

- A beautiful plant, attractive to the eye and pleasing to all the senses.
- The elimination of anything that smacked of institutionalism.
- The creation of separate small educational “neighborhoods” for different groups, enabling the child to have a sense of identity with his own group of rooms, i.e. a unit larger than the individual classroom but smaller than the school.
- The arrangement of the flow of space within the classroom, from building to building, and from indoors to outdoors, in order to allow maximum freedom of movement and a minimum number of rules.
- The provision of ample spaces of such fluidity and variety that they would be adaptable to the greatest range of activities – from the individual child working alone, to groups of children within a single classroom, to a number of classes engaged in a single project, to the entire school gathered for a single purpose. The spaces also had to meet the needs of the adults who would work with the children during the school year, those who would use it as a community center, and the groups who would be using it for the summer recreation programs.
- The use of interior furnishings and equipment that children could control themselves – chairs, desks, electric light switches, toilets, cabinets, crayon boards, etc., to be either movable or of such height that they could be manipulated by the youngsters.
- The use of the outdoors as a resource center that could be incorporated, as much as possible, into the school itself. The plant and animal life, the changing seasons, the special abandon of unenclosed space, were all to be made available to the children as materials of learning.

\textsuperscript{133} Ogata, “The Heathcote School,” 5.
These broad directives were the initial instructions that were turned over to the architects who proceeded to design a school around them.\footnote{Weinstock, “Heathcote Elementary School,” 7-8.}

Heathcote’s six buildings are made of earth-colored brick and natural wood. The designers also used sunshine, light, space, trees, and air as the materials of building. Low-pitched gravel roofs and broad overhangs, which make the structure appear to hug the ground, set a residential tone and a human scale (fig. 26). The rough-textured walls and horizontal lines of the buildings rise from the site, like the trees, so that they seem to be growing out of the earth. The weaving together of landscape and structure into a harmonious whole produces the quiet beauty of Heathcote.\footnote{Weinstock, “Heathcote Elementary School,” 1.}

Four hexagonal classrooms in each of the five clusters share a foyer area that is also used for team teaching, as well as sharing bathrooms. The flower-shaped clusters separate the different grades and ages. The classrooms offer an open, radiant-heated floor area for multiple activities and direct children to focus on each other (fig. 27). The original moveable furniture reflect the school’s desire for flexible instruction in both small and large groups. Each classroom has two glass walls that reach from the ceiling to the low built-in seats, enhancing the child’s awareness of the surrounding landscape. The extensive use of plate glass throughout the school suggests spatial openness to the wooded terrain, while also providing visual contact with other students and teachers. Nearly every room, no matter the function, incorporates view and natural light from the outside.\footnote{Ogata, “The Heathcote School,” 2-3.}
Looking at the domestic architecture of the post-war era, Perkins & Will stressed single-story construction, lower ceilings, deep overhanging roofs, and expansive glass windows. The prominent rooflines and large chimney accentuate Heathcote’s low-rise profile and connects it to the nearby single-family housing. While the ceiling heights in the public areas are low, they rise in the center of the hexagonal classrooms, and in the gymnasium and auditorium. The low-pitch roofs extend beyond the glass walls, producing a sense of shelter for the students, enhancing the notion of the domestic rather than institutional.137 Comfort and security, reflected in the domestic nature of the building, are two points at the heart of the design of Heathcote.

The cluster plan is a valuable aspect of the school’s design that implements educational methods. Heathcote, sometimes credited as the school that first exemplified the benefits of the cluster plan, portrays the ideals of flexibility, domesticity, and economy. Clusters were developed as an alternative to the long corridors seen in the Crow Island School. Schools built according to a cluster plan, with classrooms in semi-isolated “age-neighborhoods,” strongly evoke the post-war house.138 The wide windows common to the post-war schools evoked the post-war suburban house with its ubiquitous plate-glass window.139

Although designed to maximize space, many cluster-planned schools claimed both economy and a meaningful spatial experience. In organization and details, the prominent cluster schools of the early and mid-1950s reflected a new sensitivity to the child’s perception. The classroom’s nearly circular shape was used pedagogically to bring

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the children together in a circle and also allow for small group instruction.\textsuperscript{140} Scarsdale’s Superintendent during the 1950s, Archibald B. Shaw, described the school’s approach as “concern with the pupil – both as an individual and a member of a group.”\textsuperscript{141}

Indeed, Perkins & Will valued the child’s subjective experience over technical formulas. The firm described Heathcote as a rebellion against the current consensus on how to create a pleasant environment for the children, filled with air, light, and comfortable furniture.\textsuperscript{142} Special attention was given to the psychological impact the school environment had on children with its flexible classroom clusters and colorful and elegant details. Additionally, Perkins & Will’s design paid careful attention to aesthetics.\textsuperscript{143}

Throughout the school, the architects juxtaposed contrasting materials, spatial volumes, and experiences. The auditorium is sited prominently near the front of the school as an emblem of community, its semi-circular brick walls and deep rounded stage rephrasing the geometry of the individual classrooms. Along with the noisy open play yard, there is an interior courtyard for quiet contemplation that includes a landscaped area with large rocks for climbing and sitting, which was originally paved with rough stones for occasional outdoor instruction (fig. 28). Heathcote was designed for children to look, touch and hear in spaces scaled for them, to encourage reflection and participation, security and exploration.\textsuperscript{144} The forms the architects selected for Heathcote, and the

\textsuperscript{140} “Organic School,” 115.
\textsuperscript{141} Archibald B. Shaw and Lawrence B. Perkins, “Planning an Elementary School,” \textit{School Executive} 73 (July 1954), 59.
\textsuperscript{142} “Organic School,” 114.
\textsuperscript{143} Pope, Elizabeth, “What’s Happened to the Little Red Schoolhouse?” \textit{McCall’s} 83 (Oct. 1955), 52-60.
\textsuperscript{144} Ogata, “The Heathcote School,” 4.
materials used in the construction of these forms, are responsible for the final results – a physical environment that spells out hospitality to children. Cluster walls are of solid brick and brick with concrete block (fig. 29). Thick brick piers support the cluster roofs. Laminated wood beams resting on these piers in turn support laminated wood arches. The arches are concealed by 1 by 4 inch wood siding used for finish on the slanted sections of the ceiling. The function of these arches is to make possible the high ridges in the middle of the classroom ceilings without center columns for support.145

Classrooms have a feeling of openness, of easy transition between interior and out-of-doors. The open planning and glass-topped partitions help the student feel a part of the larger school community.146 A number of factors contribute to this: One is the high, slanted ceilings (in sharp contrast to the low-ceilinged center foyers, giving the foyers the quality of cozy, shaded retreats). Another is the glass walls that reach almost to the ground and are pushed out beyond the frame of the building itself. Trees and grass protect the rooms from glare. White concrete foundations are kept low to the ground to minimize the contrast between buildings and ground.147 Though the centers of the ceilings are high, the low pitch of the roofs, the broad overhangs, and the nearness of the roof edges to the ground contribute to the visual reduction of height and scale. Emphasis on roofs rather than walls is deliberately planned to convey a feeling of shelter rather than enclosure. Lawrence Perkins compares the classroom space created by the pitch of the roofs to the space under a tree.148

146 Perkins, Work Place for Learning, 24.
Corridors to the clusters are of steel frame construction with fireproof gypsum roofs; the distance of the classroom clusters from the main body of the school made their fireproofing unnecessary. Hovering over the central core building, and visible from almost anywhere on the school grounds, is the pitched auditorium roof. This core structure is rigid steel frame in part, and bar joists (fig. 30). It is consistent with the clusters in scale, form, and materials. Deep oversize brick piers extending from the nearly all-glass walls, add solidness and shelter to openness.\(^{149}\)

Glass, brick, and natural wood are the major materials of the buildings. Accents are supplied by colored glass panes and painted panels randomly placed. There is no plaster anywhere in the building, other than the auditorium ceiling where it is used as an acoustic baffle. Aside from the considerations of design, carrying the exterior materials through to the interior surfaces provides the benefit of low maintenance costs. Windows are double glazed so the children will be comfortable when they sit near them in the winter. Radiant panel floor heating keeps the green composition floor surfaces warm as well as the air.\(^{150}\)

Heathcote was designed to enhance the relationship between children and the natural beauty of the wooded site. Heathcote’s long glazed corridors have no classrooms strung along them, as the firm’s Crow Island School did, but have transparent and flowing corridors which follow the rolling topography, connecting each cluster to the administrative center and auditorium. The jewel-colored panes set into the walls cast bright compositions on the floor and provide contrast to the natural palette of wood,


\(^{150}\) Weinstock, “Heathcote Elementary School,” 22-23.
They also invite the children, as they make their way down the corridor, to peer out and rediscover the landscape in red, blue, orange, or green (fig. 31). The extensive use of plate glass and pleasurable details – even the gymnasium has expansive windows that look onto a landscaped rock garden – were designed to instill aesthetic appreciation. Lawrence Perkins wrote about the use of glass, “Too, the walls open with glass so the student sees what is going on inside; instead of being awed by the unknown, he is made eager to see more and to become part of the world within the school.” The school exemplified many modernist design techniques to incorporate and respond to the natural landscape and methodological requirements of progressive education.

Perkins & Will designed a school that responded to the needs of children and the desires of post-war educators. The conceptual focus on the school goes deeper, with each specific area of the school purpose-driven to accommodate a certain function in the school’s plan. The creation of “clusters” or educational zones allow for flexibility which serves the progressive pedagogy at the heart of Heathcote.

Overall Plan

In order to counteract the institutionalism natural to schools, Perkins & Will decentralized the buildings. To this end, and to satisfy the specification which called for the creation of educational neighborhoods, they developed a building plan with a central core and separated clusters of classrooms. The core supplies the auxiliary spaces and

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services to the clusters which brand out from it. In order to keep the plan – which is large at almost 65,000 square feet – from being overwhelming, the designers sprawled its buildings over the site’s hilltop, reducing the apparent bulk. The spread of small building masses, the low peaked roofs of the buildings, and the background of informal landscaping creates a residential scale. The clusters rest on natural flat shelves of land. Planted trees and stone walls bring the woods up to the buildings.\textsuperscript{154}

Expandability

Heathcote is comprised of five separated clusters of classrooms, each with its own special area of the site. The fifth one, the only addition to the main structure of the school in 1958, points up one of the important virtues of the cluster plan – its adaptability to expansion. Increased enrollment can be accommodated by the construction of additional classroom clusters without expensive changes in the central service core, or the disruption of activities in the rest of the school.\textsuperscript{155} The addition was in kind, and some teachers cannot even tell the difference between the original clusters and the addition made some five years after.

Educational Zones

The physical separation of the clusters creates zones for different patterns of activity. The one of kindergarteners, for example, is placed furthest away from the fifth grade cluster; therefore, the freer and noisier activities of the very young children will not interfere with the quieter work of the older ones. Each cluster becomes its own little school, giving the children an intimate unit with which to identify. Each little school is

\textsuperscript{154} Weinstock, “Heathcote Elementary School,” 8-10.
\textsuperscript{155} Weinstock, “Heathcote Elementary School,” 11.
set up as a place expressly designed for the activities and interests of the children in it.

There are four classrooms in each cluster housing children drawn from two grades (aside from the kindergarten-only cluster). Class size is limited to 23 children.\textsuperscript{156}

**The Six-sided Classrooms**

Noteworthy are Heathcote’s hexagonal classrooms (fig. 32). They are six-sided for two reasons: one, that the typical rectangular or square classroom traps unusable space in the sharply angled corners, while the wider angles of the hexagon provide great amounts of usable floor and wall area; two, the fact that children learn a great deal from their peers, perhaps as much as from adults. A space shaped to direct youngsters towards each other has its own subtle educational value.\textsuperscript{157} There is no front or back to the classroom, meaning there is no distinct hierarchy, no place in the classroom that is less suitable for learning and interacting. Each of the classrooms contains 887 square feet of space, about the average size for the period. However, because of the shape, use of expansive glass walls, the high peaked ridges of the ceilings, and the illusion of greater space induced by the hexagon’s 120-degree corners, the rooms feel larger. In addition to the main space, some classrooms have small adjoining spaces where teachers may conduct an individual lesson, have a private talk with a student, or prepare their own work.\textsuperscript{158}

\textsuperscript{156} Weinstock, “Heathcote Elementary School,” 11.
\textsuperscript{157} Weinstock, “Heathcote Elementary School,” 11.
\textsuperscript{158} Weinstock, “Heathcote Elementary School,” 13.
The Central Foyer

The central area in each cluster provides the free space that gives flexibility to each Heathcote cluster (fig. 33). This space serves as the entrance to the small school, as a coatroom with movable coat storage units, as the viewing areas for films (since it is more easily darkened that the glass walled classrooms), as a display gallery for artwork. A piano and film projector are standard equipment in each foyer. The toilets for the children of the cluster are located here as well. Most important, this space serves as an area where two or more classes, through the cooperative planning of teachers, can be brought together for a variety of activities. These may range from joint class lessons, to a movie, committee project work, or informal full-cluster assemblies which at Heathcote are called “wing dings.” Moreover, the foyer creates an opportunity for children of two consecutive grades to mingle and work together. In addition, the center serves as a recreation area in bad weather. In the kindergarten cluster this space is larger than in the other clusters, and is fully equipped for use as an indoor play yard.159

Hallway

The long hallways are an essential feature in Heathcote, used as corridors to connect the clusters of classrooms from the administrative center. Rather than having a series of classrooms branching off the hallway, a row of floor to ceiling plate glass windows line the corridors, giving prime views to nature. Inset with brilliant jewel-colored glass panes placed at various heights, the windows both cast colorful patterns on

the linoleum floor and invite children to gaze out onto the surrounding landscape.\textsuperscript{160} The corridor at Heathcote reflects ideas that Perkins had in his writing about school construction, “The more the corridor is opened visually to the world around it, the better it refreshes the mind.”\textsuperscript{161}

**Furnishings**

Tables and desks are movable and low, varied in shape, some round, some rectangular, some trapezoidal. There are sinks in the classrooms and window seats along the walls. Two of the six walls are covered with chalkboard and tackboard for displaying works and teaching. Wood paneling in the halls is of soft pine to encourage its use as tackboard for displays.\textsuperscript{162}

**Community Reaction to Heathcote Elementary**

The reaction to the school was positive almost instantly. The value of the school was recognized even prior to its completion in an October 1952 edition of *Architectural Forum*, which claimed, “Heathcote is a significant school because it digs into the fundamental question of atmosphere.”\textsuperscript{163} Ruth Weinstock, who reported on the school in 1960 for the Educational Facilities Laboratories, mentioned that the people who used it believed the concepts behind the building had been successfully achieved. Children loved the school, so much so that the administration had to organize campaigns to keep them from arriving too early in the morning. One parent even said that their child felt punished when forced to stay home from school due to illness. Teachers were equally positive.

\textsuperscript{160} Ogata, “The Heathcote School,” 3.
\textsuperscript{162} Weinstock, “Heathcote Elementary School,” 13.
\textsuperscript{163} “Organic School,” 115.
about the school. Heathcote enjoyed a marked success in attracting teachers, even when teacher recruitment was problematic nationwide. Teachers and secretaries would even come from private businesses, where salaries were higher, to work at the school.

Heathcote had a magnetic quality for parents as well. It was adopted as a center for after-hours work and recreation. Many parents took part in assisting teachers on projects and trips and membership in the Parent Teacher Association was reported to be nearly 100 per cent.

And – perhaps the most important result – students performed remarkably well at Heathcote. In the 1959-1960 National Standard Achievement Tests, the school’s grades not only exceeded the national public school norms but the national independent school norms as well. Heathcote was designed to be a joyous place for children, and because of that produced a level of academic achievement. The experience there reinforced the view of Scarsdale’s educators, who believed that learning occurs best and lasts longest when there is intense enthusiasm for it, and when children are given a maximum of individual attention.\(^{164}\)

In 2015, during my visit to the school, the reaction was still positive. One teacher, who had worked in schools throughout the Scarsdale School District, remarked that Heathcote was her favorite to teach in because of the flexibility and beautiful views from the classrooms. Another administrator, who was kind enough to take me through the school, claimed that the town was proud of the school and were encouraged to pay their comparatively high taxes to keep the school in as fine a condition physically and

academically as they could. The instant and long-lasting impact of Heathcote’s functional design is shown through the reactions in the decade following its completion and in the contemporary moment. Perkins & Will and Archibald Shaw cultivated a learning environment that children, teachers, administrators, and the community were fond of and that performed well, due to the strength of the teaching methods and considerate design.

Heathcote Elementary Today

Today, Heathcote retains much of its original character. Additions, beginning in 1958 with the completion of the fifth cluster of classrooms, and subtle adjustments to room usage (shop room transformed into the computer lab) have had a minor effect on the school’s overall appearance. In other ways, however, the sensory experience for which the school was justly renowned has changed. Although trees and grass were planted near the plate-glass walls to combat glare in the classrooms, blinds have been added to the brightest exposures, and larger seating and case furniture interrupts the openness of the classroom floor. Furthermore, the addition of handrails obstructs the view from the colored glass along the corridors. A more recent addition to the First and Second grade cluster of classrooms has expanded the wing from 4 classrooms to eight to keep pace with the growing population (fig. 34). The central foyers are no longer used as

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open learning spaces due to fire safety regulations. Radiant heated floors have been replaced with carpeted or linoleum (in case of child allergies).167

The broader object lessons of the Heathcote School are nonetheless intact. Built in an age of Cold War anxieties to serve a rapidly expanding population, Heathcote’s designers (architects, school board officials, local citizens, and teachers) envisioned an institution that would entice children to learn not only in, but also from their environment.168

Heathcote is an important example of a Progressive Modernist school. A well-designed, child-conscious learning environment was created through the work of skilled architects and dedicated educators. Because of the available funding from the Scarsdale community, the school could communicate all the important innovations discussed in the first and second chapters on this thesis. The design of Heathcote exemplifies how a school can stand as more than a building. Perkins & Will created a well-thought-out environment that promotes active learning and comfort. The consideration and progressive ideals put into Progressive Modernist schools is a staple of the type, but Heathcote stands as one of the finest examples of its execution.

Despite this, the school has not been preserved in any way. While it is not under immediate threat – the town, teachers, and students still love the school – it is an example worth mentioning in discussions of Modernist schools. Some inclusion through preservation or study would promote both the school and the typology.

Conclusion

The Progressive Modernist school typology is a valuable category to include on any type of preservation list, to increase its recognition across the nation. After the events of World War II, the many developments and improvements mentioned in this thesis led to the creation of a type of school that reinvented the way learning environments were made, reflecting new teaching methods in a new visual idiom. The post-war era was a period in which the educational principles of John Dewey could be crafted into a physical environment that responded to the new pedagogy. Modernist architectural style led to a new formal arrangement of educational spaces and a new design used in schools across the country from 1945 to 1960.

The important aspects of the age and the typology can be broken up and defined under the Criteria for Evaluation created by the National Register of Historic Places. Overall, the National Register seeks to list items that embody “The quality of significance in American history, architecture, archaeology, engineering, and culture.”\footnote{U.S. Department of the Interior, “How to Apply the National Register Criteria for Evaluation,” \textit{National Register Bulletin} (Washington D.C., 1995), 2.}

Criterion A is “association with the events that have made a significant contribution to the broad patterns of our history.”\footnote{U.S. Department of the Interior, “How to Apply the National Register Criteria for Evaluation,” 2.} Historically, the typology reflects a change in American history as the nation left the woes of the Great Depression and two World Wars behind it. The passage of the GI Bill and an availability of education options altered the shape of American society and the Progressive Modernist school type reflected these developments. As Amy Ogata mentioned in her article titled “Building for Learning in Postwar American Elementary Schools”, the post-war Progressive Modernist...
type was recognized during its nascent period and should be again as it has come to age. All of these major changes came about at a central historical period characterized by wealth and a rapidly developing population and society after World War II, which the schools reflected in their design and interpretation.

Criterion B is “association with the lives of significant persons in or past.”171 Many characters have been mentioned throughout the thesis, characters who have made a substantial impact on education and architecture locally, regionally, nationally, or internationally. The post-war period saw works from architects like Perkins & Will, John Lyon Reid, Caudill Rowlett Scott, and Richard Neutra that responded to the changes in education, society, philosophy and architecture. Implementation of educational philosophies from John Dewey and William James in these buildings (with instances of integral input from men like Archibald Shaw at Heathcote in Scarsdale) made the purpose of these buildings and the coalescence of work between the architects and the educators’ ideals valuable.

Criterion C is “embodiment of the distinctive characteristics of a type, period, or method of construction, or that represents the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction.”172 Architecturally, the schools embraced a new aesthetic that placed functionality at its core. The designs of the schools reflect architectural trends of the time and vary from Neo-formalist to Brutalist; from Moderne to the International Style. These design choices reinforce the pedagogical shift that took

place simultaneously, moving away from static classrooms to interactive and flexible spaces where the teacher engaged students in new ways. The new designs were used across the country as elementary schools were opening to accommodate the incoming student populations. Each school has a different implementation and interpretation of how to design around the Progressive educational ideals, making more than just a few significant to the nation. The new teaching methods used these new architectural styles to form envelopes around classrooms that could accommodate their new pedagogies. The more functional, form-focused styles allowed for these flexible spaces. The impact of the Modernist aesthetic on a large scale, in schools built across the nation, is a major part of the period and of the building type discussed in this thesis.

The case study of Heathcote is a stand out example of one of these schools. The detail and care involved in designing and planning one of these schools from an educational and architectural profession is noteworthy, and the case study presented in this paper is just one example of the vast number of schools being built with the same care.

Decades of work led to the creation of a unique and pioneering school building style that incorporated the philosophies by Progressive educators. A huge wave of such projects were built to educate a vast new generation of elementary school students. Those students would experience the new type of school and make an impact on American society. Having been overlooked so far, it is important now to recognize what makes these buildings valuable. They represent as a major step forward for history, society, education, and architecture.

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The ever-evolving needs of the educational system have put pressure on the preservation of progressive schools. As educational methodologies have evolved, schools were forced to change, sometimes in ways that degraded the value of the buildings. New technology, teaching trends, changes in safety considerations and codes have all forced changes in schools buildings. Yet, for schools designed in the Progressive Modernist aesthetic, their built-in flexibility and openness allowed them to develop to the necessary changes.

That being said, there are still losses to the well-regarded Progressive Modernist schools, like Clarksville. Furthermore, with the 50-year age minimum for buildings to be included on the National Register of Historic Places (the highest age criteria of any list in the nation), the timing to begin analyzing these buildings and considering them for protection is upon us. The way architects applied a range of societal and academic innovations to their architecture is special. The result, shown in Heathcote and in the schools shown in the glossary (Appendix B), is valuable to include on any preservation list.
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## Table 1.—Year of school construction and mean age of school, by school characteristics

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**NOTE:** Percentages may not sum to 100 due to rounding.


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Figure 1 – Chart of School Construction in America

Image Courtesy of the United States Department of Education
Figure 2 – Heathcote Elementary School
Image Courtesy of Perkins & Will

Figure 3 – Population Graph
Image Courtesy of U.S. History
Figure 4 – Graph, 1949
Image Courtesy of Architectural Forum

Figure 5 – Chorley Elementary School
Image Courtesy of Arkinet
Figure 6 – Phillis Wheatley Elementary School
Image Courtesy of World Monuments Fund

Figure 7 – Clarksville Elementary School
Image Courtesy of Times Union
Figure 8 – Walt Disney Elementary  
Image Courtesy of Explore PA

Figure 9 – Crow Island Elementary  
Image Courtesy of Manhattan College Fine Arts Gallery
Figure 10 – Crow Island Plan showing Finger Plan and L-Shape Classrooms
Image Courtesy of Tanner and Lackney

Figure 11 – Flat-Roofed School, typical of the Modernist Period
Image Courtesy of Dudek
Figure 12 – Interior Windows at Impington Village College (UK) by Gropius and Fry
Image Courtesy of Thomas Hille

Figure 13 – Jan Duiker’s Cliostraat Openluchtschool
Image Courtesy of MoMA
Figure 14 – Pavilion School/Staffordshire Type Diagram
Image Courtesy of Robert Lyster
Figure 15 – Horace Mann’s Plan for a Classroom, 1938
Image Courtesy of Weisser

Figure 16 – Class Organization Chart by John Lyon Reid
Image Courtesy of John Lyon Reid
Figure 17 – Classroom at Crow Island  
Image Courtesy of Perkins & Will

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Figure 18 – Scale Chart by John Lyon Reid  
Image Courtesy of John Lyon Reid
Figure 19 – L-Shape Plan
Image Courtesy of Design Share

Figure 20 – Heat Graph, 1949
Image Courtesy of Architectural Forum
Figure 21 – Heathcote Aerial View Showing Plan
Image Courtesy of Educational Facilities Laboratory
The basic core-cluster of Heathcote provides each age group with its own little school, simultaneously grouping the common activities in the core of the schoolhouse.

Figure 22 – Heathcote Elementary Plan
Image Courtesy of Educational Facilities Laboratory
Figure 23 – Child Performance Graph
ImageCourtesy of Educational Facilities Laboratory

Figure 24 – Cluster Plan
ImageCourtesy of Educational Facilities Laboratory

Four classrooms in a typical cluster are grouped around a central foyer. It is used in common by all of the classes, and provides a flexible, unifying center for all the cluster activities.
Figure 25 – Workroom At Crow Island
Image Courtesy of Perkins & Will

Figure 26 – Form and Scale of Heathcote Elementary
Image Courtesy of the Author
Figure 27 – Classroom at Heathcote
Image Courtesy of Perkins & Will

Figure 28 – Interior Courtyard at Heathcote
Image Courtesy of the Author
Figure 29 – Materials on the Exterior
Image Courtesy of the Author

Figure 30 – Corridor at Heathcote
Image Courtesy of The Architect’s Paper
Figure 31 - Colors of the Corridor at Heathcote  
Image Courtesy of Amy Ogata

Figure 32 – Hexagonal Classrooms at Heathcote  
Image Courtesy of the Author
Figure 33 – Central Foyer at Heathcote
Image Courtesy of Educational Facilities Laboratory

Figure 34 – Second Grade (Added) Cluster at Heathcote
Image Courtesy of the Author
Appendix B - Glossary of Noteworthy Schools (1945-1960)

Blythe Park Elementary School (1948) - Perkins & Will - Riverside, IL
Image Courtesy of Perkins + Will

Huston School (1948) - Caudill Rowlett Scott - Blackwell, OK
Image Courtesy of “Chronicles of Oklahoma”
Kester Avenue School (1949) - Richard Neutra - Sherman Oaks, CA
Image Courtesy of Ventura Boulevard Magazine

UCLA University Elementary School (1950) - Neutra and Alexander - Los Angeles, CA
Image Courtesy of Nigel Lo
Mira Vista Elementary School (1951) - John Carl Warnecke - Richmond, CA
Image Courtesy of Mira Vista Elementary School

John Muir School (1951) - John Lyon Reid - Martinez, CA
Image Courtesy of Oakland Museum of California
“The Model School” (1954) - The Architects Collaborative
Image Courtesy of Collier’s Magazine
Belaire Elementary School (1955) - Caudill Rowlett Scott & Donald R. Goss - San Angelo, TX
Image Courtesy of Architecture Week

Northeast Elementary School (1956) - The Architects Collaborative - Waltham, MA
Images Courtesy of Architectural Record
Bantam Elementary School (1956) - Marcel Breuer - Bantam, CT
Image Courtesy of Republican-American

Wayland School (1960) - The Architects Collaborative - Wayland, MA
Image Courtesy of University of Michigan Libraries