

**ACTIVITY OVERVIEW**

This document contains six edited excerpts from Elizabeth Fagan's 2015 dissertation, "Building Walls of Light: The Development Of Glass Block And Its Influence On American Architecture In The 1930s." The six sections included are: *A Very Short History of Glass*; *A Desire for Light*; *The Early American Glass Block Buildings*; *The William Lescaze House and Office*; *The Decline of Glass Block*; and *Conclusion*. Read *A Very Short History of Glass* aloud as a class and focus on unknown terms, key words, essential facts, and major themes. Then, examine each of the following four sections individually focusing only on the **thinking questions** assigned to you. In groups, discuss answers to the **thinking questions** and prepare to share your findings with the class. Finally, examine the conclusion and compare/contrast your and your peers' answers.

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**THINKING QUESTIONS**

pg. 3 – 5

***A Very Short History of Glass***

1. Although glass has been found among the archeological remains of ancient civilizations, when did it first become a commonly used architectural material and why?
  2. What were the pros and cons of Emile Fourcault invention?
  3. How did the industrial revolution and increased use of assembly fabrication affect the development of glass?
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pg. 16 – 22

***A Desire for Light***

4. What was the significance of Bruno Taut's Glass Pavilion, and how was its development connected to global politics?
  5. Although Maison de Verre was not the first use of glass block, what made its use of glass block unique?
  6. Why does the author cite the occupation and political beliefs of Dr. Delsace, and what relevance does this have to the development of glass block?
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pg. 23 – 29

***The Early American Glass Block Buildings***

7. Explain how the metaphor of a glass block "lantern" relates to earlier use of glass, specifically Thomas Hastings' *Tower of Jewels* (1915)?
8. Compare and contrast the use of glass block in the Barbizon Hotel to the Towne House Apartment building or Maison de Verre.
9. How did the design of the Barbizon Hotel relate to the American economy?

pg. 46 – 53 ***The William Lescaze House and Office***

10. Read William Lescaze's quote on pages 48 and 49 and assess the accuracy of his claim that his home was the first use of glass block in the United States.
  11. How did the use of glass block in Lescaze's house challenge conventional building code?
  12. Compare and contrast the two aesthetics of glass block. You may wish to discuss material, form, architectural style, technology and light.
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pg. 119 - 124 ***The Decline of Glass Block***

13. What is the relationship between the decline of glass block and global politics of the 1930's and 40's?
  14. If glass block manufacturers reported increased sales as late as the 1950's, why does the author insist the height of glass block had passed?
  15. Compare and contrast the use of glass block before and after WWII.
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pg. 125 – 130 ***Conclusion***

16. What image and messages did glass block construction send at the height of its use?
17. Compare and contrast the use of glass block in recent construction (Tado Ando and Renzo Piano)
18. What is meant by Raymond Hood's term "Architecture of the Night" and how does it relate to history, technology and culture?

**BUILDING WALLS OF LIGHT: THE DEVELOPMENT OF GLASS BLOCK AND ITS  
INFLUENCE ON AMERICAN ARCHITECTURE IN THE 1930s**

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Submitted in partial fulfillment of the requirements for the degree  
Master of Science in Historic Preservation

Graduate School of Architecture, Planning, and Preservation  
Columbia University  
May 2015



Arthur Brammer, Direct Oil Service Station, Minneapolis, MN, 1937 (photo from Hulton Archive/Getty Images)

THINKING QUESTIONS\_PART 1

pg. 3 – 5

***A Very Short History of Glass***

1. Although glass has been found among the archeological remains of ancient civilizations, when did it first become a commonly used architectural material and why?

2. What were the pros and cons of Emile Fourcalt invention?

3. How did the industrial revolution and increased use of assembly fabrication affect the development of glass?



## Chapter 1: Historical Overview of Glass, Glass Block Precedents, and Early European Hollow Glass Blocks

### *A Very Short History of Glass:*

Glass is a material that dates to ancient times. First appearing as glass beads in Egyptian tombs from the fourth millennium B.C., glass has been used in practically every culture for thousands of years. Often used for decorative arts and tools, glass also has an important place in the history of building and architecture. The Romans are believed to have first used glass for building purposes, and understood the applicability of glass for glazing windows. Remnants of glass pieces in windows frames dating to the early Imperial Period have been discovered in Pompeii and the Roman villas in England. It is believed that the Romans used glass for their baths and conservatories to help keep heat inside. Over time, with the expansion of the Roman Empire and trading with other groups, glassmaking expanded to Spain, Portugal, and along the Rhine. By the second century A.D., Cologne was a prominent glass-making center. Yet, the fall of the Roman Empire in the fifth century led to a large decrease in glassmaking, since the Romans were the principal manufacturers in this industry. Later, during the Renaissance, glass was commonly used for windows and was an accessible material. It was during this time that glass truly flourished as an art form, most notably seen in the beautiful and detailed stained glass windows of medieval cathedrals across Europe.<sup>1</sup>

The first glassmaking in America began around 1607 in Jamestown, Virginia. Cited as one of the oldest American industries, glass was among the first products shipped to England from the New World. By 1620, Jamestown had two glass furnaces, but both were destroyed by 1622.<sup>2</sup> Around 1639, colonists in Salem, Massachusetts began producing glass on a larger scale, making bottles and other items. The glassmaking industry began to spread along the East Coast, and the first successful

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<sup>1</sup> Harold Donaldson Eberlein, *Glass in Modern Construction* (New York: C. Scribner, 1937), 13.

<sup>2</sup> Macbeth-Evans Glass Company, *Fifty Years of Glass Making, 1869-1919* (Pittsburgh: Macbeth-Evans Glass Company, 1920), 19.

glass company was founded in New Jersey in 1739 by Caspar Wistar.<sup>3</sup> From the Revolutionary War onward, numerous glass companies would come and go, but the center of the glass industry would remain on the East Coast.

The primary method of glassmaking involves melting a mixture of around 72% silica, 15% sodium carbonate, and 10% lime. The mixture melts at around 1700 degrees Celsius.<sup>4</sup> Commonly referred to as soda-lime glass, this formula is still the most common mixture of ingredients for window and container glass. Until around 1825, glass was made by glassblowing, a process in which a worker would blow molten glass into a bubble using a blowpipe, and the glass could be worked into its desired shape. The molten glass could also be blown into molds, expediting the process of hand-working the glass; this was often used for utilitarian glass goods, instead of artistic ones where hand formed glass was desirable. To make plate glass, the glassmaker could use two methods: form the glass into a large cylinder, break the cylinder in half, and roll the glass out as a flat sheet before cooling; or, the molten glass can be poured into a large flat mold and spread evenly before cooling. Around the turn of the twentieth century, improvements were made in plate glass production, which in turn impacted architectural design and storefronts in particular, where large pieces of glass could now be used to better sell goods. In 1901, Belgian glassmaker Emile Fourcault invented a machine that could draw a sheet of glass five stories straight up from a vat of molten glass. This process was extremely influential, but the manufacturing process distorted and marred the surface of the glass.<sup>5</sup> By 1937, British glassmaker Pilkington Brothers partnered with Ford Motor Company to develop a fully mechanized process for making plate glass. In this process, molten glass was pressed between two rollers to form a thin sheet. After the glass cooled, the surface of the glass would undergo a

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<sup>3</sup> “Glass in America,” Corning Museum of Glass, accessed 5 April 2014, <http://www.cmog.org/collection/galleries/glass-in-america>.

<sup>4</sup> “How Glass Is Made,” Toledo Museum of Art, accessed 5 April 2014, <http://www.toledomuseum.org/kiosk/glass-study-interactive/exploring-glass/how-is-glass-made>.

<sup>5</sup> “The Window Machines: Sheet and Plate Glass,” Corning Museum of Glass, accessed 5 April 2014, <http://www.cmog.org/article/window-machines-sheet-plate-glass>.

grinding and polishing process on both sides simultaneously. This process would create a smooth, unmarked surface that was also free of distortion. The development of new methods for producing and refining plate glass process would continue for years, but by the late 1930s the material was easily manufactured and more accessible to consumers than ever before.

THINKING QUESTIONS\_PART 2

pg. 16 – 22     *A Desire for Light*

4. What was the significance of Bruno Taut's Glass Pavilion, and how was its development connected to global politics?

5. Although Maison de Verre was not the first use of glass block, what made its use of glass block unique?

6. Why does the author cite the occupation and political beliefs of Dr. Delsace, and what relevance does this have to the development of glass block?

*A Desire for Light:*

The late nineteenth and early twentieth century developments of vault light, prism tiles, and glass blocks arose out of society's fascination with, and desire for, light. Both Europe and America were on the cusp of widespread electrification, but for most cities and towns, gas lighting, oil lamps, and candlelight were the only available forms of nighttime illumination. Even during the day, especially in urban environments, many buildings were dark and dreary. In addition, the popular Victorian style of architecture, with its dark building materials and interior decoration, did not usually lend itself to a bright, cheerful environment.

By end of the nineteenth century, a change in styles and sensibilities was occurring. The Beaux-Arts style, popularized by the World's Columbia Exposition in 1893, brought light-colored masonry materials to popular taste. The Exhibition was nicknamed "The White City" for its swath of white stucco buildings. The fair also emphasized illumination, and featured large number of streetlights, which lit up the fair at night and gave the buildings a sense of optimism and beauty. As a result of the fair, America saw the introduction of a new City Beautiful movement, which emphasized the use of Classical architecture and formal landscape design in urban areas to improve public welfare and the appearance of the country's often dark, gritty cities.

Although both daylight and nighttime illumination have always been prized and sought after, in the nineteenth century the artistic expression of light began to develop and change from years past. New developments in artificial lighting, glass technology, and daylighting methods gave architects, designers, and building owners more possibilities – light became a part of architectural design in new ways. Now, light could be manipulated by using glass to direct daylight in specific ways, or to provide texture or color. Nineteenth century Impressionist artists, such as Monet and his Rouen Cathedral series, understood the transient effects of light and how different types of light would produce different colors and effects on buildings and landscapes.

By the turn of the century, architects began to capitalize on the use of glass and its ability to transmit and shape light. Bruno Taut, the leading figure in the German Expressionist movement of architecture, understood these valuable properties. In 1914, Taut designed a Glass Pavilion at the Cologne Deutscher Werkbund Exhibition. The Glass Pavilion was an innovative structure – a temple to glass and its architectural possibilities. The Pavilion, though, was partly a promotional work, as it was commissioned by the Deutsche Luxfer Prismen Syndikat, makers of glass tiles and glass blocks. This connection to a glass manufacturer, though, does not detract from its architectural value and influence on glass design.

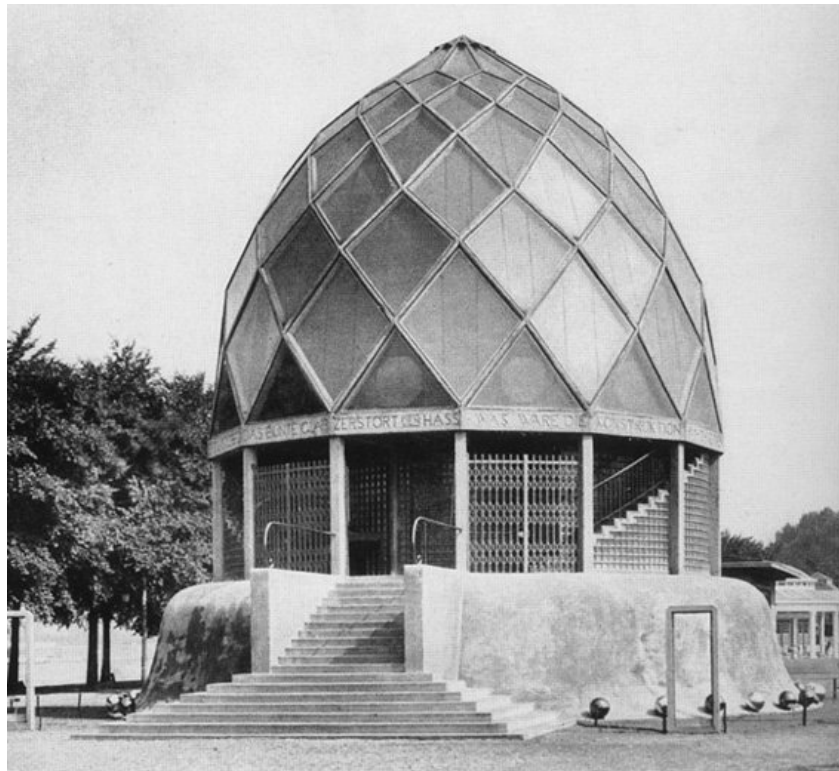


Figure 8 - The Glass Pavilion, 1914 (photo from Wikimedia Commons)

A multifaceted dome, the Glass Pavilion utilized multicolored glass to evoke the image of a crystal, giving off a spectrum of colors. The concept of the crystal was a central theme in Expressionist work. To the Expressionist architects and artists, the crystal symbolized a “utopian spiritual construction”. The Expressionist movement was largely comprised of members of the

Arbeitsrat für Kunst, who had welcomed the overthrow of the Prussian Empire. In the post-World War I years there were few architectural commissions, but the Expressionists were optimistic about the architectural experimentation they believed would be possible under the new regime. Members of the new movement were uninhibited and innovative in their designs, and believed that they were designing for a wholly “new society”. To the Expressionists, the crystal symbolized metamorphosis and transcendence.



Figure 9 - Interior staircase of the Glass Pavilion, 1914 (photo from Wikimedia Commons)



Glass, a viscous material that can be molded into any shape, seemed to closely align with the Expressionist vision, and therefore was likely chosen for Expressionist designs for this very reason. Glass is both transparent and shimmering, and can reflect the full spectrum of colors against its surface just as a crystal does. Crystals, which form out of molten rock that has been cooled, arise from a lowly material and form into something of beauty and richness. The same can be said of glass, which comes from a simple mixture, mostly comprised of sand, and can be transformed into brilliant architectural forms and materials.

The Panama Pacific Exhibition, held in 1915 in San Francisco, marked an important time in the relationship between American architecture, glass, and illumination. For the Exhibition, Walter D’Arcy Ryan, head lighting designer of General Electric, planned a comprehensive lighting scheme that would emphasize the architecture and also be a symbol of new thought and progress in American design and culture. Ryan, following ideas from prominent architectural professor C. Howard Walker, felt that the buildings at the Exhibition should not be lit with strips of outline lights, as was common in Europe at the time, but instead should be lit with floodlights. This would enable the buildings to be fully shown in the light, rather than just specific outlines or elements. One of the most visually stunning buildings to utilize the floodlights was Thomas Hastings’ Tower of Jewels. The central building of the fair, the Tower of Jewels consisted of triumphal arch with a large tower on top of it. The building was covered in over 100,000 Novagems, which were small, faceted pieces of cut glass in various colors. The Tower of Jewels stands as an important structure in architectural history, especially the history of architectural lighting, because it was one of the first buildings in the country to incorporate glass into its design for the purpose of emitting light from within. This use of glass to create a building as a type of lantern that would glow from within will be an important theme in the later history of glass block.



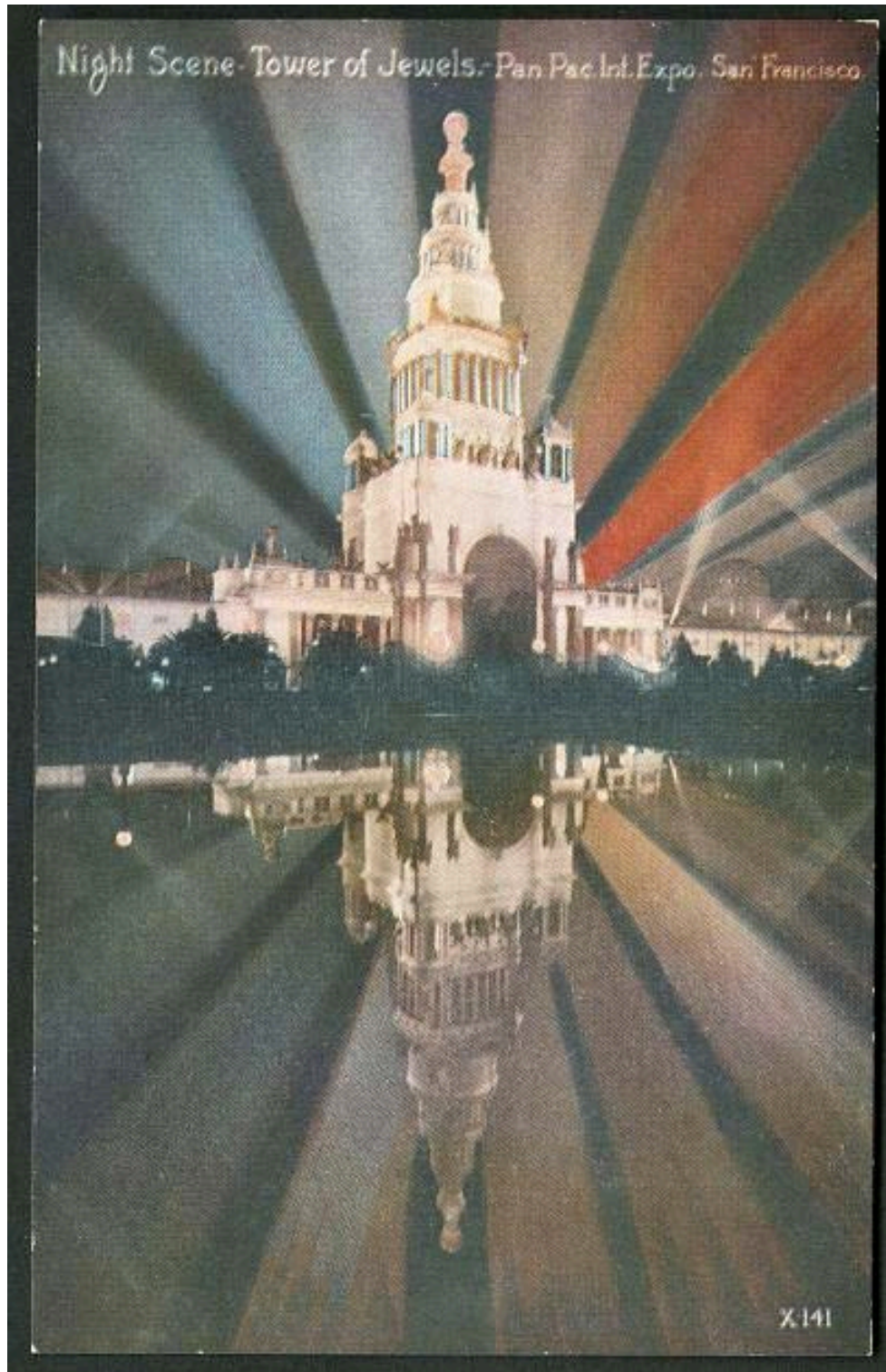


Figure 10 - Postcard of the Tower of Jewels at the Panama-Pacific International Exposition, 1915 (postcard by the Pacific Novelty Co., image from the Smithsonian Institution Archives)

Arguably one of the most influential glass buildings of the early twentieth century is the Maison de Verre, located at 31 Rue Saint-Guillaume in Paris. Built from 1928 to 1931, the Maison de Verre is an addition to an eighteenth-century building, located in a small courtyard. Architects Pierre Chareau and Bernard Bijvoet designed the house for Dr. Jean Dalsace, a gynecologist, and his wife, both of whom were progressive intellectuals who often held meetings with Marxists intellectuals and Surrealist artists. The building served as both a residence and an office for Dr. Dalsace.

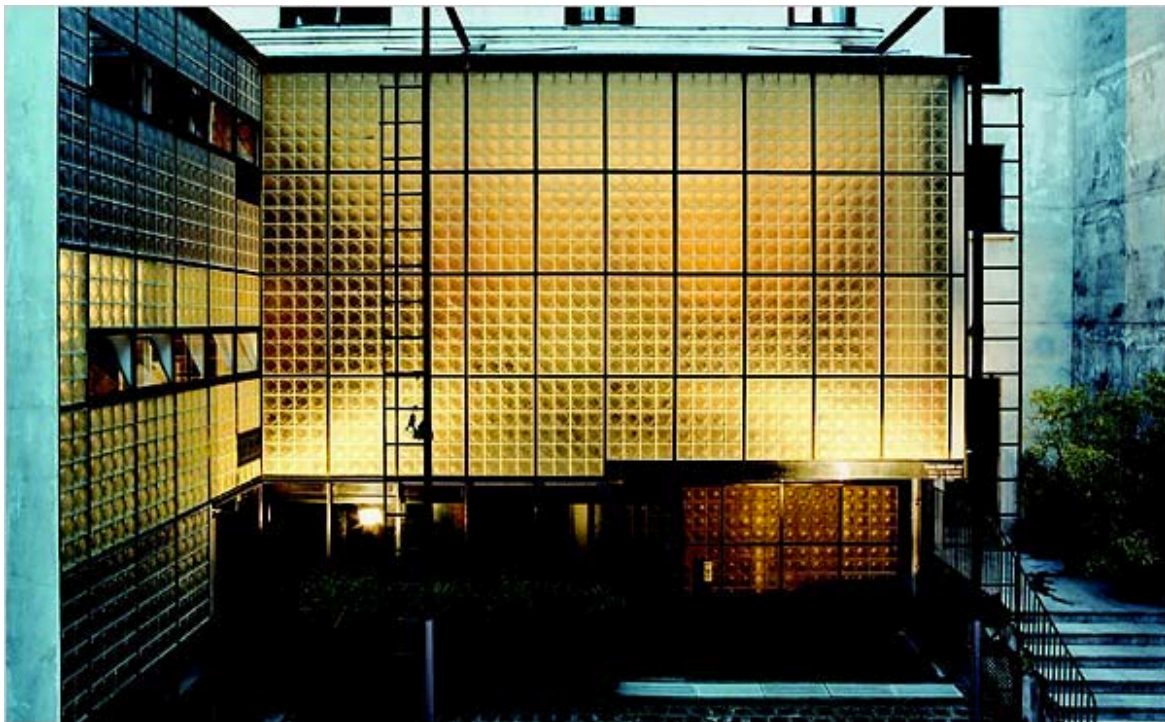


Figure 11 - Le Maison de Verre (Photo by Mark Leon, [www.untappedcities.com](http://www.untappedcities.com))

The Maison de Verre was built using sold glass blocks designed by the Saint Gobain Company, French manufacturers of glass products. In 1928, the company introduced the “Nevada” glass block, a square unit measuring approximately 7.8 inches square and 1.5 inches thick. The blocks, which were set into a steel framework, featured a mottled pattern reminiscent of dried earth on the exterior face, and a circular concave interior face to reduce the weight of the solid blocks.

Although the blocks in the Maison de Verre were solid, not hollow glass blocks, this building was an extremely important precedent structure to the history of hollow glass blocks. The Maison de Verre helped to spark the popularity of glass blocks, as it was one of the first buildings to use this new material for most of its façade. The dramatic appearance of the building, especially at night, introduced the idea that glass could replace the traditional masonry wall, and this idea would be incorporated into American architecture shortly after the completion of the Maison de Verre.

### THINKING QUESTIONS\_PART 3

pg. 23 – 29     ***The Early American Glass Block Buildings***

7. Explain how the metaphor of a glass block “lantern” relates to earlier use of glass, specifically Thomas Hastings’ *Tower of Jewels* (1915)?

8. Compare and contrast the use of glass block in the Barbizon Hotel to the Towne House Apartment building or Maison de Verre.

9. How did the design of the Barbizon Hotel relate to the American economy?

## Chapter 2: The Development and Early Use of Hollow Glass Block in America

### *The Early American Glass Block Buildings:*

When discussing the earliest use of hollow glass block in America, most scholars cite two important structures: The Owens-Illinois Glass Block Building at the Chicago Century of Progress Exhibition, constructed in 1933, and the William Lescaze House & Office in Manhattan, constructed from 1933 to 1934. While these were certainly defining moments in the early history of glass block in America, these were not the “first” examples of the material’s use, as many claim. The first use of hollow glass block in the U.S. dates as early as the construction of the Barbizon Plaza Hotel in 1928.

The Barbizon Plaza Hotel, located at 106 Central Park South, was designed by architect Laurence Emmons. It is likely to have been the first building in the United States to use hollow glass block, aside from the Falconnier pavilion at the World’s Columbian Exposition. Constructed from 1928 to 1930, the Barbizon Plaza featured a glass atrium roof that was four stories tall, constructed of both structural glass tiles and hollow glass blocks. These blocks measured 9 ¾” by 4 ½” by 3 ¼”, with vertical ribs on the side, open at the bottom, and “lugs” on the top. Reports state that the hollow blocks used for this building were imported from Germany, so it is likely that Siemens was the manufacturer.

The Barbizon Plaza Hotel is said to have been America’s first glass-pinnacled skyscraper.<sup>20</sup> Also cited as the first building in the country to use glass blocks as a wall material, the blocks were used for the vertical side walls which formed the base of the roof, and smaller round glass tiles were used to complete the upper portion the roof. The glass tiles were set into diamond-shaped panels, held together with a metal frame and placed upon the glass block base. The glass blocks were laid

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<sup>20</sup> “A New Beacon,” *The Architect* 14 (June 1930), 243.



with staggered joints, just as bricks are laid, also marking the first time in the country that glass was used as if it were a masonry material.

In his design, Emmons tested various lighting arrangements for the illumination of the roof. Using interior floodlights, Emmons was able to produce a mellow glow that was said to imitate the texture of moonlight. The floodlights would reflect against glass mirrors placed inside the tower and shine outward through the glass tiles and glass blocks, the rays diffused in the process. This lighting scheme could also be produced in various colors, bringing the possibility of new interests and appearances to the building. These lighting effects, when used together, created what was once described as a “crown of light” for the building.<sup>21</sup>

The Barbizon Plaza, while boasting these “firsts”, was part of a larger movement in the late 1920s and early 1930s towards the illumination of city skylines. Yet, most other illuminated skyscrapers of this time were lit with external floodlights, shining upon their exterior facades. The Barbizon Plaza was unique because it was illuminated from *within*. Other contemporary Art Deco skyscrapers, such as Raymond Hood’s American Radiator Building, featured externally-illuminated towers and did not experiment with glass the way that Emmons did at the Barbizon Plaza. Emmons was revolutionary in his use of both glass tiles and glass blocks to create a fully-glass rooftop structure. Inside, the rooftop was used as an indoor fitness center and “sun-tan” roof for hotel guests.<sup>22</sup> Similar to the Falconnier glass block garden pavilions, the Barbizon Plaza’s rooftop was evocative of a jewel-like garden folly set atop the New York City skyline. At a time when many architects built skyscrapers along Central Park with whimsical rooftops above the Park’s treetops, the Barbizon Plaza’s shimmering glass lantern stood out amongst the others.

The Barbizon Plaza Hotel was the also first building in America to use glass block for the

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<sup>21</sup> “Steel Work Finished: Barbizon Plaza Building Due to be Opened in March,” *New York Times*, November 17, 1929, RE1.

<sup>22</sup> “Barbizon-Plaza Hotel,” *Columbia Daily Spectator*, May 19, 1931, 4.

purpose of advertisement. The hotel's glass block pinnacle roof was regarded as a "mark of revolutionary changes in decorative light for great buildings". The blocks' prismatic ridges would reflect sunlight during the day, and at night would "produce a dazzling brilliance that can be seen far at sea".<sup>23</sup> The Barbizon Plaza, in addition to being a hotel, was also used as the headquarters, meeting, and event space for many of the city's top art and musical organizations. Today, the roof of the building has been altered, removing all of the glass and replacing it with a gold-painted metal. This altered rooftop, designed by Frank Williams, is Postmodern in style and does not do justice to the magnificent rooftop that once existed. This is a great architectural loss, especially due to the Barbizon Plaza Hotel's importance to the history of glass block in the United States.

The artificial lighting used in the Barbizon Plaza gave the top of the building a fanciful glow - an embodiment of the Roaring Twenties zeitgeist. Although the Barbizon Plaza was completed just after the Depression, its design was still a product of the pre-Depression years of glamour and excitement. Before the Depression, the country was filled with jazz age glamour and optimism. Cities were growing rapidly, and each skyscraper seemed to one-up its neighbor. Even Fritz Lang, creator of the groundbreaking, futuristic science fiction film *Metropolis*, stated that "the film was born from my first sight of the skyscrapers in New York in October 1924...I looked into the streets - the glaring lights and the tall buildings - and there I conceived *Metropolis*."<sup>24</sup> The film captured the optimism of the decade, including its forward-thinking architecture.

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<sup>23</sup> "New Beacon This Week on Night Skyline of City," *New York Herald Tribune*, May 25, 1930, E2.

<sup>24</sup> Michael Minden and Holger Bachmann, *Fritz Lang's Metropolis: Cinematic Visions of Technology and Fear* (Rochester: Camden House, 2000), 4.



Figure 12 - The Barbizon Plaza Hotel, 1939 (photo by Samuel H. Gottscho, from the Samuel H. Gottscho Collection at the Museum of the City of New York)



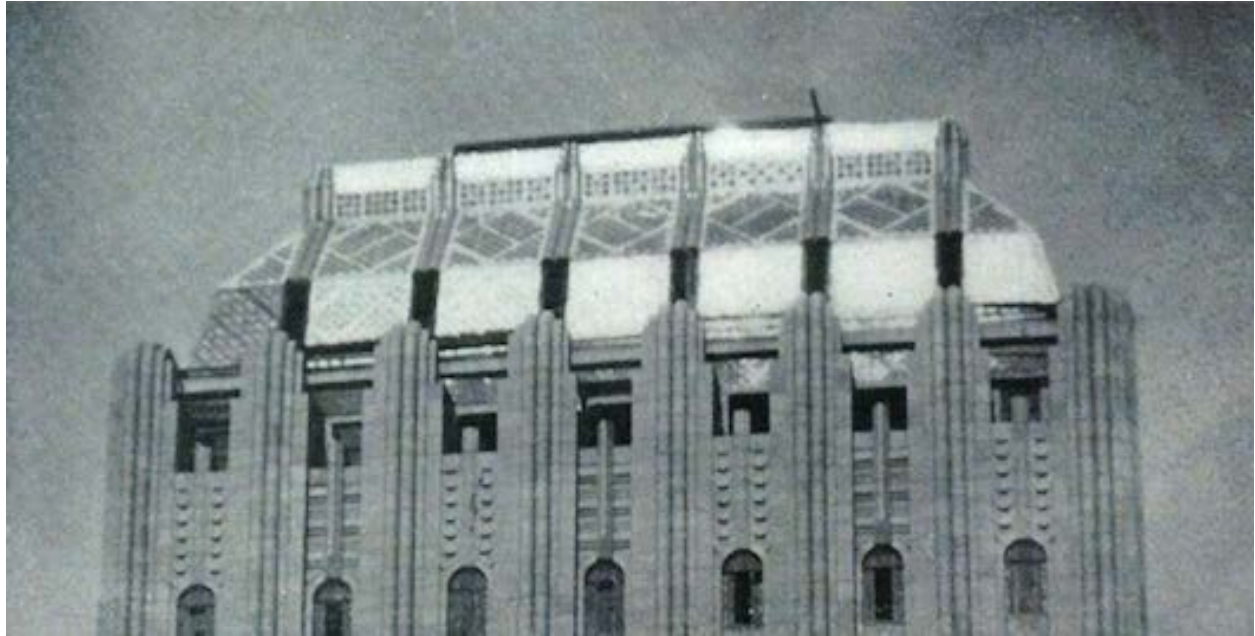


Figure 13 - Detail of the Barbizon Plaza Hotel roof (from Eugene Clute, "Designing for Construction in Glass", *Pencil Points*, 1932)



Figure 14 - Installation of glass blocks at the roof of the Barbizon Plaza Hotel (published in "Glass Walls Now Used in Building", *Popular Science*, June, 1930)



Figure 15 - Roof of the former Barbizon Plaza Hotel, now the Trump Parc, 2009 (photo by [www.carnegierocks.com](http://www.carnegierocks.com))

In addition to the Barbizon Plaza, another skyscraper building in New York City was experimenting with early glass block. The Towne House apartment building, located at 108 East 38th Street, featured large, rectangular panels of glass block at the top of its tower. This block, reportedly imported from Holland, was illuminated at night to show off its deep amethyst color. Designed by Russell & Bowden, this Art Deco building is twenty-five stories tall and features a brick facade with rainbow-colored terracotta at the top. The brick facade gradually changes in color, from darker brick at the bottom to lighter brick at the top, culminating in the tower. Here, rectangular glass blocks were used in large rectangular panels on all four sides of the tower. The purple-red amethyst color of the blocks made them blend in with the brick façade during the day, but shone

brightly at night - an unexpected surprise. In one description of this building in the *New York Herald Tribune*, glass block was heralded as the “building material of the future”.<sup>25</sup> Similar to the Barbizon Plaza Hotel, the glass blocks were laid with staggered joints, creating a recessed wall panel within the tower.

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<sup>25</sup> “Glass Brick Construction Used in new Town House,” *New York Herald Tribune*, August 24, 1930, E1.

THINKING QUESTIONS\_PART 4

pg. 46 – 53     ***The William Lescaze House and Office***

10. Read William Lescaze's quote on pages 48 and 49 and assess the accuracy of his claim that his home was the first use of glass block in the United States.

11. How did the use of glass block in Lescaze's house challenge conventional building code?

12. Compare and contrast the two aesthetics of glass block. You may wish to discuss material, form, architectural style, technology and light.

*The William Lescaze House and Office:*



Figure 24 - The William Lescaze House, 1934 (photo by the Wurts Bros, from the Collection of the Museum of the City of New York)





Figure 25 - The William Lescage House, 1934 (photo by the Wurts Bros., from the Collection of the Museum of the City of New York)

While the Glass Block Building was on a large scale, promotional use of glass block, the material also began to be picked up for use by architects for smaller-scale projects around the same time as the Chicago Century of Progress Exhibition. The most notable early residential use of glass block is found at the William Lescaze House & Office at 211 East 48th Street in Manhattan. Designed by William Lescaze himself, the building was constructed from 1933 to 1934. One of the first Modern style residences in the city, the building had a great impact on the popularity of glass block.

The Lescaze House was a dramatic departure from the nineteenth century brownstones that surrounded it. The facade, with its simple, flat forms, showed that glass block was part of a new movement of architecture - away from the Art Deco movement into a new style that emphasized angular lines, planar surfaces, functionalism, and little to no ornamentation. The Lescaze House featured an off-white stucco facade with a rectilinear design. Glass block is featured prominently in the facade, comprising two large rectangular infill panels on the third and fourth floors, taking up almost the entire width of the building. Another smaller wall of solid blocks is used on the ground floor, where Lescaze's office was located. Because this was likely the first time in New York where glass block was to be used for the majority of a building facade, the Department of Buildings had some reservations. Lescaze stated,

When we built our house in 1934, glass bricks had not been used in this country. Unbelievable but true. I had seen a few of them in Europe, and they seemed to me an excellent new material to do a job which I was anxious to have done. They added to the amount of daylight without adding to the fuel bill, they let daylight through yet obscured the uninteresting view of the nine-story apartment house across the street, and they deadened street noises. An enterprising manufacturer agreed to make the first American glass blocks for us in his plant in Illinois. But what an epic battle we had with the Code! It lasted at least three months, back and forth. Three months of agony. Don't say: What of it, a pioneer must take a pioneer's tribulations. I don't call that pioneering. That's merely making use of a known building material (glass) in a somewhat different form (block). Look at it this way - the architect's way. Suppose I had been doing it for a client. Would I have the right to burden him with all the attendant annoyances, the holding up of construction, the added expense caused by this first attempt to use a new material? However, I was finally allowed to build as I had designed, and once the first case had been approved it established a

“precedent” and from then on, there being a precedent, every subsequent case had a much easier time.<sup>51</sup>

Although Lescaze was incorrect in his statement that this was the first time glass blocks were used in the country, his building was nevertheless an important event in the history of glass block. Because earlier uses of the material in the City never comprised large expanses of wall in a residential building, the New York City Department of Buildings was unsure of how to proceed with the code regulations and acceptance of this new material. The Department of Buildings was hesitant to allow Lescaze to use such large expanses of blocks, for fear that the building would not have proper ventilation. To remedy this, Lescaze agreed to include an extensive system of mechanical ventilation and air conditioning.<sup>52</sup> At the time, air conditioning very new, but Lescaze was familiar with it from his design for the Philadelphia Savings Fund Society building, which was the second skyscraper building to have central air conditioning. In the future, buildings with large expanses of glass blocks and few, if any, operational windows were a signal that the building was air-conditioned. Throughout the 1930s, an air conditioned building indicated that the owner of the building was up-to-date with the latest in modern technology.

Lescaze’s building was given great attention and praise by architectural publications. The press did help to spark interest in glass block, and some architects even constructed very similar buildings to Lescaze’s in the same block shortly thereafter. Lescaze himself designed two more townhouses in the city that utilized glass block: the Kramer House at 32 East 74<sup>th</sup> Street, built in 1934-1935, and the Norman House at 124 East 70<sup>th</sup> Street, built in 1940-1941. Both of these houses were commissioned as private residences. Both the Kramer and Norman families admired the

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<sup>51</sup> William Lescaze, *On Being an Architect* (New York: Putnam, 1942), 205-206.

<sup>52</sup> New York City Landmarks Preservation Commission, *William Lescaze House and Office Designation Report* (LP 0898)(New York: City of New York: 1976).



Modernist approach of Lescaze's own home, and sought out the architect to design for them in his recognizable aesthetic.



Figure 26- The William Lescaze House, 2013 (photo from [www.ephemeralnewyork.com](http://www.ephemeralnewyork.com))



Figure 27- William Lescaze, Kramer Residence, built 1935, photo from 2013  
(photo by Ruth Fernson, published in “An Urban Standard, Coolly Reimagined”  
*The New York Times*, January 10, 2013)





Figure 28- William Lescaze, Norman Residence, built in 1940, photo from 2011 (photo by David Cobb Craig, [www.davidcobbrcraig.blogspot.com](http://www.davidcobbrcraig.blogspot.com))

The Owens-Illinois Glass Block Building and the William Lescaze House represent the start of two different aesthetic uses of glass block which would continue throughout the 1930s and into the 1940s. The first aesthetic path used glass block freely to create volumetric forms – walls, towers, columns, pylons etc. The second aesthetic path was the use of glass block in plane - as an infill material for angular wall openings in the Modernist style. Most of the buildings, which used the material in free, volumetric ways, were designed in the Streamline Moderne or Art Deco styles. Although many buildings in this style had a Classical composition - featuring a central, vertical axis from which low, horizontal wings extend from – the way that the glass block was used in these buildings is arguably more innovative than the way it was used in Modernist, flat planes. For example, the Owens-Illinois Glass Block building featured a Classically-inspired form, but the way that it used colored glass blocks to build its walls instead of traditional masonry materials made the building wholly innovative.

THINKING QUESTIONS\_PART 5

pg. 119 - 124 *The Decline of Glass Block*

13. What is the relationship between the decline of glass block and global politics of the 1930's and 40's?

14. If glass block manufacturers reported increased sales as late as the 1950's, why does the author insist the height of glass block had passed?

15. Compare and contrast the use of glass block before and after WWII.

aesthetic value. For example, the Metals Building used the blocks as a surface upon which to build the fountain, rather than letting the blocks stand out on their own. The blocks were also used because they could be easily colored with paint or light, without affecting the pristine white walls of the building, and were also non-porous so that the water could run off of the surface without damaging it.

### *The Decline of Glass Block*

The end of the World's Fair marked the "last hurrah" of Streamline Moderne, and, in turn, the decline of glass block's use. By the early 1940s, the use of glass block had shifted from the innovative, Streamline designs of the 1930s, to small residential applications. As the International Style and Corporate Modernism began to take more of a hold on American architecture, the volumetric, curved glass blocks designs began to disappear. The decline of the use of glass block may be attributed to the decline in the Streamline Moderne style, which used the material so often to bring interest and value to buildings. The fact that glass block was a relatively new, mass-produced material aligned with the Streamline Moderne ideals of building structures that evoked technology and the idea of the building as a machine. In addition, the light-giving and light-emitting qualities of glass block supported the nation's search for optimism in the post-Depression years.

During the 1930s, most clients were not fully ready to embrace the austere aesthetic of European Modernism. Yet, as Hitler came to power in Europe, many architects fled to America after Hitler's declaration that Modern art and architecture were a representation of Bolshevism and moral decadence. Modern architects like Walter Gropius and Mies van der Rohe immigrated to America around 1937 and 1938, and earned appointments as architecture professors in colleges and universities. The Streamline Moderne style was at its height, and judging by the large number of glass block buildings built at this time, it was also the height of the use of glass block as well. Yet, as

Modern architects and their work began to be more widely accepted by the public, Streamline Moderne was losing its favor as the style that embodied the “now”. By the start of the 1940s, the Modern and International Style aesthetics had taken hold.

Although glass block manufacturers noted increases in the sale of glass block during the 1940s and into the 1950s, it is likely that the majority of these sales were for small infill applications. By the mid-1940s, glass block was primarily being marketed by Owens-Illinois and Pittsburgh Corning for use in the middle-class American home. Advertised as a material which you could use in the window above your kitchen sink to provide daylight, or to provide privacy in a bathroom, glass block had begun to transition from a material used in design-focused projects by professional architects to one used by average homemaker to “update” their dwelling. In the 1940s and 1950s, Owens-Illinois and Pittsburgh Corning introduced new patterns and types of blocks, presumably marketed to the homeowner looking for more novelty-type glass blocks. Blocks were introduced with circular, hollowed-out interior sides which could be placed in a wall and hold flowers or other items. A system of easily assembling and disassembling blocks without the use of mortar was readily accepted by those who wished to update their home quickly. These blocks were slid onto a wood frame system, and were used for interior partitions. In addition, another type of block using a half block and set on metal hinges could be opened, similar to a hopper window.





Figures 87 & 88 - Above: Use of glass block as an infill material, Below: Use of glass block in the kitchen, 1945 (from “Beautiful Homes”, trade catalog by Owens-Illinois, published 1945)

Yet, although the use of glass block declined in the 1940s and 1950s, it certainly does not mean that large installations of the material stopped completely. In addition, architects did not stop designing in the Streamline Moderne by 1940, as no architectural style has a clearly defined start and end point. Architects still built in the Streamline Moderne style well throughout the 1940s, but it can be argued that the innovative designs and bold use of glass block largely died out during these later years. Of course, there are always exceptions to this statement. For example, IBM built a factory in 1952 in Poughkeepsie, New York, almost entirely out of glass blocks. Reminiscent of earlier glass



block factories of the 1930s, like the Campana Factory, the IBM Plant featured a Classical form with a vertical tower anchoring two long, horizontal wings. Another notable, later use of glass block is at the New York School of Printing, now the High School of Graphic Communication Arts, built in 1959 and located at 439 West 49<sup>th</sup> Street in Manhattan. Designed by Kelly & Gruzen, almost entire façade of the seven-story school was comprised of glass blocks, only separated by metal mullions and plate glass windows on the lower half of the floors to provide ventilation.

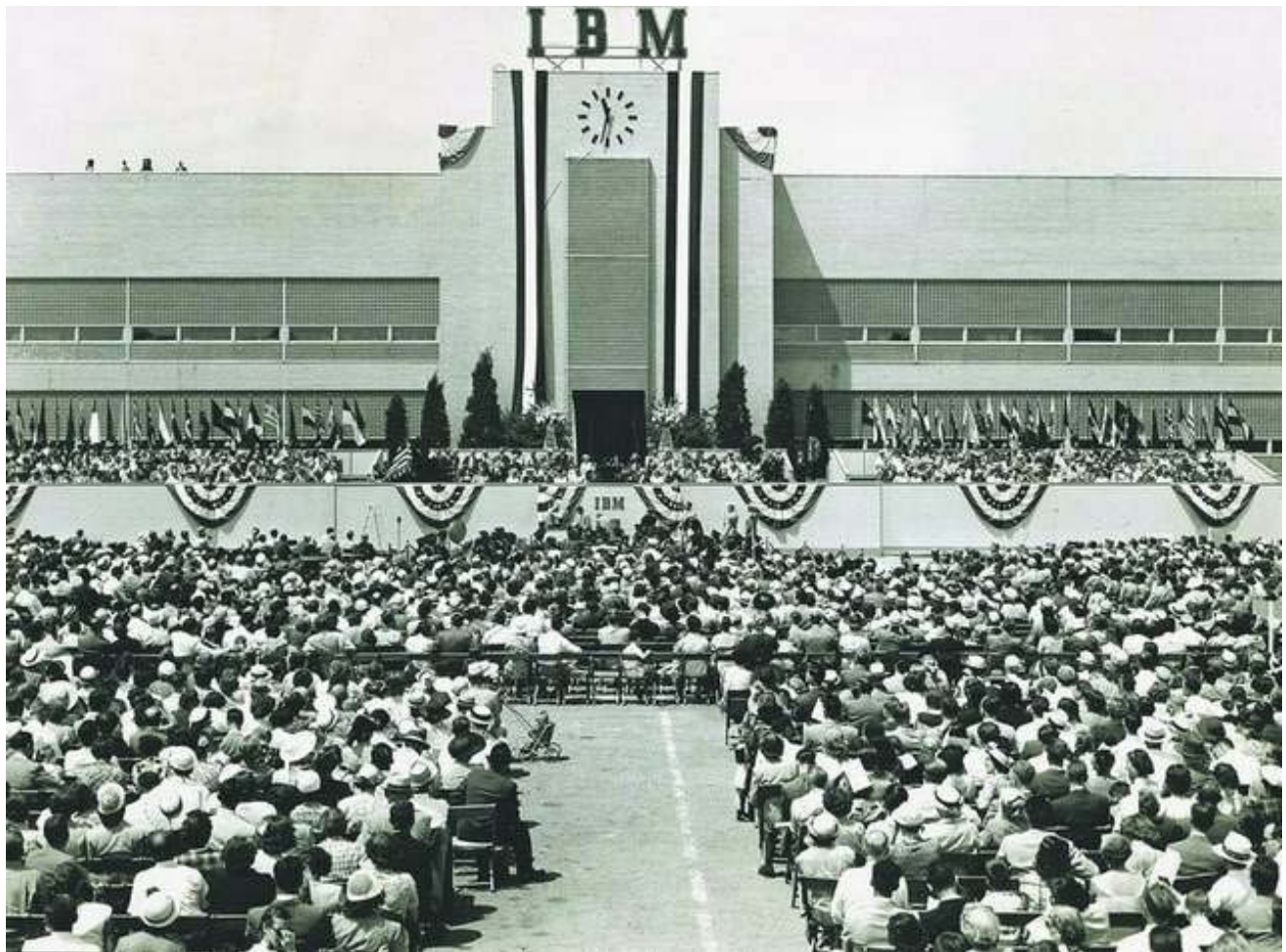


Figure 89 - IBM Plant, Poughkeepsie, NY, 1952 (from “Insulux Glass Block”, trade catalog published by Owens-Illinois, 1953)

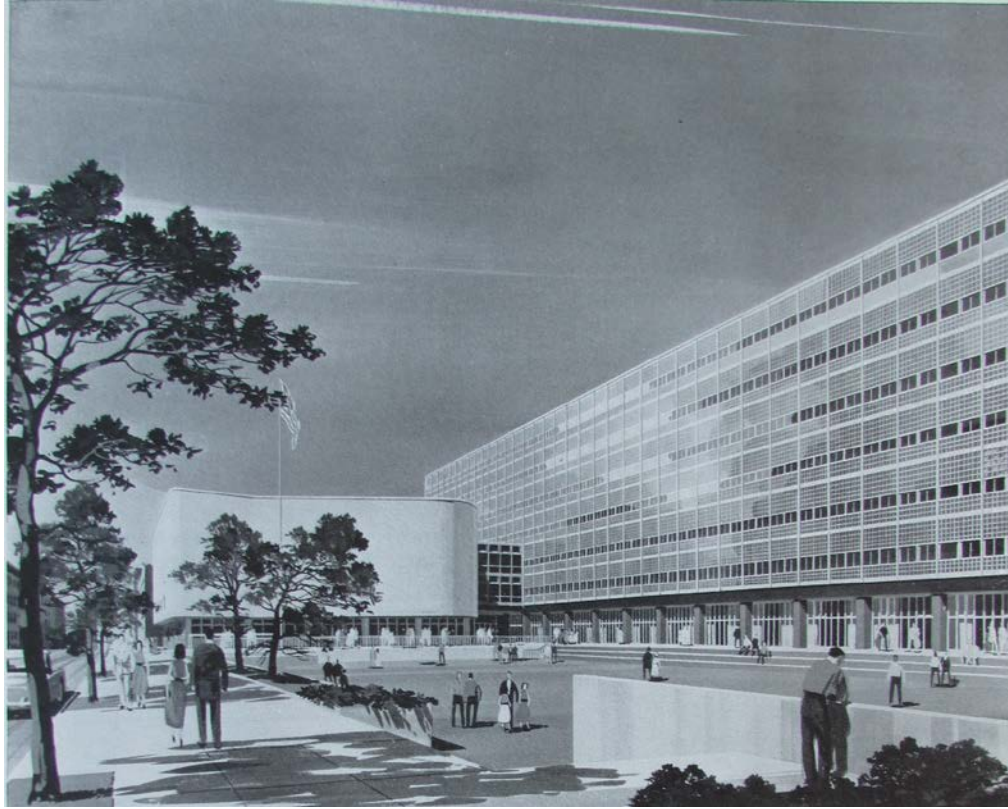


Figure 90 - Rendering of the New York School of Printing, 1957 (from “PC Products”, advertisement in *Architectural Forum*, December 1957)

The popularity of glass block in school design was one of the most important reasons for the material’s use through the 1950s. The introduction of light-directing blocks in the 1940s - which had prisms on the interior face that would direct light upwards towards the ceiling and diffuse it through the room- proved popular in schools. The blocks allowed for large amounts of daylight with little glare, beneficial to students and their studies. Most of the glass block commissions for schools were used as large panels above row of operable plate glass windows. This use of glass blocks is much like the early prism glass tiles, which were used as transoms above a store entrance to bring in light. Just as early glass blocks had been used as an infill material, they had now come full circle, back to that same use.



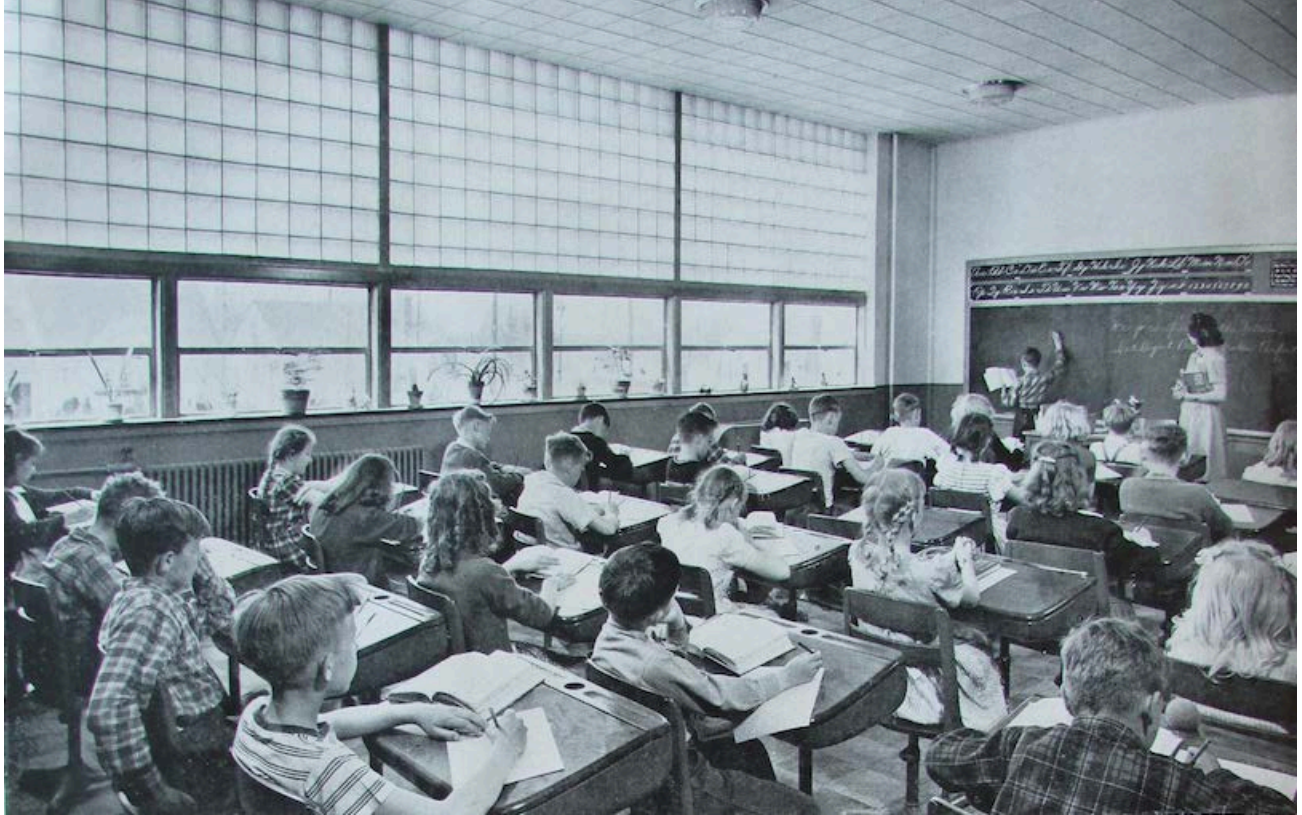


Figure 91 - Oakdale Christian School, Grand Rapids, MI, c. 1949 (from “The Mark of a Modern Building in Industrial, Commercial, and Public Structures”, trade catalog published by Pittsburgh Corning in 1949)

THINKING QUESTIONS\_PART 6

pg. 125 – 130 **Conclusion**

16. What image and messages did glass block construction send at the height of its use?

17. Compare and contrast the use of glass block in recent construction (Tado Ando and Renzo Piano)

18. What is meant by Raymond Hood's term "Architecture of the Night" and how does it relate to history, technology and culture?

## Conclusion

Glass block left its mark as a defining architectural material of the 1930s. A material that allowed for translucency and illumination, glass blocks reinterpreted traditional notions of building with masonry. Some of most innovative uses of the material were found in Art Deco and Streamline Moderne buildings, which often featured curved walls, vertical pillars, and other volumetric elements. In the Streamline Moderne, glass block flourished because it could be used to its full potential as a material that could create these volumetric forms with light, glowing from within. The use of glass block in the architecture of the 1930s signified modernity and innovation. The material itself was a form of advertisement for a building – not only due to its nighttime illumination, but because it suggested that the building’s owner or company was up-to-date with the latest architectural trends. For commercial buildings especially, glass blocks often signified that the products or services offered on the inside of the store would be just as modern as its exterior. Glass block was also found in Modern style buildings, but was used largely as a planar infill material. In this manner, glass block was used more for the technical properties it could provide, rather than its innovative aesthetic qualities. While using the blocks for their technical value is by no means insignificant, architects’ use of glass blocks in the Art Deco and Streamline Moderne form was more bold and daring, for it changed what the idea of a masonry should look like.

Changes in architectural tastes lead to the decline of glass block’s use in the late 1940s and 1950s. Although most architects no longer sought out the material to create innovative designs, it still found use for its light-giving and light-directing qualities, especially in school buildings. Although not discussed in this thesis, glass block manufacturers, most notably Pittsburgh Corning, tried to revamp glass blocks in the 1960s and 1970s by offering them in new colors, patterns, and shapes, but the material would not see the popularity that it had seen in the 1930s. Although the

glamorous age of glass block design may be over, some recent architectural works have chosen to bring new life to the material.

Beginning in the 1970s, architect Tadao Ando used glass block to comprise the walls of the interior courtyard of the Ichihara House, designed in 1979, and for a wall of the Horiuchi House, designed in 1979. Both buildings are located in Osaka, Japan. In 1998, Renzo Piano designed an all-glass block commercial building in Tokyo for the Hermes Company. A volumetric, rectangular pillar, Piano stated that he wanted his building to evoke the image of a Japanese lantern.

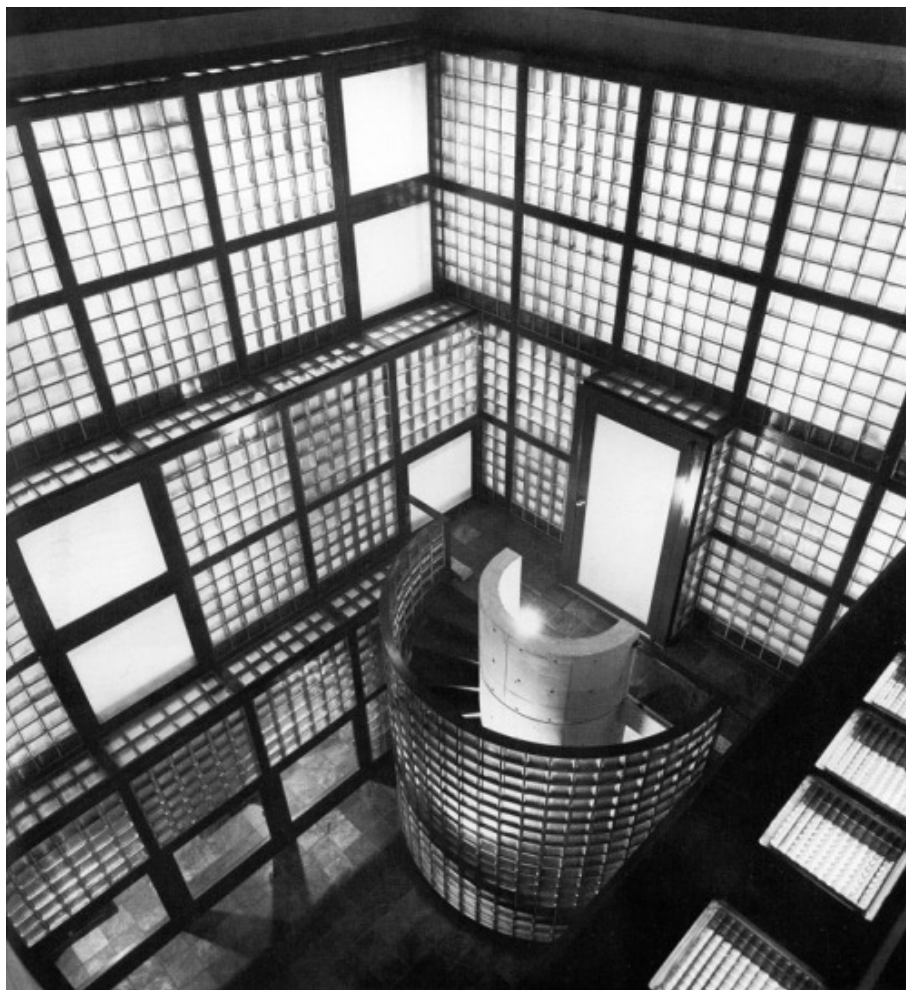


Figure 92 - Ishihara House, 1977 (photo from *Tadao Ando: Complete Works*, 1995).





Figure 93 -Top: The Maison Hermès, 1998 (photo by Michel Denance, from Fondazione Renzo Piano)

Other recent works of glass block include Crown Fountain in Chicago, built in 2004 and designed by Jaume Plensa. The fountain is comprised of a reflecting pool that is placed between two vertical, rectangular glass block towers, from which a jet of water flows into the pool. The towers display videos of faces, lips puckered, which appear as if they are spitting water from their mouths into the pool. This video imagery is designed to be reminiscent of gargoyle water spouts, typically seen on historic buildings. Here again, glass block is partaking in a project that revamps tradition.



Figure 94 - Crown Fountain, photographed 2008 (photo from Wikimedia Commons)

Finally, another recent glass block work at the Reagan National Airport merges the historic, 1930s glass block forms and reworks it for the present day. Designed by Hartman-Cox Architects in 1991, the structure functions as the entrance to a parking garage at airport. Yet, what could have been a mundane structure was transformed by glass block into a Neo-Streamline Moderne design, drawing from such precedents as the 1937 Arthur Brammer-designed Direct Oil Service Station. Thus, as these recent glass block projects show, the use of glass block may be enjoying a revival.

Glass block was one of the most innovative building materials of its time, as it enabled architects to build with light and illumination. Using Classical forms, architects could now create pilasters and columns with translucent glass, completely changing the idea of what a “solid” pilaster or column should look like. Glass block enabled buildings to be made *with* light—transforming them



into glowing lanterns or shimmering beacons during the night. This “Architecture of the Night”, coined by Raymond Hood, was a departure from the opaque masonry buildings of years past. Glass block allowed for buildings to be entirely made of translucency and illumination, and its introduction and use stands as an important moment in American architectural history as a material which reinterpreted traditional ways of building. In the 1930s, the boundaries of indoor and outdoor, opaque and translucent, solid and lightweight, and dark and light were challenged with great success. It is vital to preserve our remaining historic glass block buildings as a testament to, and symbol of, this great era of innovation.



Figures 95 & 96- Top: Reagan National Airport Parking Garage, 1991 (photo from Glass Block of America)

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