

Eero Saarinen - America's Modern Form-Giver



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One of the world's most celebrated architects at the time of his untimely death at the age of 51, the Finnish-born, American-trained master of Modernism Eero Saarinen designed and built more than thirty-five buildings in his brief lifetime, and more than thirty other projects in collaboration with his father and such celebrated design professionals as Charles Eames and Ralph Rapson. Every legitimate survey of the most superior works of architecture in the twentieth century includes at least two of Eero Saarinen's projects.

After his death, interest and respect for Eero Saarinen and his work initially waned.

Fortunately, the release of his papers in the last two decades has awakened awareness and appreciation for Saarinen's career and work. Eero Saarinen's archives are in a number of different locations. Cranbrook has family papers, correspondence, photographs and 16 mm films that were archived in 1991 and 1998. After Eliel's death, Loja donated his honorary degrees, awards, drawings and photographs to the Museum of Finnish Architecture in Helsinki. She donated Eliel's correspondence with composer Jean Sibelius to Finland's Sibelius Museum.

Some of Eliel's drawings are in the archives of the Royal Institute of British Architects at Yale University. Eero's second wife Aline donated a collection of Eero's papers to Yale in 1971. Between 2003 and 2010, Roche Dinkeloo Associates donated the bulk of Eero's working files and additional drawings to Yale.

Many others have contributed to the Eero Saarinen archive at Yale: Robert Scobey and the firm of Cooper, Dunham, Clark, Griffin & Moran, 1982; Peter C. Papademetriou, 1987; Brackley Shaw, 1988; Charles Dibbell, 1992; Robert A. M. Stern, 2004; Gerald D. Hines School of Architecture, University of Houston, 2004; Oliver Lundquist, 2004; Bentley Historical Library, University of Michigan, 2006; Will Miller and Irwin Management Company, 2010-2011; Jayne Merkel, 2011; Pelli Clarke Pelli Architects, 2011; D. Thomas Kincaid, 2011; Frederick T. Kubitz, 2014.



Top: TWA Flight Center, JFK Airport, New York; 1956

Above: Eliel & Eero Saarinen, 1920

Below: Eliel Saarinen with Students



While the projects most celebrated in the brief career of Eero Saarinen are well known and widely praised, such a focus misses the tremendous migration that Saarinen made in his design strategies and his evolution over a short period of time to become the greatest form-giving architect of the twentieth century.

Eero effectively burst on the architectural scene with his first solo commission, the large GM Tech Center in Warren, MI. The Kresge Auditorium at MIT was a precedent for the TWA terminals at JFK and Dulles Airports. His St. Louis Gateway Arch is known to all. His Irwin Miller house and North Christian Church in Columbus, IN are iconic projects, as is his chapel at MIT. With a number of Saarinen's works incomplete at the time of his passing, an examination of the timeline of his designs illustrates his significance evolution as an architect in a regrettably brief career.

Saarinen was born to supremely talented parents in Kirkkonummi, Finland in 1910. Father Eliel Saarinen was himself a world-famous architect while Eero's mother Loja, Eliel's second wife, was a noted sculptor. Father Eliel's first major project was the Finland Pavilion at the Paris 1900 World's Fair, which managed the convergence of Finnish wooden vernacular, British Gothic Revival with Jugendstil. His second major project was the Helsinki Central Rail Station (1904-1914), which resulted in his work being deemed Finnish National Romanticism. Eliel also designed stamps and Finnish currency.

Eero grew up literally in his father's architectural office. Often as a very young child, Eero would sit under Eliel's drafting table drawing while his father would be working on commissions right above his head. Reputedly, every day he would ask one of his father's draftsmen, named Otto, to draw him a horse. Later, when Eero interviewed potential employees in his own office, he would have them draw him a horse, claiming that he could tell how good a draftsman anyone was from about two or three strokes of sketching the figure.

This story is born out by virtually every individual who worked for Saarinen. Piet van Dijk was recommended to Saarinen and when so charged, drew the back end of the horse, which demonstrated to Eero Piet's nontraditional thinking, so van Dijk fit right in. At his interview with Eero, Cleveland's Norman Perttula was instead asked to prepare a rendering of the School of Music at the University of Michigan. Fifty years later, that Perttula rendering is still on the cover of the music school's literature.

It is not responsible to assess the works and career of Eero Saarinen without considering the path of Eliel inasmuch as by influence and collaboration, Eliel's values and work greatly influenced and impacted Eero's approach and beliefs.

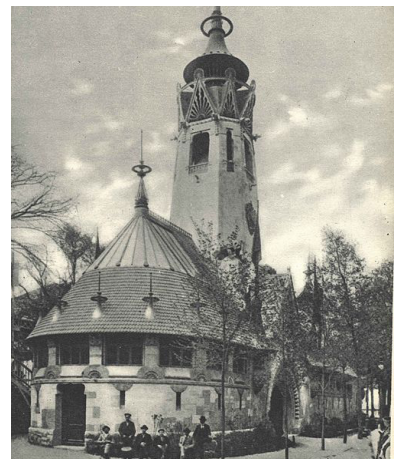
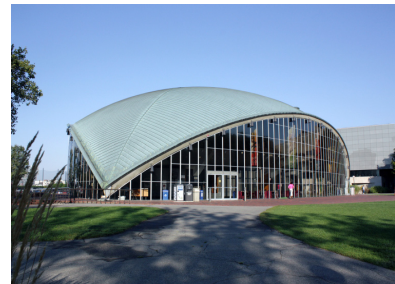
Eliel Saarinen Background:

Gottlieb Eliel Saarinen was born 20 August 1873 to Juho, a minister, and Selma Broms Saarinen in Rantasalmi, Finland. Finland did not become independent of Russia until the 1917 Russian Revolution. The eldest of seven children, at age two, Eliel's family moved to Ingria in Russia. Eliel's father spoke German, Finnish, Swedish and Russian. At home, Eliel's parents spoke Finnish to Eliel and Swedish to his brother Hannes.

At the age of ten, Eliel was enrolled in a school in Viipuri, a small town dominated by a large stone castle with high walls and a tower. For ten years, Eliel daily passed St. Petersburg en route to school with its monumental squares,



Top to Bottom:
1. GM Tech Center; Warren, MI
2. Kresge Auditorium, MIT; Cambridge, MASS
3. Finland Pavilion, Paris World's Fair, 1900
4. Helsinki Grand Railway Station, 1904-1909



radial streets, canals, palaces and parks. These experiences profoundly influenced Eliel's confidence and interest in and approach to urban planning and design.

Eliel inherited a strong sense of nationalism from his father who was banished from Ingris in 1899 for his "ardent pro-Finnish mentality." The following year, Juho was given a Finnish church in St. Petersburg and named vicar in 1911. Saarinen's family would return to Finland and Hvittrask nearly every summer to visit.

In his childhood, Juho lived in the Russian territory of Ingermanland near St. Petersburg. Thus, the proximity of St. Petersburg provided young Eliel Saarinen with a unique urban experience in more rural Finland.

Eliel Saarinen began his collegiate training in drawing and architecture at the Helsinki Polytechnic Institute in 1893, immersing himself in cultural life. His travels with classmates and family in the region generally involved settings without significant topographical changes, and Saarinen developed an appreciation for themes where a work of architecture was seen across a lake against a lush forest. It is reported that Saarinen "rose to a position of authority among his fellow students."

Saarinen's leading professor, Gustaf Nystrom, required a formal mastery of Classical styles, though Saarinen was "quick to expose new trends (Haussen, 1990)." Saarinen did not find Nystrom inspiring; "For those years – from 1894 – 1897 – during which I got my first dose of Classical architecture, coincided with those very years when it finally became evident that Classical form after all is not the form to be used for contemporary purpose, but that our time must develop an architectural form of its own. So was the reasoning in forward looking circles, and – for sure, forward looking circles are the only criterion."

"But since those early days there was no architectural form of our own, the sincere student felt as if he were brought onto deep waters with the assurance of a lifebelt only to find that the lifebelt was old and useless."

In 1896, Eliel Saarinen entered into the practice of architecture with Herman Gesellius and Armas Lindgren who were Institute classmates, beginning their practice together one year before graduation. The Gesellius, Lindgren and Eliel Saarinen (GLS) office continued until 1905 when Lindgren left the partnership. Gesellius and Eliel Saarinen stayed to practice together for two more years.

The Saarinen-Gesellius-Lindgren partnership got its first commission in 1897, the same year Saarinen graduated, for the Tallberg Apartments in Helsinki. This was followed with an important commission in 1899 for the office of a large insurance company in Helsinki. The Gesellius Lindgren



Top to Bottom:
1. Tallberg Apartments; Helsinki; 1897
2. Finnish National Museum, 1902



Saarinen partnership achieved early fame for its design of the Finnish pavilion at the Paris International Exposition of 1900, followed by their winning the international competition for the design of the Finnish National Museum in 1902.

After his partnership with both Lindgren and Gesellius ended, Eliel Saarinen expanded his practice to include his interest in city planning projects as well as building design. Saarinen gained international prominence two years later as an individual competitor when he won the competition for the design of the new Helsinki railway station.

Eliel studied painting at the University of Helsingfors and architecture at Helsingfors' Polytekniska Institute in Helsinki from 1893-97. He maintained an architectural practice in Finland with classmates Herman Gesellius and Armas Lindgren from 1896-1905. On 15 November 1899, Saarinen married Mathilda Gylden. After their divorce in 1904, Mathilda married Herman Gesellius.

On 6 March 1904, Eliel Saarinen married Minna Carolina Mathilde Louise "Loja" Gesellius, sister of Herman Gesellius, with whom he had two children - a daughter, Eva-Lisa, and a son, Eero.

Loja was born on 16 March 1879 to Herman Otto and Emilie Caroline Auguste Gesellius in Helsingfors, Finland. Loja studied art in Helsinki at Taideteollinen Keskuskoulu, 1898-99, and at Suomen Taideyhdistyksen Piirustuskoulu, 1899-1902.

After studying sculpture in Paris at Academie Colarossi under Jean-Antoine Injaalbert, she joined her brother in 1903 at Hvittrask where the architectural firm of Gesellius, Lindgren and Saarinen was located. Here she worked on commissions for interiors, photography and sculpture. Lindgren left the firm in 1905 and Gesellius and Saarinen continued the firm until 1907 when Saarinen began his own private practice. Gesellius withdrew from practice in 1914 due to illness and he died in 1916.

The Saarinen's daughter Eeva Lisa "Pipsan" was born in Helsingfors, Finland on 31 March 1905 and their son Eero was born in Kyrkslaett, Finland on 20 August 1910.

Eliel Saarinen's practice of architecture in Finland reflects two periods. From 1896-1905, Eliel practiced architecture with the firm he and his classmates founded in college, Gesellius, Lindgren and Saarinen (GLS).

Eliel Saarinen became well known in Europe due to the Paris press writing extensively about Eliel's role as the chief designer of the Paris World Fair Finnish Pavilion in 1900.

Saarinen, Gesellius and Lindgren became famous in Europe as the most adept proponents of national romanticism. The Helsinki Railway Station elevated Eliel Saarinen to the top of the class in Europe, and his Chicago Tribune competition entry made him a legend in the US (Hausen, et. al., 1990).

In Finland and Europe over time, Saarinen's Hvittrask House became more important than his Finland National Museum or Helsinki Railway Station projects. Eliel also designed a station in Viipuri and town halls in Lahti and Joensuu.

Gesellius and Lindgren were "unable to keep up with" Eliel when he extended his range to town planning and urban design (Hausen, 1990). Eliel was the first Scandinavian architect to hold his own in international competitions. After the Finnish Parliament Competition in 1908, Eliel shifted his interests to town planning in 1910 and worked on projects for Helsinki, Tallinn, Budapest and Canberra,



Top to Bottom:
1. Armas Lindgren, Eliel Saarinen, Albertina Ostman & Herman Gesellius
2. Finnish Pavillion, Paris World's Fair, 1900
3. Finnish Pavillion, Paris World's Fair, 1900
4. Hvittrask House



Australia.

In 1911, Saarinen met with city planning experts in Budapest to study that city's plan, and he wrote a detailed criticism that appeared the following year. Later in 1911 he served as a consultant to the Town Planning Committee of the City of Tallinn, Estonia advising on conditions for a town planning competition. He entered the competition and was announced the winner for his plan for Tallinn in 1913.

In 1912, Saarinen took part in the international city planning competition for the new Australian capital-to-be, Canberra. He designed the new capital in only 19 days because he learned of the competition late. While his submission lacked detail, he won second prize while the winner was an American-born architect Walter Burley Griffin.

He had important contributions for Helsinki in the city planning. In between 1911-1915 he completed a detailed design for the Munkkiniemi-Haaga District that was a region of nearly 2,000 acres to be developed by a private company. Part of the street plan and the design of some of the squares and buildings of this area owe their origins to Saarinen's proposals.

Saarinen also prepared a master plan for the whole Helsinki metropolitan area. This project could not be supported by the municipality of Helsinki or any other governmental agency but his master plan was exhibited in 1915.

Puholja Insurance Building; Helsinki; 1899 – 1901:

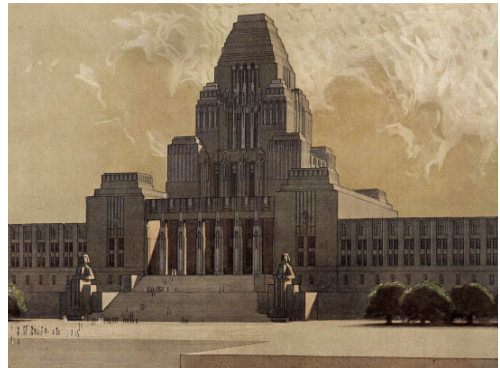
The Pohjola Insurance Building is the former headquarters of the Pohjola Insurance Company at Aleksanterinkatu 44 and Mikonkatu 3 in central Helsinki. Designed by Gesellius, Lindgren & Saarinen and constructed in 1899–1901, it is a prominent example of Finnish national romantic architecture. It was acquired in 1972 by Kansallis-Osake-Pankki, now succeeded by Nordea. Founded in 1891, the Pohjola Insurance Company specialized in fire insurance.

Pohjola held a competition for the design of their headquarters, which would also house another Fennoman insurance company, Kullervo, with the specification that the building must be made of fire-resistant stone. The competition was won by Gesellius, Lindgren & Saarinen to design the exteriors and major interior spaces, while Ines and Ernst A. Törnqvall were responsible for the space planning of the insurance offices. It was the first commercial building by Gesellius, Lindgren & Saarinen.

The building is national romantic in style, with façades of rough-hewn soapstone, red granite and serpentine decorated with sculptures of vegetation, squirrels, and figures from Kalevala, and on the street corner a tower with a pinecone-shaped roof. When it was built, a reviewer dwelt on its "Finnish-naturalistic" style, but in form the exterior may have been influenced by contemporary American buildings. Henry Hobson Richardson's 1876 Cheney

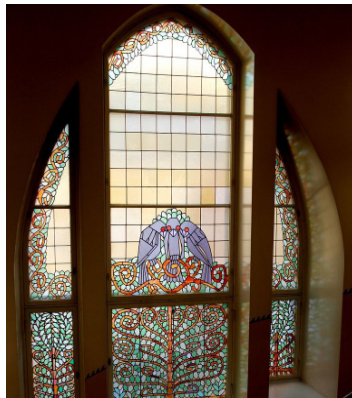
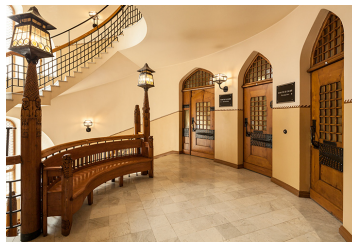


Top to Bottom:
1. Hvittrask House
2. Viipuri Rail Station
3. Finnish Parliament Building Winning Competition Entry
4. Puholja Insurance Co.





Top to Bottom:
1. - 3. Puholja Insurance Co.
4. Suur-Merijoki Manor



Building similarly uses a corner tower, and the use of windows resembles that in Louis Sullivan's 1889 Auditorium Building. Another Finnish architect, Bertel Jung, criticized the romantic elements as embodying "primitive, partially crude and untamed force". Other reviewers praised it for its comparability to buildings in other countries and to their use of ornament.

Lindgren, the member of the firm who appears to have been most attached to national romanticism, greatly influenced the ornamentation of this building. The main entrance, designed by Hilda Flodin, a pupil of Rodin, is flanked by the names of the two insurance companies, both from Kalevala, and by devils, monsters or trolls. Bears, the symbol of the insurance company, top the pilasters and also appear in the interior decoration. The door itself is deeply recessed under an arch, and the vestibule continues the allusion to medieval architecture, with vaulting and with carved animals topping pillars.

The interior spaces also use rustic and folklore motifs, with doorways fabricated by Erik O. W. Ehrström, iron wheel chandeliers made by G. W. Sohlberg, and a circular main stairway with a cast-iron banister with pine-tree motifs; the newel posts and the benches on the landings were carved wood depicting fern leaves and, again, trolls, and the stained glass featured ferns and owls. The service hall on the first floor was given red pine paneling and a central pillar styled to resemble a tree trunk. However, it has a steel core; behind the façades the building is brick with structural steel and from the start had Swedish-made elevators as well as an electrical generator.

Suur-Merijoki Manor; Viipuri Province, Russia; 1902 – 1903:

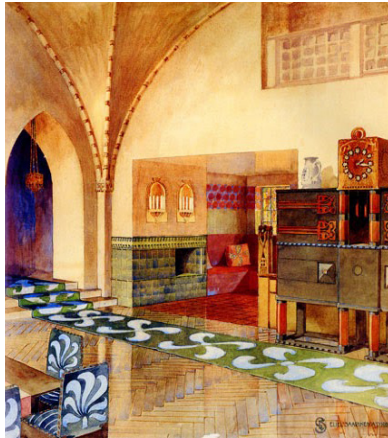
Suur-Merijoki Manor was commissioned by Swiss-born Maximilian Neuscheller (1860–1919), a wealthy, cosmopolitan businessman based in St. Petersburg who traveled widely and was a knowledgeable patron of the arts. In 1900, Neuscheller purchased the Suur-Merijoki estate on the Karelia Isthmus, a popular vacationing spot among the St Petersburg elite. Two years later, he enlisted the services of the promising Finnish architect trio to design a summer villa for himself and his family.

Wealthy Neuscheller offered the young architects a unique opportunity by giving them the chance to design a 'total work of art' in the Art Nouveau style, sparing no expense, complete with trimmings such as furniture and textiles. The architects were assisted by a large team of artisans, painters and sculptors, including Eric O. W. Ehrström, Väinö Blomstedt and Gabriel Engberg. The manor was under construction from 1902 to 1903.

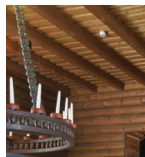
Neuscheller died in the aftermath of the Russian Revolution in 1919, and the estate was sold to the Finnish government in 1927. The Finnish Air Force was the estate's main occupant until 1939. The manor was badly damaged during the Winter War, but some of its furnishings were salvaged and evacuated to Finland. The estate was relinquished to the Soviet Union in 1944. Today there is nothing left of the once-splendid manor.

The Museum of Finnish Architecture was gifted a large collection of Eliel's drawings in 1952, including those for Suur-Merijoki Manor.

Hvittrask House; Kirkkonummi, Finland; 1903:



Top to Bottom:
1. Suur-Merijoki Manor, Viipuri, 1903
2. - 4. Hvitträsk House, Kirkkonummi, 1903



Hvitträsk was designed to be a studio home for the members of the Gesellius, Lindgren, and Saarinen firm. It later became the private residence of Eliel Saarinen. Today Hvitträsk is a museum open to the public during summer months.

Eliel Saarinen, Herman Gesellius, and Armas Lindgren created this artistic lakeside retreat for themselves between 1901 and 1904. The three men had established their partnership a few years earlier, shortly before their graduation from the Polytechnic Institute in Helsinki. They built Hvitträsk, located about 19 miles west of Helsinki in Kirkkonummi, Finland, to consolidate their practice and to escape the congestion and noise of city life. It was named after Lake Vitträsk on which it was built. Hvitträsk literally means White Lake. The complex included a shared studio, homes for each of their families, and several service buildings. The architects arranged their studio and homes around a central garden courtyard.

Saarinen and his partners made their home and workplace a northern outpost of high culture. Friends and visitors included composers Gustav Mahler and Jean Sibelius, novelist Maxim Gorki, sculptor Carl Milles, and many others of artistic temperament. This is where the plans were drawn up for the Helsinki Railway Station, the National Museum of Finland and the monumental Munkkiniemi-Haaga project, among other grand works.

The buildings at Hvitträsk embody a mix of a local interpretation of the English Arts and Crafts Movement, late 19th century Romanticism, traditional Finnish building materials, methods, and spirit, and a healthy dose of Jugendstil, the Germanic and Scandinavian version of Art Nouveau. Saarinen, Gesellius, and Lindgren carefully crafted buildings of stone, plaster, shingles, and logs that are completely at ease with their heavily forested and rocky surroundings.

Like other Arts and Crafts designs, it is both rustic and sophisticated with colorful glazed tiles and patterns used throughout the house. There is the frequent use of giant tapestries hanging from the wall, draping down over the back and seat of a built-in bench, and culminating at the floor as the incredible "Liekki" rug designed by the painter Akseli Gallen-Kallela in the living room. It was the antithesis of the Neoclassical and Victorian architecture that had become so popular in the decades before its construction.

Perched on a steep hillside overlooking a beautiful lake, Saarinen's own house at Hvitträsk offered spectacular views. It was also center stage for several romantic storms. Eliel Saarinen's first wife Mathilda fell in love with Eliel's partner, Herman Gesellius. Eliel then met Gesellius's younger sister Loja, a textile designer and sculptor, whom he married after divorcing Mathilda. It was the childhood house of their children; Pipsan Saarinen who later became a designer, and Eero Saarinen, who would become a famous modernist architect in his own right.

The Saarinens immigrated to America in 1923, and Eliel soon took a position as the first president of the Cranbrook Academy of Art in Bloomfield Hills, Michigan. Hvitträsk then became a summer home for this extraordinary family - with an architectural addition from Eero Saarinen who rebuilt the North Wing during the 1930's after a fire.

The project has been viewed as a legible and enduring example of the definition of what has been characterized as Regional Romanticism. "Here is

the pioneer work of National Romanticism: a group of studios and dwellings designed from 1901 onwards for their joint use by Herman Gesellius, Armas Lindgren and Eliel Saarinen, on a wooded site rising steeply from the edge of a lake... The first part to be built (1902)... consisted of a studio and workshop (later to be used as stables) with a large flat above... It was simple in style, reminiscent of Karelian vernacular building. The remainder of the project is more original and sophisticated, and shows the influence of the new domestic architecture (itself based on a revived interest in vernacular building methods) that had lately emerged in Europe and particularly in England..." (Richards, 1978)

Helsinki National Museum; Competition with Armas Lindgren and Herman Gesellius; 1904 – 1910; opened in 1916:

Eliel's winning competition entry reflected influences from Finland's medieval churches. The museum's entrance hall ceiling has ceiling frescoes in the national epic Kalevala theme, painted by Akseli Gallén-Kallela. The frescoes, painted in 1928, are based on the frescoes painted by Gallén-Kallela in Saarinen's Finnish Pavilion of the Paris World Fair in 1900.

The massing and appearance of the building reflects Finland's medieval churches and castles. The architecture belongs to national romanticism and the interior mainly to Art Nouveau. The museum was built from 1905 to 1910 and opened to the public in 1916. The museum was named the Finnish National Museum after Finland's independence in 1917. A recent competition for expansion that attracted 185 entries was won by Helsinki-based JKMM Architects. Their entry features a large cylinder volume behind and separated from the original building with the majority of new gallery spaces below grade to respect Saarinen's original building.

Helsinki Railway Station; 1904 - 1909:

Eliel – as an individual architect - won the 1904 competition for a new train station in Helsinki, for it's original 1869 station had been rendered obsolete in size.

What was built was quite different than the design that won the competition, which was much more like the Helsinki National Museum. Saarinen used part of the competition prize money to make a European tour to take in the world of other leading modern architects. The arched doorway with engaged flanking statues holding lanterns borrows directly from the Ernst Ludwig house by Joseph Maria Olbrich at the Darmstadt (1901) Artists' colony. The railway station's tower was influenced by Josef Hoffman's Stoclet Palace in Brussels, Belgium (1905-1911) in its Viennese Secessionist style where Hoffman designed everything in the mansion down to the hardware and light fixtures.

The station is mostly clad in Finnish granite, and its distinguishing features are its clock tower and the two pairs of statues holding the spherical lamps, lit at night, on either side of the main entrance.

Chicago Tribune Tower Competition; 1922:

Eliel Saarinen immigrated to the United States in 1923, using the acclaim and



Top to Bottom:

1. Helsinki National Museum, 1904 - 1916
6. Helsinki National Museum, 1904 - 1916
3. Helsinki Railway Station Competition Entry Rendering
4. Helsinki Railway Station



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\$20,000 he received for his second-place entry into the 1922 Chicago Tribune Tower Competition to relocate his family and career to America. While Saarinen's design for the Tribune Tower was the most popular with the public, first place was awarded to an exercise in academic historicism by Raymond Hood and John Mead Howells that stands at the foot of the Chicago River today with its fake flying buttresses at its top.

Saarinen's entry was not given top accolades because Chicago Tribune editor Robert McCormick was aesthetically conservative and Eero's entry did not align with McCormick's narrow academic image he felt was appropriate as a symbol and brand identity for the newspaper. Saarinen's entry also arrived a date late.

Louis Sullivan, whose knowledge in high-rise design afforded him credibility and authority, wrote of Saarinen's design, "in its single solidarity of concentrated intention, there is revealed a logic of a new order."

Before Raymond Hood's Tribune Tower was completed, Hood adopted Saarinen's style and massing from his Tribune entry in his design for the 23-story American Radiator Building in New York City which was completed even before Hood's Tribune Tower in Chicago.

Saarinen's Chicago Tribune tower became the prototype of the American skyscraper for twenty years. Von Eckhardt went further, asserting that Saarinen paved the way for Mies and Gropius to come to the US and find acceptance (1967). Yet the trajectory of the more radical functionalism of American Modernism in the 1930's was contrary to the Saarinen tradition.

However the lasting legacy of Eliel Saarinen to Eero and the US is perhaps best reflected by Eliel's 1908 Parliament Building's monumental detachment from its surroundings and the monumental scale of his master planning for Canberra Australia and his integrated town plans for Chicago and Detroit in 1923 and 1924 – all of which reflect Eliel's strong and fanatical commitment to the total work of art.

Eliel's concepts of decentralized plans for large cities and their analogies to nature – now popularized by the biomimicry movement – are his most legible contribution to urban planning theory in our time. This science of urban planning and decentralization was subsequently given expression by Kevin Lynch, Jane Jacobs, Serge Chermayeff and Christopher Alexander in the 1960's.

Coming to America:

In his letter to Eliel Saarinen awarding him second prize in the Chicago Tribune Tower competition, the *Tribune* manager suggested that Saarinen visit Chicago. The lack of commissions in Finland due to the country's civil war and subsequent political and economic upheaval enhanced the appeal of the invitation to Saarinen.

In February of 1923, Eliel Saarinen came to the United States to visit colleagues, and in April of that year, the family settled in Evanston, Illinois where Eliel began a limited architectural practice, working on his



Above: Chicago Tribune HQ Competition Entry, 1922
Below: Raymond Hood's Chicago Tribune Tower





Top to Bottom:
1. Tallin, Estonia Master Plan, 1913
2. George & Ellen Booth
3. Chicago's Randolph Redesign by Saarinen, 1925

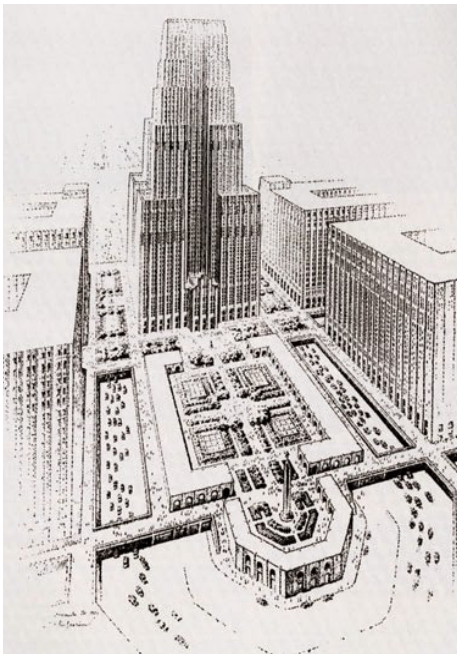


scheme to redevelop the Chicago lakefront. Eliel was interested in urban planning and design, having worked and published an extensive city planning project for Munksnas-Haga in Lithuania, and he helped plan the cities of Budapest and Helsinki. His competition entry for the planning of the capitol city of Canberra Australia came in second. In 1913, Eliel had won an international competition for the planning of the city of Reval, now known as Tallin, Estonia.

Exactly why the Saarinens moved to America is unclear. Even Albert Christ-Janer has not come up with a decisive reason, despite having spent untold hours interviewing Saarinen for his otherwise fulsome biography. What is clear however is that following the positive reception of his competition entry and the *Chicago Tribune's* invitation to visit America, Saarinen was exposed to the reality of contemporary American architecture and the American way of life. Saarinen then realized that there were at that moment more opportunities for him in the American economic boom than in Europe, and certainly in Finland, and so decided to cross the Atlantic and try his luck.

In the fall of 1923, Eliel became a visiting professor at the University of Michigan and the family moved to Ann Arbor, MI. Shortly after his arrival, Eliel met the *Detroit News* newspaper magnate George Gough Booth, who was to become his chief patron in America. Booth's son became a student of Saarinen and prepared studies for an academic complex on his father's estate. Booth was likely also impressed with Saarinen's design for the Detroit riverfront for the local chapter of the American Institute of Architects which was undertaken with Booth's financial support.

At Booth's invitation, Saarinen moved his practice to Bloomfield Hills in 1925, and he spent the remainder of his life assisting in the design and development of the cultural complex that Booth constructed at his country estate, the Cranbrook Educational Community, intended to be the American equivalent to the Bauhaus. Eliel Saarinen also continued to work on a number of outside architectural commissions and projects.



In 1928, Loja Saarinen established a weaving firm at Cranbrook, Studio Loja Saarinen, to provide quality fabrics and textiles for Cranbrook buildings and private commissions. Studio Loja Saarinen had close ties with the Weaving Department of the Cranbrook Academy of Art, which Loja headed between 1932 and 1942. Studio Loja Saarinen officially closed in 1942, but Loja remained semi-active in weaving up to the late 1940's.

Both Pipsan and Eero, educated in design by their parents, continued in design fields. Eero attended Yale School of Architecture from 1930-34 and became successful in architectural work, first with his father and brother-in-law, J. Robert F. Swanson, then with his own architectural office, Eero Saarinen & Associates. Pipsan became a successful designer in home and office interiors and furniture design, and headed a company, Swanson Associates, with her husband.

Between 1932-46, Eliel served as the president of the Cranbrook Academy of Art. Thereafter, he continued as the director of the Department of Architecture and Urban Design until his death on 1 July 1950. In 1951, Loja moved from Saarinen House into a small home Eero built for her next to his Bloomfield Hills home, where she lived until her

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death on 21 April 1968. Eero died in Ann Arbor on 1 September 1961, and Pipsan passed away after a short illness on 23 October 1979 in Bloomfield Twp., Michigan.

Cranbrook Academy of Art:

The Cranbrook Academy of Art displayed Eliel's heritage with and affection for the Arts and Crafts Movement and his evolution towards modernism. Founded by George and Ellen Booth, Eliel was recruited by the Booths to develop a private arts and craft community that grew to 14 buildings. The Booths were supporters of the Arts and Crafts movement. In addition to tasteful design to replace objects of lesser quality in American homes, they sought an integration of art with daily life, social values and the act of production.

They sought to unify the separate silos of industrialization, technology and urbanization. Honest craftsmanship was the basis for an ethically responsible collective life. The movement in Europe that has touched Eliel Saarinen was seen in the forms of Art Nouveau, Jugendstil and Stile Liberty in architecture, ceramics, graphics, textiles and furniture. These movements defined cultural identity.

While on a tour of Europe in 1922, Booth and his wife visited the American Academy in Rome. They appreciated the facility and the Fellows they met and interviewed. The critical impression on the Booths was that the academy did not have classes or a prescribed course or curriculum. The primary purpose was to afford those of advanced training the opportunity and freedom to come in contact with others working in a variety of arts. This influence was valued over instruction. Booth returned and published in his newspaper photos and an article where he described the American Academy as "nourishing the flower of the nation's artistic genius in an atmosphere and under circumstances which, of all the world, are best designed to cause that flower to bloom."

Booth's convergence with Eliel Saarinen in Bloomfield Hills positioned Cranbrook to become a special cultural achievement. Saarinen conceived the campus master plan, designed its major buildings, designed its curriculum, hired its faculty and built the institution into one of the nation's most respected schools for art and design.

In his Trust Indenture of 1927, Booth envisioned an Academy with an arts and crafts school with Academy departments including architecture, design, interior decoration, painting, sculpture, drawings, landscape design, music and artistic craftsmanship. By August 1930, he had an artist-in-residence concept for architect, painter, sculptor and designer. The master artists would reside at Cranbrook and "give general talks to students on art matters."

Unlike the narrow expressions of the International Style, Saarinen's design philosophy of Cranbrook encouraged diverse expressions. Those expressions were not bound by appearance or even specified principles of design, but instead by a consistent view of materiality and place.

The design of Cranbrook reflects the influence by H. H. Richardson – respected by Saarinen as the author of a strong national style with

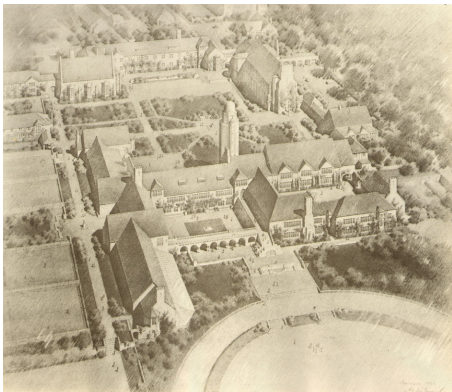


Top to Bottom:
1. George Booth
2. Cranbrook Press, 1901





Top to Bottom:
1. Saarinen House
2. Saarinen's Cranbrook Master Plan Aerial Rendering
3. Christ Church Cranbrook, Bertram Goodhue Architects, 1926
4. Cranbrook School for Boys, 1926-1930



distinct massing, richly textured masonry, and richly decorated surfaces. Eliel himself characterized his early works as “pompous Richardsonian pseudo-romantic towers.”

Saarinen taught there and became president of the Cranbrook Academy of Art in 1932. Among his student-collaborators were Ray Eames (then Ray Kaiser) and Charles Eames. Saarinen influenced their subsequent furniture designs, and vice versa.

Working with his wife Loja, daughter Pipsan, and son Eero, the Saarinens created what came to be known as Saarinen House to be the residence of Cranbrook Academy of Art's president. Designed in 1928 and ready for use in 1930, Saarinen House is one of the most significant and outstanding examples of a Gesamtkunstwerk, or total work of art, in America. The house combines the Arts and Crafts ethos of beauty and utility with the high-style aesthetic of the Art Deco. Although Eliel Saarinen stepped down as president in 1942, he continued living in the home until his death in 1950. Loja Saarinen remained in the house until 1951.

Cranbrook Schools comprise a co-educational day and boarding college preparatory “upper” school, a middle school, and Brookside Lower School. But originally, Cranbrook was contemplated to be a boys choir school for the Cranbrook church.

Saarinen submitted drawings to Booth in October 1924 after returning from a trip to Finland. He submitted several additional studies over the new few months and visited Finland again in the summer of 1925. Upon his return, he moved to Bloomfield Hills and concentrated on the school for boys, the first of his designs to be implemented. Construction began in 1926, and the first sections were completed in late 1927, though work on related elements continued for years.

In 1925, Booth encouraged Saarinen to expand his schemes so the major academy of fine and applied arts would be comparable in scope to the American Academy in Rome. Saarinen maintained a human scale and a clear concern for exterior spaces with courtyards and gardens defined by the building elements and linked by walks.

Saarinen's use of the organizing axes that provided unity and enabled focal elements such as fountains or sculpture were scaled versions of his previous urban design schemes in Europe, Australia and the US. And Saarinen's shaping of these elements varied from the Beaux-arts conventions with a more loose and informal connection of the component, creating a seemingly endless variety of vistas.

In 1922, the Bloomfield Hills School was the first school to open on the Cranbrook grounds. Booth's Bloomfield Hills School was intended as the community school for local area children. The Bloomfield Hills School ultimately evolved into Brookside School. Following completion of the Bloomfield Hills School, Booth looked forward to building the Cranbrook School for Boys, an all-boys College-Preparatory school at which students from the Detroit area and abroad would come to reside.

Booth wanted the Cranbrook School to possess an architecture reminiscent of the finest British Boarding Schools, which is why he

elected to retain the established Finnish architect Eliel Saarinen to design the campus. Cranbrook's initial phase of building was completed in 1928, the same year that the neo-Gothic Christ Church Cranbrook with a design attributed to Bertram Goodhue (though more likely the work of Goodhue associate Oscar Murray after Goodhue's death in 1924) was completed. While Goodhue's name is typically credited with the design of Christ Church, it was Murray's hand that developed and implemented the design and successfully integrated the numerous decorative elements contributed by Booth and the wealthy parishioners.

Over the years, the Cranbrook School for Boys campus grew to include Stevens Hall, Page Hall, and Coulter Hall. While primarily functioning as only residential spaces, Page Hall featured a smoking lounge as well as a shooting range. Lerchen Gymnasium, Keppel Gymnasium, and Thompson Oval were also constructed on the campus. In the 1960's, Cranbrook School for Boys also constructed a state-of-the-art Science Building named the Gordon Science Center.

Eliel visited Frank Lloyd Wright at Taliesin in 1924. The two were friends and it has been said that Wright respected Saarinen more than any other architect. At that time, the two had a similar approach. Wright's sloping roofs and vertical masonry forms at Taliesin bear a strong similarity to Saarinen's approach to Cranbrook.

From late 1924 – early 1925, Eliel Saarinen developed master plans for Cranbrook with a loose program for artists to learn by working in a sympathetic environment. After choosing an arts campus as his thesis at Michigan, George Booth's son Henry worked for Saarinen after graduating, but without design responsibilities on Cranbrook.

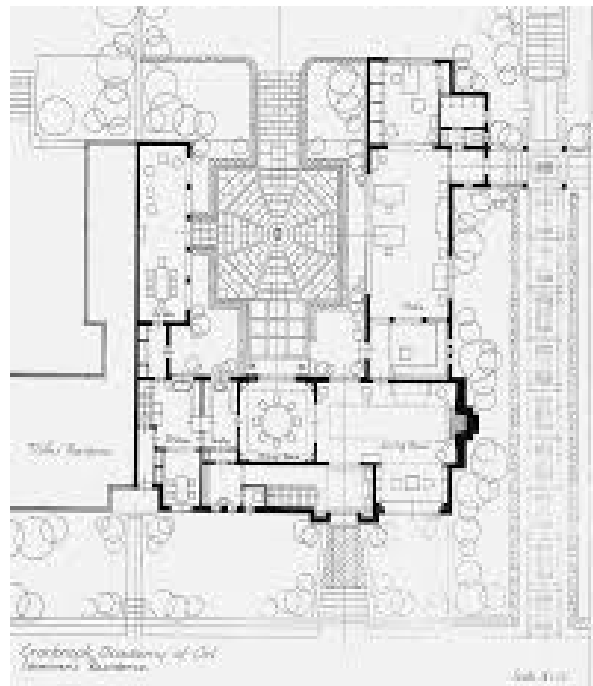
Saarinen's planning for Cranbrook also reflected his considerable respect for the thinking and work of Austrian Camillo Sitte who advocated city planning according to artistic principles.

Camillo Sitte, born Vienna in 1843, was an art historian and architect whose writings, according to Eliel Saarinen, were familiar to German-speaking architects of the late 19th century. Sitte traveled extensively in Western Europe, seeking to identify the factors that made certain towns feel warm and welcoming. Sitte saw architecture was a process and product of culture. He received praise for his 1889 book, *City Planning According to Artistic Principles* (often translated as *The Art of Building Cities*).

Richly illustrated with sketches and neighborhood maps, Sitte drew parallels between the elements of public spaces and those of furnished rooms, and he made a forceful case that the aesthetic experience of urban spaces should be the leading factor of urban planning. At the same time, he was

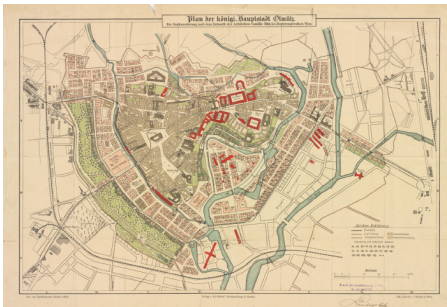


Above and Below: Saarinen House, Cranbrook, 1930
Bottom: Eliel Saarinen with Frank Lloyd Wright





Top to Bottom:
1. Camillo Sitte
2. Camillo Sitte's Plan for Royal Capitol, Czech Republic, 1895
3. Yale University Harkness Quadrangle, James Gamble Rogers
4. Stockholm City Hall, Ragnar Ostberg, 1923



highly critical of the patterns of industrial urbanism in Europe at that time.

Sitte was one of the first urban writers to consciously emphasize the value of irregularity in the urban form. He challenged the growing tendency toward rigid symmetry in contemporary urban design, including the isolated placement of churches and monuments in large, open plots as is typified in Shaker Heights. Sitte's approach was very much in opposition to traditional neo-classical, Baroque planning axioms. Both Sitte and Eliel Saarinen wrote about Venice.

Booth originally asked Saarinen to adapt a small number of Cranbrook's earlier farm buildings into housing for the school's boys. Only a fragment survived. At the same time Saarinen was planning and designing Cranbrook, James Gamble Rogers had completed his Gothic Revival Harkness Quadrangle (1921) at Yale. Some have compared the Cranbrook eclectic Boys School to Ostberg's Stockholm City Hall (1909-1923). With Booth looking over his shoulder, Eliel's work at Cranbrook was not as avant-garde as Gropius' Bauhaus at Dessau (1936).

At the same time, James Gamble Rogers (1867-1947) authored the master plan and a number of Gothic Revival structures at Yale. Rogers had become the favorite architect of philanthropist Edward Harkness, whose wealth came from his father's involvement with Standard Oil in Cleveland. Harkness also gave generously to Harvard, Columbia, Phillips Exeter Academy and MoMA. Harkness conditioned his gifts to Yale upon the university's agreement to engage Rogers to function as architect. At the time of his giving, only John D. Rockefeller and Andrew Carnegie gave more money to institutions than Harkness.

Rogers is credited with developing what has become known as the Collegiate Gothic style of architecture. He has also been harshly criticized – even by other prominent Gothic Revival architects such as Ralph Adams Cram, for the lack of honesty in which his buildings utilized steel structural framing under stone claddings and saw their stone facings falsely aged with the splashing of acid. In his interview with the Cleveland Architecture Foundation in 2019, Piet van Dijk FAIA also criticized such buildings for their lack of authenticity.

Rogers was also criticized by those sympathetic to the growing modernist movement at the time. When Rogers' Sterling Memorial Library at Yale was completed in 1927, Yale students voiced criticisms for its historical – backward-looking – spirit and lavish ornament, though it is well respected today – because of its excess.

Yale's Harkness Memorial Quadrangle was commissioned in 1917 to provide student housing. It was Yale's first Collegiate Gothic building and the first campus project by Rogers. With its drymoats, dining hall, seven courtyards and its tower placed on axis to unify the huge project with Yale's Old Campus, its richly ornamented masonry exterior commemorates distinguished graduates.

At Cranbrook, Saarinen modernized the layout of buildings and the spaces between them. Saarinen's movement splines and vistas have visual terminations of architectural elements or sculpture, as well as architectural elements that engage the pathways and mark transitions

Essays on Architecture:

Eero Saarinen - America's Modern Form-Giver

from the outdoor rooms to one another.

Architectural historian and critic Henry-Russell Hitchcock labeled Cranbrook an example of the 'new tradition' vs. 'the new pioneers' in Europe. Hitchcock put Saarinen and Frank Lloyd Wright together in the 'new tradition' category.

David De Long, Professor Emeritus at the University of Pennsylvania has asserted that Saarinen used forms from early Christian architecture as a bridge from historical Roman motifs to a modern vocabulary of special spaces and articulation that delivered forms that incoded pre-modern potential for meaning in a way that the post-modern movement attempted to do without regard to scale, texture and the compositional integrity that Saarinen employed. Saarinen's elements completed toward the end of the 1920's employ art deco motifs.

The Kingswood School for Girls at Cranbrook; 1927 - 1931:

Realizing that young women would also need a place of their own to learn, Ellen Scripps Booth, Booth's wife, pressured her husband into building a school for girls. Scripps Booth supervised the project, which she named the Kingswood School Cranbrook. The Girls School was announced in 1927 with preliminary designs by Henry Booth. George Booth himself had apprenticed with an uncle, a prominent architect in Toronto.

Unlike her husband, Scripps Booth encouraged Eliel Saarinen to come up with a unique interior design for the campus completely on his own. Instead of the several buildings that housed the Cranbrook School for Boys, the Kingswood School Cranbrook was contained within one building that included all necessary features, including dormitories, a dining hall, an auditorium, classrooms, a bowling alley, a ballroom, and lounges and common areas. The education at Kingswood School Cranbrook was initially viewed as a "finishing school", though that has changed over time.

Saarinen's modernism was different than Wright's or the Bauhaus. At Kingswood, Saarinen discretely designed rooms with four walls, where Wright's modernism created a continuous flow of space without crisp definition. Wright treated structure abstractly where Saarinen expressed and elaborated structure in a more decorative manner.

Saarinen wrote that the Greek column was clumsy and unrefined, but it had potentialities of refinement. And Saarinen evolved and refined his column elements. At Kingswood, the vertical decorative motif on the columns also exists in stained glass and masonry surfaces.

DeLong stated in *Design in America: The Cranbrook Vision 1925-1950*, that Saarinen's work entered a transitional phase in 1929 where his work bore references only to a more recent past, and that Kingswood provide the more clear evidence of this transition. DeLong acknowledges that there had been discussions on a girls school at Cranbrook in 1927 and 1929 regarding its size and location. Saarinen's early design drawings for Kingswood are dated 1929, construction began in 1930 and the school was completed in 1931.



Top to Bottom:
1. Kingswood School Aerial
2. Kingswood Reception Hall
3. Kingswood Dining Hall





Top to Bottom:
 1. Sterling Memorial Library, Yale University, James Gamble Rogers
 2. Sterling Memorial Library Interior
 3. Sterling Library Interior
 4. Columns at Page Hall Entry, Cranbrook

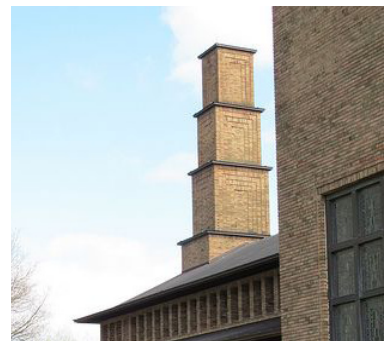


Kingswood's warm tan brick and copper roofs are differentiated from the dark red brick and slate roofs of the earlier Cranbrook buildings. The massing of the girls' school is also simpler with its detail and ornament reflecting fewer themes. While a minor motif at the boys' school and the Helsinki Railway Station, the telescoping column and chimney details are repeated at Kingswood throughout on columns and chimneys as well as providing the pattern on brick surfaces, leaded windows, rugs and other elements. Flared and fluted columns had been employed sparingly at the boys' school, but at Kingswood, they are prevalent as abstractions of floral motifs which DeLong asserts recall the decoration popularized at the 1925 Exposition Internationale des Arts Decoratifs et Industriels Modernes in Paris which Saarinen attended.

Saarinen also altered his drawing and presentation methods during this period. While previously effective with deeply shaded pencil, he began using a lighter watercolor technique for perspectives, and on his working drawings, he rendered plans and elevations in different colored inks. In seeking an authentic American mode of



Top Right, Down and Clockwise:
 1. Kingswood School for Girls
 2. Kingswood School Lobby
 3. Kingswood telescoping chimney
 4. Kingswood Lobby Stair
 5. Kingswood Column
 6. Kingswood Dining Hall



expression, DeLong argues that Saarinen turned to Wright for Kingswood, most specifically his low hip-roofed houses in Chicago from 1900 – 1910. Those hip roofs, large overhanging eaves, horizontal bands of windows can be found in Kingswood's extended eaves, as do wide openings to major interior spaces, changing levels of floors and ceilings and the linking – albeit informally, of the axes of interior volumes.

But Saarinen resisted Wright's affection for the open flow of spaces to one another. Saarinen defied his volumes clearly with solid corners, reflecting walls with a mass. Windows and doors are cut into Kingswood rather than being rendered as screens or openings between elements. Wright's windows are rabbeted into their soffits so the formal definition of itself is muted. At Kingswood, Saarinen detailed the windows with a rowlock course of brick between the window head and the soffit, defining the masonry wall as a continuous enclosure in to which the window is inserted. Saarinen's thirst for collaboration at Kingswood included tapestries and fabrics from wife Loja.

In 1986, the Cranbrook School for Boys and Kingswood School Cranbrook entered a joint agreement, renaming the new institution the Cranbrook Kingswood Upper School. In 2011, the Kingswood Middle School for Girls opened, designed by Lake/ Flato Architects.

The Saarinen House; 1930:

Cranbrook's Saarinen House is 'early modern architecture' which reflects a strong influence of Edward Lutyens from his Deanery House and Garden in Berkshire (1901), now owned by Led Zeppelin's Jimmy Page. Not only are the two similar in their forms and relation to their landscape, they are similar in plan as well - rooms grouped around an open courtyard that opens out to a pathway. Even the proportions of the rooms are similar, indicating that Saarinen was drawing upon English precedents, but with his own filter.

Before the Saarinen Cranbrook home was completed, Eero Saarinen designed sculptural tiles and a variety of carved-stone pieces for Cranbrook, which were among his first commissioned projects in the country.

As a complete work, the Saarinen Cranbrook home features a multitude of handcrafted objects designed by Eliel, Loja and Eero. The fireplace bronze andirons are abstracted peacocks with a glazed Pewabic tile surround, and dinnerware and silverware also designed by Eliel. The home includes patterned rugs on the floor and walls designed by Loja Saarinen.

The décor was heavily influenced by the Art and Crafts movement, which arose in 19th-century Britain in response to industrialization. Loja's patterned rugs introduce a delicate yet active geometry to the spaces that reinforces other elements to create a cohesive whole. By example, the square dining room carpet introduced the room's octagonal shape at it moves towards the round table and fluted custom chairs with the slender accents that are repeated in the carpet figure-ground motif.

Virtually all of the artistic decisions in the residence were executed by Eliel and Loja Saarinen. The large, round wooden table in the dining room

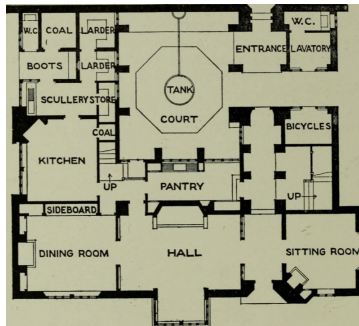
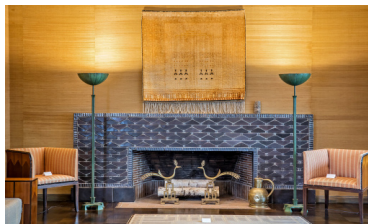


Top to Bottom:
1. Saarinen Cranbrook House
2. Saarinen House - Living Room
3. Saarinen House - Dining Room

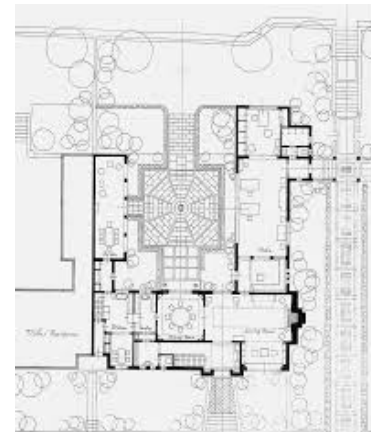
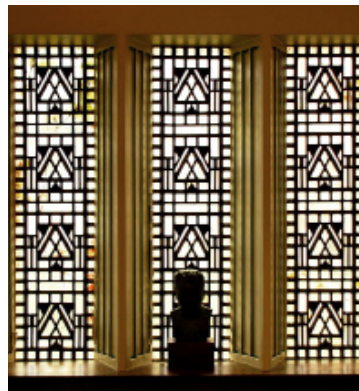




Above, Top to Bottom:
 1. Saarinen House - Sitting Area
 2. Saarinen House - Bathroom
 3. Saarinen House - Living room
 4. Saarinen House - Fireplace
 5. Saarinen House - Bedroom



Top to Bottom, Clockwise:
 1. Lutyens Deanery House Plan, 1921
 2. Saarinen's Cranbrook House Plan
 3. Saarinen House Courtyard
 4. Saarinen House Leaded Windows



restates the circular shape of the ceiling, enhanced by fluted dining chairs. The octagons and squares in the dining room rug exuded a strong sense of character, as did the nearby studio space.

Upstairs, Eero's contribution is more evident, having designed furniture for his parents' bedroom area, including the bed and nightstand, as well as a sterling silver vanity collection. The lamps near the vanity collection emit light toward the ceiling, avoiding direct exposure to the face. The master bathroom, designed by Eliel, boasts additional Pewabic tiles. At Cranbrook, Eero Saarinen also created designs for several glass windows and crafted many of the beds, tables, and chairs for the Kingswood School for Girls.

Eero at Yale and Beyond:

After high school, Eero Saarinen studied sculpture at the Académie de la Grande Chaumière in Paris before attending Yale University's School of Architecture, where he excelled, notwithstanding the traditional Beaux-Arts curriculum. Eero was already an accomplished draftsman having worked informally with his father on a number of Cranbrook projects before enrolling at Yale. His work at Yale was regularly singled out for its level of accomplishment, and he completed the requirements of the five-year program in three years.

While the architectural program at Yale was organized in the Ecole de Beaux Arts tradition at the time, Eero's school work reflected a simple modern

approach to design. Eero's design of a monumental clock was awarded mention in the Emerson Prize competition in 1932. His Forum Project in Helsinki in 1934 tracks with the works of Erich Mendelsohn with its taught glass faced and curved glass corner like Mendelsohn's Mossenhaus in Berlin (1925), and Schokken Department Store in Stuttgart (1928).

Upon graduation in 1934, Eero used his traveling fellowship to travel in Europe and work in the Helsinki office of Karl Eklund until 1936 when he returned to Cranbrook and went into practice with Eliel.

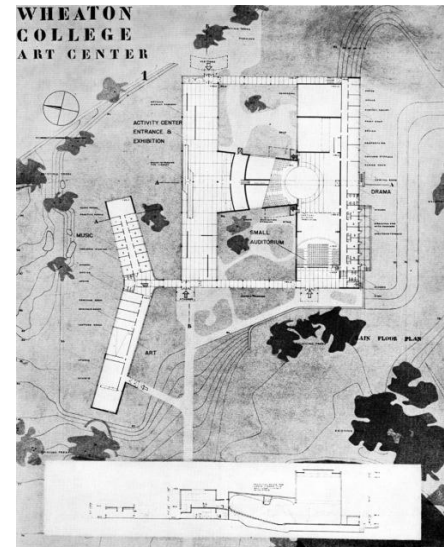
When Saarinen returned to Cranbrook between school breaks and later in his 20's, he stayed in an upstairs bedroom at the Saarinen House. Even as Eliel Saarinen served as president of the Cranbrook Academy of Art from 1932 to 1946 and was its resident architect, Eero Saarinen began entering into architectural competitions with him in the late 1930's. Eero initially worked for his father and received recognition while serving under him, for a chair designed for a competition in 1940.

College Design Competitions; 1937 – 1946:

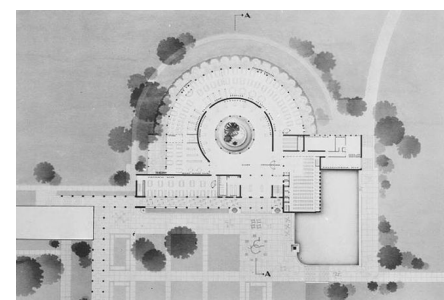
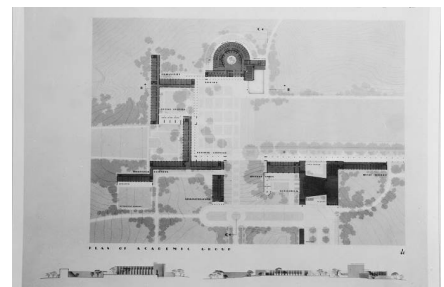
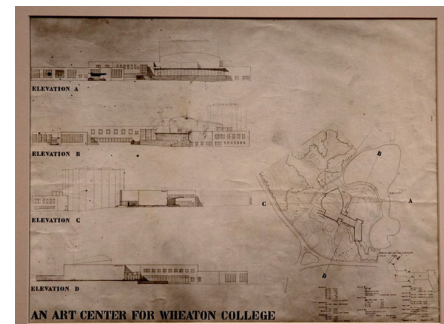
The Great Depression of the 1930's affected everyone profoundly, including architects. With the evaporation of capitol, development and construction ground to a halt and draftsmen and architects were out of work everywhere. The Roosevelt administration Historic American Engineering Record and Works Progress Administration programs that involved surveying and cataloging the country's infrastructure at then time were a partial benefit to some. But these programs were no substitute for the prestige, creativity, and financial rewards that came with new architectural commissions. The work available was limited, and what work existed was focused on the architecture of the past, not designs for the future.

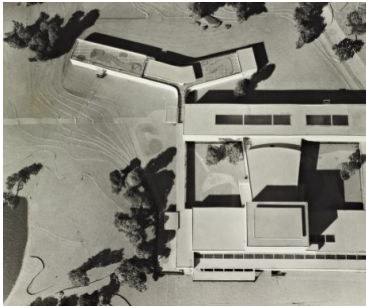
To fill the need for prestige, creativity, and funds came architectural competitions. They allowed as many architects as possible to vie on an even playing field for the few commissions that existed around the country. Competitions ranged from calls to design the American City of Tomorrow to simpler requests for single buildings. A surprising number of these contests came out of America's academic institutions. Three little-known design competitions—at Wheaton College, the College of William and Mary, and Goucher College—pitted the biggest names in modern architecture, including Richard Neutra, Eero & Eliel Saarinen, Pietro Belluschi, Walter Gropius, and others, against one another. The track record of Eliel and Eero Saarinen in competitions is simply unmatched in the 20th century.

These competitions, which began in 1937, were the first of their kind since the Chicago Tribune building competition in 1922. Unlike the Tribune building, though, most of the collegiate

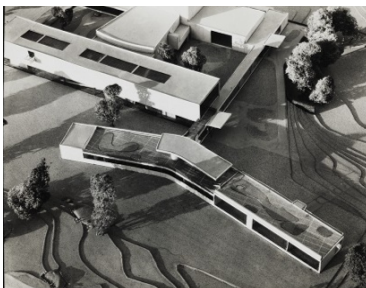


Top Down:
1. Wheaton College Art Center Walter Gropius & Marcel Breuer Competition Entry
2. Wheaton College Art Center Entry - Hornbostel & Bennett
3. & 4. Saarinen's Goucher College Competition Entry, 1938





Above & Below: Wheaton College Art Center
Competition Model ; Marcel Breuer



competition-winning buildings were never built - even though the designs, at one point forgotten for nearly 50 years, marked the beginning of the Modernist movement in America.

Wheaton College in Norton, Massachusetts, held the first of the three collegiate competitions. Wheaton, founded as a women's seminary in 1834, was one of the oldest institutions for women in the country. With its design competition, the school looked to modernize by building a new art center. Conducted by the Museum of Modern Art in New York and Architectural Forum, the competition was championed on campus by art professor Esther I. Seaver, who found Wheaton's campus of Georgian-colonial designs to be lacking in function. A 1938 press release from MoMA called for designs for a single building, or a group of buildings, with stadium seating capacity for 500, a smaller theater for concerts, a library, exhibition galleries, studios, and classrooms.

When the results were announced, Walter Gropius, who had previously founded the German Bauhaus movement, came in a noteworthy second place in the competition. Wheaton's winning design came from young architects Richard Bennett and Caleb Hornbostel, whose design boasted the trademarks of the International style - an austere structure and strict adherence to function over form.

The building was to be rounded so that it could sit perfectly between the two lobes of the campus' Peacock Pond. But the reception of Bennett and Hornbostel's plan was acrimonious - resulting in Professor Seaver's resignation, a convenient and 'mysterious' disappearance of all design records, and a moratorium on the art center's construction. It wasn't until 1961 that construction on a new art center finally began at Wheaton College. This art center, though it shared a Modernist spirit with Bennett and Hornbostel's 1938 design, was the work of an entirely new firm, Rich and Tucker and Associates.

The second competition, in the summer of 1938, was for Baltimore's Goucher College. Goucher was founded in 1885, and, by its 50th anniversary, had outgrown its Romanesque-style downtown campus and was looking to modernize on 421 acres in the suburbs. Although Goucher's competition was not exclusively Modernist, it was the most ambitious of the three, calling for an entire campus plan over 500,000 square feet of building space, including at least eighteen buildings for the various scholastic departments, the library, the administrative offices, a chapel, an auditorium, a student union, a gym, an infirmary, five residence halls (each with their own dining hall) to hold around 140 students, a President's house, and a faculty club. Goucher considers itself particularly "forward-thinking," which may be why, architectural historian James D. Kornwolf notes, the school was the only one to retain an extensive record of its design submissions.

Those records indicate that over 150 architects submitted credentials to Goucher, 50 of them were invited by the College to participate in the competition, and ultimately 35 submitted designs. There were Modernist designs by Richard Neutra, whose plan was the first known example of large-scale environmental design in the U.S., Harrison and Foulhoux, William Lescaze, Mellor and Meigs, Walter Gropius, and Eliel and Eero Saarinen, who placed second in the competition. The winning designer was Moore and Hutchins for an informal Modernist design, which featured the use of local Butler stone. Construction on the Moore and Hutchins' design—Goucher was the only one of the three schools to ever break ground on these competition winners which began in 1941.

The College of William and Mary held the third and final collegiate competition in late 1938. The Williamsburg, Virginia-based school was founded in 1693 by King William II and Queen Mary II. After Harvard, it is the second-oldest institution of higher education in America. A vestige of colonial America, the College of William and Mary was in desperate need of a modern outlook; they sought it with designs for a new festival theater and fine arts center. For William and Mary, the Modernist competition represented a dramatic break from tradition and its colonial roots, just as nearby Colonial Williamsburg was undergoing renovations to restore its colonial heritage.

The College of William and Mary's competition for a festival theater and fine arts center, announced in *Architectural Record* in November 1938, was championed by the American National Theatre and Academy—the only one of the three competitions to be championed by an entity outside of the institution itself. But the American National Theatre and Academy received virtually no funding to support its new theater design. As a result, the winning, state-of-the-art design put forth by the team of Eero Saarinen, Ralph Rapson and Frederic James was discarded.

These three collegiate architectural competitions breathed life back into the nation's struggling architects by, as Kornwolf writes, helping to birth the fledgling Modernist movement in America. Just before the first competition in 1937, Harvard's School of Architecture boldly hired one of Europe's foremost Modern architects, Walter Gropius, igniting Modernist fervor. The competitions saw the submission of 416 total designs, the largest concentration of Modernist-designed work in the country at that point. The novelty and promise of Modernism represented a break not just from America's traditional past, but also from the gloom of the Depression.

The designs were jarring. Of the College of William and Mary designs, American philosopher and literary critic Lewis Mumford wrote at the time:

"By now the only people who think there is any other way to design a building are the old-timers who haven't died off yet and the suburban real estate speculators who have never sold a modern building for the good reason that they have never built one and don't believe it can be done. The real news is that competitions are now being held in which the judges refuse to be bamboozled by elegant renderings in color, whose greatest architectural achievement is the sky [...] The fact that no one was tempted to fit the new building into seventeenth-century Williamsburg by even adding as much as a pineapple to the forthright façade is naturally, all to the good."

In fact, many of these Modernist designs sparked discord at their respective institutions. College donors and trustees whose memory of their own collegiate experiences involved interacting with largely formal and traditional architecture and campus layouts, were put off by the then-new genre of architecture, making the actual financing of the winning buildings that much more difficult.

After the designs flopped, some of these institutions went so far as to erase all evidence that these competitions had existed in the first place. Drawings and competition records disappeared altogether. But it is perhaps because most of these buildings were never erected—and were, instead, fought over—that these competitions advanced the conversation on Modernism



1937

Walter Gropius, founder of the Bauhaus Movement, appointed head of Harvard's School of Architecture

Wheaton College announces competition

1938

Goucher College competition announced in *Pencil Points* in June. The jury announces the winner in October

In November, William and Mary announces its competition in *Architectural Record*

1939

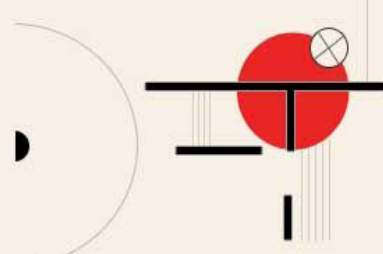
The William and Mary competition jury announces its winner in February. In April, the school's winning theater design is abandoned.

1941

Construction begins on Goucher College's winning Moore & Hutchins design

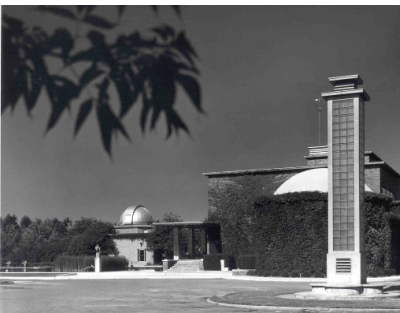
1946

Wheaton College President A. Howard Meneely announces all new buildings to maintain the Georgian-Colonial style. Bennett and Hornbostel's design is officially dead





Above: Cranbrook Academy of Art
Below: Cranbrook Institute of Science; 1941



more than tacit acceptance of these designs could have done.

Cranbrook Academy of Art:

The Cranbrook Academy of Art, one of America's leading graduate schools for architecture, art, and design, was founded by George and Ellen Booth in 1932. In 1984, *The New York Times* wrote that "the effect of Cranbrook and its graduates and faculty on the physical environment of this country has been profound ... Cranbrook, surely more than any other institution, has a right to think of itself as synonymous with contemporary American design."

The Academy of Art buildings were designed and the school first headed by Eliel Saarinen, who integrated design practices and theories from the Arts and Crafts movement through the International Style. The school continues to be known for its apprenticeship method of teaching, in which a small group of students—usually only 10 to 16 per class, or 150 students in total for the ten departments—study under a single artist-in-residence for the duration of their curriculum. The graduate program is unconventional because there are no traditional courses; all learning is self-directed under the guidance and supervision of the respective artist-in-residence.

The schools are set within a designed landscape that ranges from formal gardens to naturalistic woodlands and lakes. H.J. Corfield and O.C. Simonds shaped the property's landscape around Cranbrook House (designed by Albert Kahn in 1908) prior to 1924. After 1925, C. DeForest Platt planted the Arts and Crafts-style Cranbrook School's interior courtyards with deciduous trees, flat lawn panels, shrubs, and perennial borders. Edward Eichstadt provided planting plans for Saarinen's Art Deco-style Kingswood School in 1934, with open lawns and small flowering trees to contrast the mature native woods surrounding the site. Water features and over 70 outdoor sculptures by Carl Milles, Marshall Fredericks, and other artists grace the grounds.

The campus includes Cranbrook House as well as the Gothic Revival-style Christ Church designed by Oscar Murray of Bertram G. Goodhue Associates and completed in 1926 after Goodhue's untimely death in 1924, a theater, four schools, and two museums. Steven Holl, Tod Williams and Billie Tsien, Rafael Moneo, and Peter Rose have also designed campus buildings in the last twenty years. Kenneth E. Bassett of Sasaki Associates produced the latest campus plan in 2002. Now 319 acres, Cranbrook was designated a National Historic Landmark in 1989.

Notable alumni and faculty of the Cranbrook Academy of Art include Harry Bertoia, Richard DeVore, Charles Eames, Ray Eames, Waylande Gregory, Florence Knoll (did not graduate), Daniel Libeskind, and Eero Saarinen. In 1932, sculptor Marshall Fredericks accepted an invitation by Carl Milles to join the staff of the academy and schools, teaching there until he enlisted in the armed forces in 1942. In 1987, Keith Haring served as an artist-in-residence.

Cranbrook Institute of Science; 1935-1937:

Architectural historians view this project as a transitional element in

Essays on Architecture:

Eero Saarinen - America's Modern Form-Giver

Eliel's career and the ascension of Eero's role as the leading hand in his collaboration with Eliel. At the highest point on the Cranbrook campus previously known as "Sunset Hill," the Cranbrook Institute of Science is a sprawling L-shaped building that now includes the original 1930 structure of the Saarinens along with several additions.

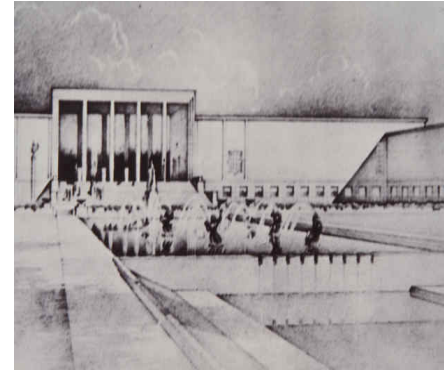
The original building faces south and reflects buff yellow brick and strong horizontal lines. The building's horizontality is emphasized by the rhythm of its windows as well as the long thin cornices and overhanging flat roofs. The building is focused toward the large central reflecting pool that contains the Mermaid and Triton sculptures by Carl Milles. The round volumes and domes of the observatory and planetarium located at each end of the L-shaped plan provide balance to the otherwise strict angular geometry of the rest of the building. The building's main entrance is located under an open porch at the northeast corner of the building. The porch has a thin flat slab roof supported by four concrete columns molded to appear as large patterned stacked blocks. East of the building is a large semi-circular parking area with the original concrete and glass block "light tower" at its center.

The Cranbrook Institute of Science was envisioned in the late 1920's as the Cranbrook schools were in the final stages of completion. Founder George Booth's interest to add astronomy to the schools' curriculum resulted in the original plan to mount a telescope at the top of the school's tower (now part of Hooey Hall). However this location was found to be unfit for an observatory, and the plans were put on hold.

Over the next several years, the Booths acquired several mineral collections during their travels in the American West, which further emphasized the need for a dedicated repository for the display of these collections and a setting for the study the natural sciences. In 1930, the Board of Trustees authorized the construction of "suitable buildings" for this purpose and proposed that "the Cranbrook Institute of Science" be established.

Booth himself designed the institute's first building – a temporary one-story concrete block structure with a wood shingle roof. Booth asked Eliel Saarinen to develop a master plan for the future growth and expansion of the institute, resulting in the development of several schemes. A revised plan was approved and the Saarinen-designed institute building was dedicated in May 1938.

According to historic images and a sketch plan held in the Cranbrook Archives showing the evolution of the building, Saarinen incorporated a small portion of Booth's original structure into the new institute building. Booth's original structure had a donut or U-shaped plan that encompassed the area where the pool is today. As the institute has grown, several additions have been added to Saarinen's original design. Modifications include construction of McMath Planetarium in 1955, the addition of the Skilman wing in 1962 and a large contemporary wing designed by Stephen Holl in 1998.



Above & Below:
1. Eliel Saarinen's Rendering of Cranbrook Museum & Library
2. Cranbrook Museum Entry
3. Cranbrook Museum & Library Aerial
4. Cranbrook Library



Cranbrook Museum & Library; 1940-1943:

The Cranbrook Academy of Art Museum and Library is located near



Top Down:

1. Cranbrook Museum with Milles Sculptures
2. Musee d'Art Moderne, 1937 Paris World Exposition
3. Cranbrook Museum Interior
4. Cranbrook Museum Travertine Steps



the center of the academy's 315-acre campus. The buff yellow brick and Mankato limestone-clad building consists of two rectangular wings separated by a large open propylaeum that shelters the entrances to the museum and library wings. The museum block to the west is almost window-less by necessity, while the library wing possesses a bank of windows along the north elevation that provides natural light to the two-story reading room.

The design of the building is believed to have been inspired by the Musee d' Art Moderne erected at the 1937 Paris World Exposition and also that the propylaeum recalls Asplund's Woodland Crematorium in Stockholm which Eliel visited just before starting work on the museum and library. Open terraces north and south of the propylaeum contain fountains and bronze sculptures created by Carl Milles, the Swedish-born sculptor brought to Cranbrook in 1931 by George Booth. A stairway addition designed by George Booth was added in 1957-58.

Academy trustees asked Saarinen to begin designing a new museum and library for the campus as early as 1937 as economic conditions began to improve following the Great Depression. Design of the new building, which would be Eliel Saarinen's last major project on campus, represented the culmination of a thorough study of similar buildings around the United States and in Europe. Construction began in May 1940 and the building was essentially complete by late 1942.

The art museum was intended to not only house artworks acquired from George Booth through the Cranbrook Foundation, but also to serve as a teaching tool through its permanent collections and exhibitions. The Cranbrook Academy of Art Museum and Library remains today the physical and emotional center of the Cranbrook Educational Community, which is made up of several institutions including the Cranbrook Schools, Cranbrook Academy of Art, Cranbrook Art Museum, Cranbrook Institute of Science, and the Cranbrook House and Gardens.

The design of the art museum and library reflected Saarinen's recognition of the orthodoxy of the International Style's entry into the American mainstream, which Philip Johnson and Henry Russell-Hitchcock had exhibited at the groundbreaking 1932 MOMA show. David DeLong attributes this migration/ progression to Eero, who traveled 1929-1930 in Paris, and traveled in Europe in 1934 and in 1935-1936, working with Karl Eklund in Helsinki. De Long also noted that Saarinen's approach "humanized orthodox modernism" which could be cold and unappealing.

Eero Saarinen's design for the downtown Helsinki commercial complex Forum Competition in 1934 reflects an approach far more supportive of a more orthodox modernism with its taunt transparency and curvilinear form.

The National Historic Landmark nomination describes Cranbrook as "one of the most important groups of education and architectural structures in America, a summary of the first half of the twentieth century in the form of a group of buildings."

Alexander Hamilton Memorial Project; Chicago, IL; 1932 – 1952:

Philanthropist and art patron Kate Sturges Buckingham (1858–1937), originally from Zanesville, OH, is best known for donating the Clarence Buckingham Memorial Fountain in Grant Park, and was known as “Chicago’s Greatest Spinster.”

When her mother passed away in 1889, Kate took charge of the family’s considerable wealth from grain elevators and banking at the age of 32. She never married and became an enthusiastic philanthropist, donating over 16,000 works to the Art Institute of Chicago. She also commissioned this monument to Alexander Hamilton (1757–1804), whom she felt was “one of the least appreciated great Americans.” Buckingham believed that as the first Secretary of the Treasury, Hamilton had secured the nation’s financial future, allowing her own family to make a fortune in grain elevators and banking.

Kate Buckingham hired artist John Angel to model a figurative sculpture of Hamilton. Born in England, John Angel (1881–1960) produced several artworks located in the United Kingdom including war memorials in Exeter, Somerset, and Yorkshire. He also sculpted the Francis Vigo Monument in George Rogers Clark Park in Indiana, and created artworks for many American churches.

Buckingham wanted the Alexander Hamilton Monument to have a colossal architectural setting and she originally commissioned the then-famous Eliel Saarinen (1873–1950) to create one. Saarinen combined four elongated fluted telescoping columns that he used at Kingswood to form the baldachino for the Hamilton Memorial Project. The initial 1932 preliminary design shows simpler columns with a terraced base and an upper crown, similar to his 1933 scheme.

The memorial was conceived as an open pavilion bridging a long channel of water, evidencing Saarinen’s adept integration and unification of architectural elements with plazas, pools and the landscaping of public parks. The crown of the memorial was to be gilded bronze with concealed lights in the fluted concentric rings of the oculus, motifs popularized at the 1925 Paris Exposition.

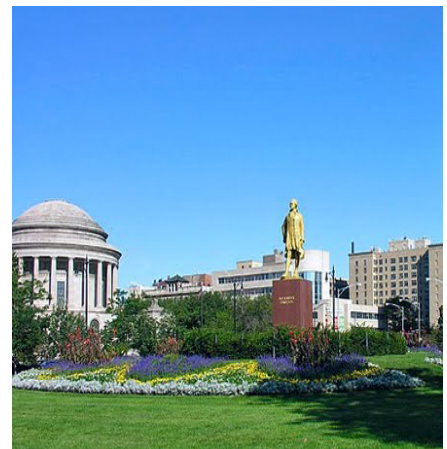
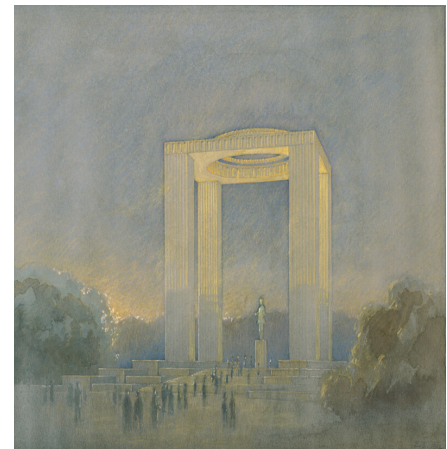
However, Saarinen’s proposed 115-foot-tall columned shelter was not well received, with Buckingham reacting, “My signature would be lost,” and the “monument should not look like a modern skyscraper.” By the time Kate Buckingham died in 1937, the sculpture’s setting and location were uncertain. Her will stipulated that if the memorial had not been completed within ten years of her death, the \$1M trust should be turned over to the Art Institute.

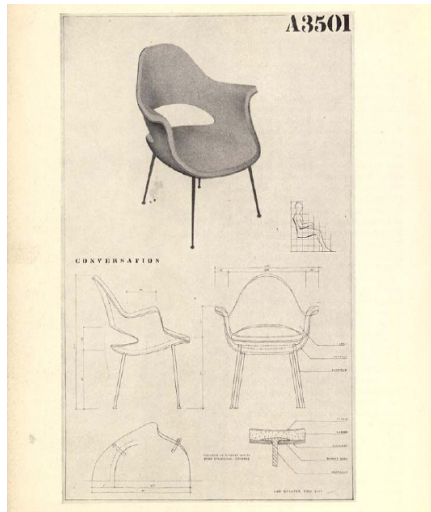
Years passed, and critics accused the executors of Buckingham’s estate and trustees for the monument of conspiring to allow the project’s time limit to expire so that the money would revert to the Art Institute of Chicago. After the courts ordered the completion of the Alexander Hamilton Monument by 1953, the trustees moved swiftly, hiring architect Samuel A. Marx (1885–1964) to design a tall granite setting for the sculpture’s newly-selected Lincoln Park site. The trustees also decided to gild the bronze statue.

The sculpture stood on Marx’s enormous seventy-eight-foot-tall cantilevered black granite exedra for four decades. When engineering



Top Down:
1. Alexander Hamilton Memorial Competition Entry
2. Alexander Hamilton Memorial Competition Entry
3. John Angel Alexander Hamilton Statue





Top Down:

1. MOMA Organic Design Exhibition Presentation Dwg. by Charles Eames & Eero Saarinen
2. Saarinen Tea Service design for Wilcox Silver Plate Co.
3. Lilian Louisa Swann



studies revealed that the granite setting had structural design flaws, the Chicago Park District demolished it in 1993. Today, the gilded Hamilton sits on its simple low red granite base, the only remaining element of Marx's exedra structure, overwhelmed by its surroundings.

Product Design; 1934:

From 1929–34, Eliel Saarinen designed product for the Wilcox Silver Plate Co. / International Silver Company in Meriden, CT. His iconic tea urn was first exhibited in 1934–35 at the Metropolitan Museum of Art in New York.

Over the years, the tea urn has been widely exhibited, including in St. Louis Modern (2015–16) at the St Louis Art Museum, Cranbrook Goes to the Movies: Films and Their Objects, 1925–1975 at the Cranbrook Art Museum (2014–15) and in 2005–07 in the touring exhibition Modernism in American Silver: 20th-Century Design, organized by the Dallas Museum of Art, which also traveled to the Smithsonian Institution in Washington, DC.

In 1951–52, the tea urn was featured in the Eliel Saarinen Memorial Exhibition which traveled to multiple venues across the United States. In addition to Cranbrook, the Dallas Museum and the St Louis Museum, The British Museum in London and the Metropolitan Museum of Art also hold tea urn-related Eliel Saarinen designs.

Marriage to Lilian Swann; 1939:

In 1939, Eero married the sculptor Lilian Swann, with whom he eventually had two children, Eric and Susan. Eric later went on to become a filmmaker, producing the 2016 documentary for PBS about his father, *Eero Saarinen: The Architect Who Saw The Future*. Lilian was, to be certain, a key influence on Eero, inspiring him to maintain a sculptural, plastic quality in his designs and sometimes contributing relief sculpture to Eliel and Eero's architectural projects.

Their marriage, however, was not a particularly happy one. Eero's energies were completely focused on his work, and it was normal for him to spend virtually no time with his family, staying at the office until very late at night and leaving Lilian to look after the children and tend to domestic duties. Eric later recalled, "I always resented my father for literally abandoning my mother, my sister, and me. But I never saw it from his point of view." Eero and Lilian divorced in 1954.

The Smithsonian National Gallery of Art Competition; Washington, DC: 1939:

Eero Saarinen began his career with his father's company, Saarinen, Swansen and Associates. In 1937, Andrew Mellon, a former Treasury Secretary, donated not only his impressive collection of Old Masters work as well as significant funds to construct a new museum to accommodate the collection and other great works on the Mall in Washington, DC. Eliel, Eero and Robert Swanson entered the 1939 competition to design a new facility for what was to be the Smithsonian Gallery of Art in Washington,

DC. With over 400 submissions, the Saarinen team's entry was the unanimous winner. Walter Gropius was among the jurors.

Reflecting the aspirations of Roosevelt's New Deal America, the competition represented the brief direct involvement of the Federal government with the arts. In the resulting clash between modernists and classicists, the conservative Commission of Fine Arts rejected the design by never formally meeting to consider the winning design. Eero, 29, was still prominently featured in the press for his winning design.

In an interview with Ralph Rapson who was working in the Saarinen office at the time, while Eero was working on the Smithsonian design, Eliel would walk behind Eero looking over his shoulder and shake his head in a disapproving manner and walk to his desk to work alone on the Cranbrook Museum and Library.

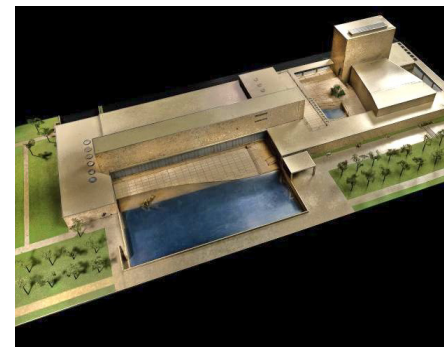
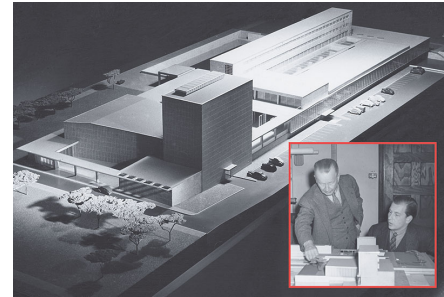
MoMA 'Organic Design' Competition; 1940:

In 1940, MoMA sponsored a contest challenging designers to submit furniture, lamps, and textiles of "Organic Design," which curator Elliot Noyes described as exemplifying "harmonious organization of the parts within the whole, according to structure, material, and purpose." Winners would not only have their work exhibited in the 1941 exhibition Organic Design in Home Furnishings, but were also awarded contracts for the manufacture and distribution of their designs with major department stores, with the first day of sales timed to coincide with the exhibition's opening. This exhibition introduced the world to Eero Saarinen and Charles Eames, who worked together as a team that won in both the chair design with the iconic Organic Chair and living room categories.

MoMA's press release stated, "Through the cooperation of the sponsoring department stores and manufacturers, the Museum has been able to eliminate the time-lag between theory and application - a condition heretofore tending to discourage public interest in good design. Now, in the exhibition opening at the Museum of Modern Art Wednesday, prize-winning designs will not be mere dreams in blueprint. They will be obtainable as finished products at Bloomingdale's in New York; L. S. Ayres & Company, Indianapolis; Barker Bros., Los Angeles; Famous-Barr Co., St. Louis; Marshall Field & Company, Chicago; Gimbel Bros., Philadelphia; Jordan Marsh Company, Boston; The Halle Bros. Co., Cleveland; The J. L. Hudson Company, Detroit; Kaufmann Department Stores, Pittsburgh; the F. & R. Lazarus & Co., Columbus; and Wolf & Dessauer, Fort Wayne."

"The chairs which appear in actuality or enlarged photographs above the projection track include the Morris Chair; a Thonet bentwood bench designed in about 1880; the first tubular metal chair by Breuer; the Mie's van der Rohe chair with spring steel legs; the lounging chair with tubular steel frame by Le Corbusier; bent plywood chairs by Aalto; and other plywood designs by Breuer and by Bruno Mathsson of Sweden. In his commentary on chair design in the catalog which will be published simultaneously with the exhibition, Mr. Noyes writes:"

"Into the artistic confusion which occurred when machines began to flood the everyday scene with articles the design of which was a fumbling imitation of hand crafts, came William Morris. A great revolutionary figure,



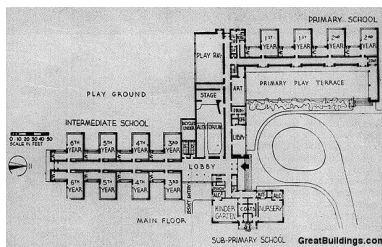
Above: Smithsonian Competition Entry with Eliel & Eero Inset, Smithsonian Competition Entry Model

Below: MOMA Organic Design Exhibition Presentation Dwg. by Charles Eames & Eero Saarinen





Top to Bottom:
1. MOMA Organic Design Exhibition
2. MOMA Organic Design Exhibition
3. MOMA Organic Design Exhibition
4. Crow Island School Plan



he realized that art no longer existed as a normal function of life. Declaring that the machine was incapable of producing art, he called for a return to arts and crafts."

"His observation was correct, but his remedy was negative and fundamentally wrong. While others were to recognize the positive qualities which machine production could offer, Morris had at least taken a major step in his insistence that art and design must be a normal part of life."

"For this reason it may be said that Morris is the first important figure in the modern movement; for these qualities the Morris Chair, while probably not designed by Morris himself, may be called the first modern chair."

"From Morris' time until today, three distinct aspects of design may be observed in action. One of these is the reactionary, decorative, arts and crafts approach to design. The validity of traditional ornament was quickly undermined by the Industrial Revolution, and immediately there came attempts to create new decorative formulae to replace it. Art Nouveau at the turn of the century, the Viennese Kunstgewerbe, the decorative trivialities of Paris in 1925, and finally streamlining (as a decorative formula) are all of this package."

"A second aspect of design is contributed, often unconsciously, by men who, while working with materials and new machines find new forms and new ways of making things. Still a third aspect of design is that in which designers of vision, recognizing the temper of the new industrial world which is coming into being, try to come to terms with the machine and its implications..."

"Turning from this exhibit in horror the visitor sees several of the newer chairs presented for the first time in the exhibition. Parts of the sections are cut away so that the construction processes may be understood. A tremendous step toward simplification and lightness is shown until the visitor comes to the entirely new structural idea in chair design."

"This chair, which comes in four variations, has been originated by Eero Saarinen and Charles Eames of Bloomfield Hills, Michigan, who are the winners not only in Category A: Seating for a Living Room; but also in Category B: Other Furniture for a Living Room. The original full-scale model for the chair is molded by the designers in plaster and wire netting to fit the contours of the human anatomy somewhat as a sculptor makes his first plaster cast."

"The shape of this plaster-and-netting chair is then transferred to a cast-iron mold in which the final chair shell is fabricated. The substance of the chair itself is formed of alternate layers of thin sheets of wood and glue laminated in the cast-iron form under intense pressure and heat. When removed from the cast the completed shell needs only to be trimmed and to have legs attached, which completes the structural part of the chair. A thin rubber pad is then applied over the inner side of the shell to be covered by upholstery material."

After the exhibition closed at MoMA, it was shipped to other museums throughout the country, expanding further the awareness of the talents of Saarinen and Eames.

Crow Island School; Winnetka, IL; 1940:

Viewed from the outside today, the Crow Island Elementary School does not

look particularly extraordinary. But it is and was. In 2015, alumni from around the country returned to celebrate the 75th anniversary of the school's completion - because of its design.

Public schools in this country, and particularly elementary schools, are rarely honored for their design. Whether it is a question of modest budgets or the simple architectural demands of a classroom or a gym, there are very few schools and architects who gain recognition of any consequence in this category. The Crow Island School is an exception. Blessed by circumstances of timing and good luck, the contract for Crow Island School in 1940 was awarded to a very young and inexperienced architect Eero Saarinen, who would later design some of the most significant and iconic buildings in the US.

Fresh out of teaching design at Cranbrook in Michigan, where father Eliel Saarinen became an instructor after WWII, Eero Saarinen joined a partnership with Perkins, Wheeler, and Will to work with Winnetka's innovative school superintendent Carlton Washburne to design a radically new model for educating elementary school children.

From interviewing children and their teachers, as well as his own experience as a student in Danish elementary schools, Saarinen wanted the building to be "child-centered" with each classroom being a home for the entire day. With almost unlimited natural light created by large low windows, a private exit to the outdoor woods, acoustically treated ceilings, a private workroom, private bathroom, endless blackboard space and other fixtures placed at the proper height for little people, Saarinen created a special world for children that now has been copied in some form or another in almost every school built today. Saarinen maximized daylight by separating the classrooms from one another with a supplies/ storage/ bathroom support area between each one, enabling him to add large glass areas on two sides instead of one.

The net result of this collaboration has been heralded by

Below:

1. Dr. Carleton Washburne
2. Larry Perkins & Philip Will



architectural historians and scholars around the country as an exceptional model of innovation. Crow Island was an early project involving Saarinen's collaboration with Lawrence Perkins, founder of the now-global architecture firm Perkins + Will, who used the school to set in motion a prolific education-design practice. Eliel and Eero Saarinen, the renowned Finnish-born father and son architects, were the school's designers, brought on board by the district to lend top-shelf sensibility and creativity to Perkins' young and hungry firm.

Crow Island School is the "physical embodiment of progressive education" expressed through the design of groundbreaking modernist architects, said Laurie Petersen, a Chicago architecture expert. Crow Island, a National Historic Landmark at 1112 Willow Road, is child-centered and experiential and "emphasizes the whole child," said Petersen, co-editor of the revised AIA Guide to Chicago.

"Traditional schools prior to progressive education had desks that were strictly regimented in rows and bolted to the floor," she said. "But in 1919, progressive education came to Winnetka."

In 1919, the Winnetka School District 36 Board of Education had hired progressive advocate Carleton Washburne as its superintendent. In 1937, after withstanding much of the Great Depression, the board and Washburne decided to build their "dream school," Peterson said. Three years later, the fruits of a collaboration with Chicago architects Perkins, Wheeler and Will and Finnish modernists Eliel and Eero Saarinen were born as Crow Island.

"It was a gorgeous school and very influential," Petersen said. "Thinking of the experience of being at the school, (the designers) had wider halls and bathrooms on each floor. They wanted lots of light in the classrooms. It was really thinking of the children." Before Crow Island's construction, architect Larry Perkins spent several months in Winnetka's Horace Mann School speaking with students, staff and parents about their experiences there, she said.

Below:

1. Crow Island School Exterior
2. Crow Island School Classroom





Top to Bottom:
1. Crow Island School Classroom
2. Crow Island school Classroom
3. - 5. Crow island School Sculptures by Lilian Swann



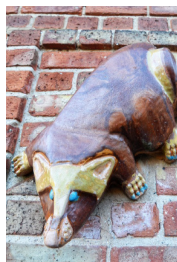
"The kids said they felt small and insignificant," Petersen said. "The kids wanted lower ceilings. The teachers wanted more space for messy projects. They wanted a bathroom in their classroom, so they would not have to go down the hall. "The beauty of Crow Island, which was truly innovative for the time, was that it could now separate the kids and have a central area." Each level -- kindergarten, elementary and intermediate -- had its own wing with its own play area, she said. The designers developed the idea of placing schools in park settings, so they would be surrounded by green space, Petersen said.

Alumni also report that a key positive part of their experiences at Crow Island were the stunning ceramic reliefs created by Eero's wife, Lily Swann Saarinen. Lily Swann's marvelously surreal images of animals and American Indians impacted many as a constant reminder of the power of play; "As a child, they seemed delightfully comical but not in a distorted way. They greeted each kid every morning in the same way as capturing a glimpse of a loved but underappreciated teddy bear sitting in the corner of the child's bedroom. As an adult, there is an almost childlike glee in seeing them again. They sit just as nobly in their class courtyards as they did when I was a kid, still pulsating with an addictive sense of freshness and the modern. That's worth honoring on its own."

True to this Modernist ethos, Crow Island distinguished itself through a break with the past. Like most all public buildings, the design of schools through history paraded through a succession of historical stylistic tropes: Gothic, Neoclassical, Beaux Arts, "all proportioned to the rules and proclaiming their cultural affiliations by pale symbols of Latium," reported *Architectural Forum* in a 1940 article on Crow Island. There was not much on-the-ground assessment of how schools actually functioned and how students used them.

"Crow Island turned all that upside down," says education architect Steven Turckes, of Perkins + Will. Pedagogical changes associated with the Progressive Era began to inspire new ideas about how children in an urbanizing democracy should learn. At that time, students learned in pattern-book schools designed with more than a bit of rote copying, and likewise, the way they learned was through rote memorization: A teacher at the front of the class drilled facts into them as they sat in desks bolted to the floor.

Reformers like the University of Chicago's John Dewey espoused a more active mode of learning. In the late 1930's, Winnetka superintendent Carleton Washburne asked for a school that would "encourage spontaneity, variation, initiation, creative work and independent thinking." As a result, the L-shaped classrooms framed with two wide window walls provide a main instructional space as well as a smaller, flexible workspace where children can step away from day-to-day, teacher-led instruction and focus on longer-term projects.



The work zones, says Beth Hebert, a former principal, “are the original maker-space, places where students can go to create things of their own design.”

The school’s classrooms look out to a lush forested public park, and all have cozy, landscaped courtyards. The landscaping throughout is pleasingly overgrown and filled with shaded nooks and crannies to explore, offering places to practice the skills of seclusion and concentration.

The combination of secluded outdoor space, a variety of instruction areas, and each classroom’s own sink and bathroom made each class a self-contained village of its own; a cloistered place to try on different responsibilities and activities. Crow Island was far more child-centered than previous generations of schools. Door handles and custom-designed furniture were all child-scaled. “It was their own little world within the larger context of the school,” says Turckes.

The school emphasized the Bauhaus ideal of integration of all arts by including the playful ceramic animal sculptures by Eero’s wife Lilian Saarinen. Crow Island’s commitment to Modernism didn’t make it stark—the Saarinens’ brickwork also offers unexpected flourishes, like a blueprint of the building in raised brick.

In the school’s basement is the “Pioneer Room,” a faux log cabin where students dip candles and spin wool. *Architectural Forum* in 1940: “There could be no worse method for teaching history.” This room’s inclusion shows that Crow Island has never been too precious about its own legacy. The school is made of simple and durable materials, like the ponderosa pine panels in each classroom which teachers have used to pin students’ work to the walls for 75 years.

After the debut of Crow Island in 1940, the next great boom in school building came in the Baby Boom years after WWII. Many of those schools copied Crow Island, but only in fragmented ways of its most basic elements: an asymmetrical single-story building made of brick, with strong horizontal lines and large windows. What emerged was the classic postwar school box, a “factory model,” says school architect John Dale. Ironically, these elements of Modernist design were the opposite of what the Saarinens were known for, having developed a warmer and more wood-hued take on the International Style.

Some early Modern-era schools - like Perkins + Will’s Heathcote School - applied the Crow Island template directly and included the material detailing that made it a standout. In 2001, 47 years later, Perkins + Will featured the same asymmetrical chimney tower and broad expanses of windows in its Harold G. Fearn Elementary School.

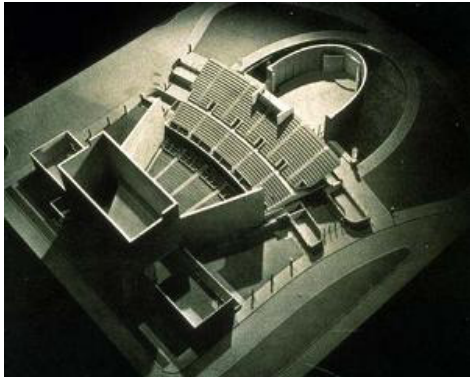


Top to Bottom: Crow Island School, 1940





Above and Below: Kleinhans Music Hall, Buffalo, 1940



A few recent primary school projects have adopted the model wholeheartedly, emphasizing the same multipurpose, independent learning spaces and artful floor-to-ceiling windows. They include Cranbrook Kingswood Girls Middle School in Bloomfield Hills, Michigan, and Trillium Creek Primary School in West Linn, Oregon.

But most school districts were more reluctant than the affluent North Shore suburb of Winnetka to invest in an idiosyncratic building, ostensibly more expensive to build and maintain, although, at a cost of \$287,000 (\$5.268M today), Crow Island came in under budget, according to the *Chicago Reader*. School districts generally prefer standardization to Crow Island's sense of exploration, play, and artistry.

The school received the prestigious Twenty-Five Year Award from the American Institute of Architects in 1971, the only K-12 education building ever to be so honored. Crow Island is typically regarded as the first Modern elementary school building in North America.

Kleinhans Music Hall; Buffalo, NY; 1938 – 1940:

Eero returned to the US in 1937 and went into partnership with Eliel. Eero's influence would appear almost immediately. With the Kleinhans Music Hall, functionally articulated elements – concert hall, chamber hall, lobby – define the project instead of Eliel's integrated massing within a composed whole. Eliel and Eero Saarinen were hired when the client became disenchanted with the work of original architects F. J. and W. A. Kidd Architects. The Saarinens collaborated with Charles Eames and Ralph Rapson in developing the tripartite curvilinear design.

Between 1938 and 1940, Eero and his father designed the Kleinhans Music Hall in Buffalo, New York. The Kleinhans project was an interesting composition that revealed Eliel's progression past the romantic organization and articulation of forms. The two semi-elliptical structures contain a 3000-seat auditorium for orchestral music and an 800-seat chamber music hall with flexible seating designed by Eames and Eero.

Eero's influence and contribution appears to be the interior with its curving lobby opening and stair. A chair for the project that Eero, 28, designed with Charles Eames, 31, utilized a one-piece lightly padded molded plywood seat and back, likely influenced by Alvar Aalto's molded wood furniture of that period. A few of the chairs have survived in the musicians' lounge of the hall.

The concert hall is not widely known, located in a suburban residential neighborhood on the west side of Buffalo. The site design is classical and grand with a 500-foot diameter landscape arc as a termination of The Circle, a public park designed by Frederick Law Olmsted and Calvert Vaux in the

1860's when they planned the city's future form. At the opposite end of the parkway sits H. H. Richardson's grand Romanesque Buffalo State Hospital, recently renovated as a Museum Hotel by Debra Berke.

The Saarinens' response to the Olmsted-Vaux circle is an appropriately formal drum-shaped curved chamber music hall – a primary geometric form - to echo the landscape circle, while the main hall – a larger curved volume, extends behind with the lobby serving both halls between the two volumes.

Eliel Saarinen's own writings about the project characterized the plan of the project as a violin: "The shape of the violin [the overall shape of Kleinhans Music Hall] has not derived from a preconceived style form. It has derived from and through its own function of a musical instrument and with distinct requirements as to the quality and carrying capacity of its sound, and as to how it is handled by the player. That is, the shape of the violin is based on both musical and human qualifications."

"This holds true with regard to any musical instrument, provided that instrument has genuinely and functionally been crystallized into a form of its own. And as a concert auditorium to its inmost nature is a musical instrument -- and very much so, for that matter -- its formation must derive accordingly."

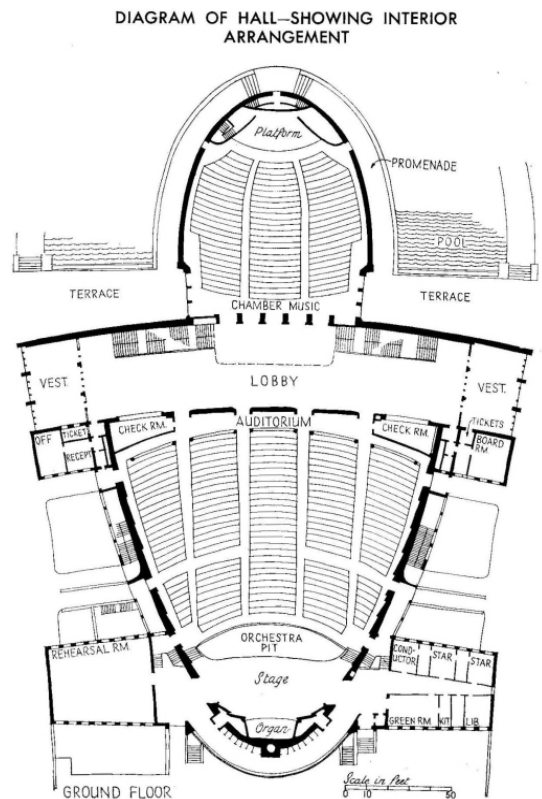
"There is, however, one fundamental difference between the violin and the concert auditorium. Whereas the sound of the violin brings the surrounding space into vibration, any music played in the auditorium must vibrate within that very space having been enclosed by the auditorium itself. According to these two contrasting characteristics, the respective instruments -- the violin and the concert auditorium -- must be shaped. In the case of the violin, form shaping must be "open" so as to allow the vibrations of sound to fill the surrounding space. In the case of the concert auditorium, on the other hand, form shaping must be "closed" so as to keep the vibrations of sound within that space designed for these vibrations."

"Still more to illustrate our point of "openness" versus "enclosure" we might draw another parallel - -now purely an architectural one -- by referring to the Greek Temple and the Mediaeval Cathedral, respectively. And with this parallel we will stress the meaning of openness versus enclosure, not only in a physical sense, but in a spiritual sense as well, and particularly in that latter sense."

"In the case of the Greek Temple, the people during the ceremonial performance were outside of the structure. For this reason the exterior formation of the temple was designed "open" by means of imposing colonnades, thus to effect serenity of mind. Through abundant sunlight and because of the depth of the colonnades, there was achieved a play of light and shadow, of color and spatial brilliance, thus to effect a sentiment of sanguine and esthetic optimism. In the case of the Mediaeval Cathedral, on the other hand, the people during the service were

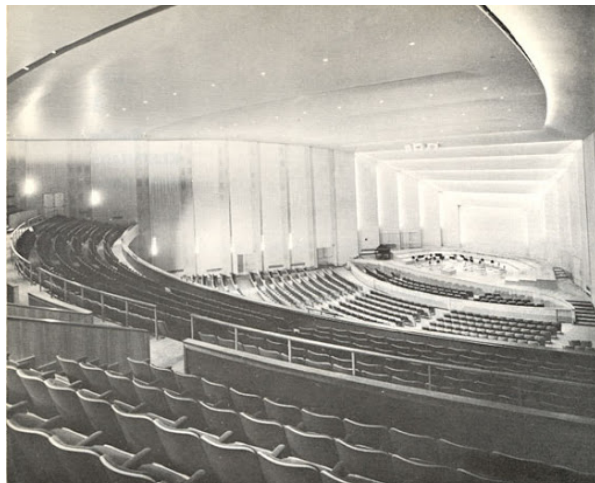


Top to Bottom:
1. Kleinhans Concert Hall Auditorium
2. Kleinhans Mary Seaton Room
3. Kleinhans Floor Plan





Above and Below Kleinhaus Concert Hall



Below Left to Right:
1. Berlin Philharmonic; Hans Scharoun
2. Sydney Opera house; Jørn Utzon
3. Kimmel Center for the Performing Arts; Raphael Vinoly
4. Auditorio de Tenerife; Santiago Calatrava



inside of the structure. For this reason the cathedral was designed "closed," and its interior was de-signed lofty in order to elevate minds to sublime thought. And by means of spare light it was made spatially indistinct so as to create a sentiment of inner mystic contemplation. In the case of the Greek Temple, the spatial accord, so to speak, was tuned in major. In the case of the Mediaeval Cathedral it was tuned in minor."

"In the case of the concert auditorium, the above intends to emphasize -- besides the point of physical "enclosure" -- another and more essential point, namely, that any such auditorium, to be a musical instrument, must be so shaped by means of architectural form expression, as to tune both performers and public toward a musically constructive disposition of mind. Metaphorically speaking, the concert auditorium, by means of its form, must be part of that music played within its walls."

The Main Auditorium

"In the designing of the Kleinhaus Music Hall, the above expressed thoughts constituted the spiritual program of the design work. In other words, the shape and character of the main auditorium were not conceived as a mere conventional product of some randomly selected architectural style, historical or otherwise, for such an approach to the problem would have been just as backward a procedure as to design a violin to satisfy some style demands having nothing in common with the nature of a violin. The shape and character of the main auditorium were conceived as a "musical instrument" where the solution of the problem had to grow from within in accordance with the demands, both spiritual and practical, of such an instrument. In this process it was the aim of the designers to create -- in accordance with the above described recipe -- an architectural atmosphere in this auditorium so as to tune the performers and the public alike in a proper mood of performance and receptiveness, respectively."

"This was the spiritual issue."

"In order to satisfy the demands of this spiritual issue, however, there were many practical and technical requirements which were of basic significance in the shaping and proportioning of the auditorium."

"First, there were the acoustical requirements which to a considerable degree decided the general form of the auditorium and the disposition of stage, seats and surfaces. Furthermore, these acoustical requirements decided much of the character and texture of ceiling, walls, and of floor covering, so as to ascertain satisfactory reverberation."

"Second, there was the problem of an adequate

relationship between the musicians on the stage and the public in the auditorium proper. In this respect we do not mean particularly that practical matter of adequate sight from every chair, but even the psychological side of a pleasant participating in the performance. It must namely be borne in mind -- and this is a well known fact to every performer -- that the action of any successful performance is dual and reciprocal, where the performers and the public influence and inspire one another. And the more both the performers and the public have been disposed, by means of favorable planning, to such a reciprocal influence and inspiration, the better the design of the auditorium does meet one of its primary requirements."

"Third, there was the problem of shaping the auditorium so as to provide for possibilities of various and varying light effects according to the changing moments and accents, as the performance proceeds. This point the designers considered of a particular importance, as the proposed double lighting with cold and warm color is essential in the bringing of forms and proportions into their full value, and also in bringing the varying light effects into accord with corresponding variations of performance and intervals."

As architecture author Witold Rbyszynski observes, modern society has now come to expect concert halls to be bold architectural statements – at least in the last 50+ years. Hans Scharoun's Berliner Philharmonie would not open until 1963.

Jorn Utzon's expressionist Sydney Opera House design won him the international competition in 1957 (thanks to Eero), though the facility did not open until 1973. Philadelphia's Kimmel Center for the Performing Arts (2001) by Raphael Vinoly Architects Inc. features a huge glass vault across the common lobby for the various performance facilities. Numerous lawsuits against Vinoly were finally settled in 2006.

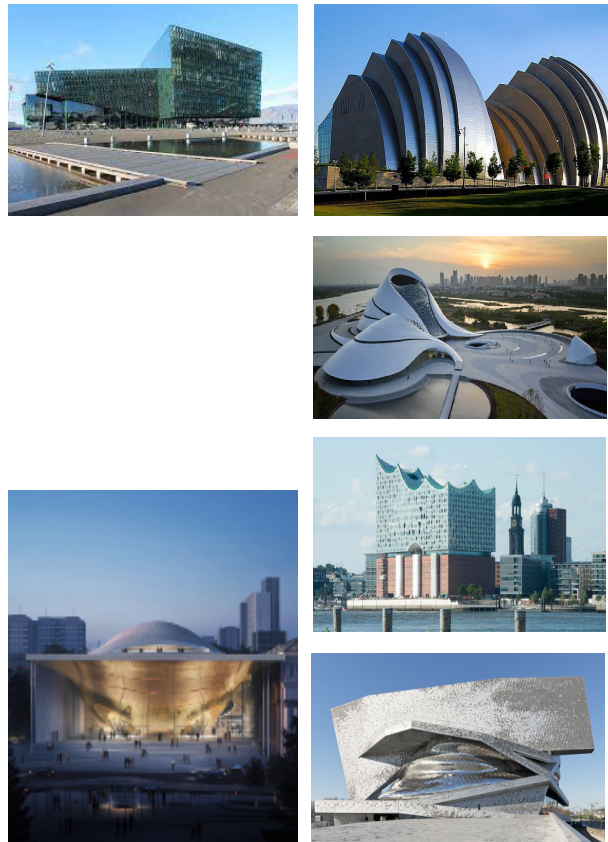
Santiago Calatrava's Auditorio de Tenerife in Spain's Canary Islands opened in 2003, looking like a scorpion's tail. Frank Gehry's explosion of titanium curls for the Disney Concert Hall (2003) in Los Angeles opened four years after construction was originally completed to enable the acoustics to be 'fine tuned.'

Sir Norman Foster's Sage Gateshead glass shell opened in 2004. Beijing's National Center for the Performing Arts by French architect Paul Andreu, now dubbed 'The Giant Egg' opened in 2007.



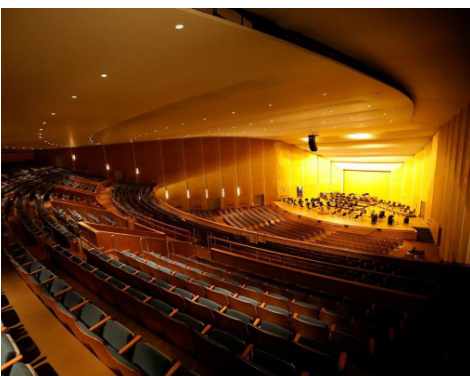
Above, Clockwise:

1. Disney Concert Hall; Frank Gehry
 2. Sage Gateshead Concert Hall; Sir Norman Foster
 3. Oslo Opera House; Snøhetta
 4. Guangzhou Opera House; Zaha Hadid
- Below, Clockwise:
5. Harpa Music Center; Henning Larsen
 6. Kaufman Center; Moshe Safdie
 7. Harbin Opera House; MAD Architects
 8. Elbe Philharmonic Hall; Herzog & de Meuron
 9. Philharmonie de Paris; Jean Nouvel
 10. Sverdlovsk Concert Hall; Zaha Hadid





Above and Below: Kleinmans Music Hall, Buffalo, 1940



The Snohetta Oslo Opera House slanting roof at the water opened in 2008.

Jean Nouvel's Copenhagen Concert Hall (2009) with its bright blue glowing form overcame its poor setting. Zaha Hadid's Guangzhou Opera House opened in 2010, inspired by the eroding river valleys in the region. Henning Larsen's geometric Harpa Music Center (2011) in Reykjavik, Iceland was inspired by local basalt formations.

Kansas City's Kaufman Center (2011) was designed by Canadian Moshe Safdie with two symmetrical half shells of vertical, concentric arches that open toward the south. Each shell houses one acoustically independent performance venue, with a shared backstage area. The remarkable organic Harbin Opera House, designed by Ma Yansong of MAD Architects, opened in 2015 in the Heilongjiang Province, China.

Herzog and de Meuron's Elbe Philharmonic (2017) in Hamburg built atop an old warehouse building has been interpreted as a sail, a wave, an iceberg or quartz crystal and at 354' in height, it is Hamburg's tallest building. The Zany Philharmonie de Paris by Jean Nouvel was completed in 2015 while litigation lingers on. In 2018, the firm of Zaha Hadid (1950-2016) won the competition for a new concert hall in Sverdlovsk, Russia with a floating manta-ray form.

Diller Scofidio and Renfro's renovated Pietro Belluschi and Eduardo Catalano's Alice Tully Hall at Lincoln Center (1969) and stretched it out to Broadway with incisions at the first two floors to expose program elements to the busy street (2009).

Unlike these projects of the past 60+ years, the Saarinens did not see their Kleinmans commission as an obligation or opportunity to create something outlandish. The project was awarded to the firm in 1938. What automobiles looked like then is perhaps an appropriate context in which to view Saarinens' effort, which came only seven years after the completion of Buffalo City Hall, an art deco tower by John Wade of the firm of Dietel, Wade & Jones, and only six years after the Henry-Russell Hitchcock and Philip Johnson exhibition on the International Style at the Museum of Modern Art which had failed to include Eliel.

Approaching Kleinmans from the circle, one catches only a brief glimpse between the trees of a small brick drum embraced by a curved walkway and what was originally a horseshoe-shaped reflecting pool, which has been sadly filled in. No windows and no entrances are at first visible, just the drum and the arc of the lawn/ pool.

The main entrance is on the side with a long concrete canopy. There is no enhancement to the masonry, no decorative coursework or other animations in the multicolored Wyandotte Ohio brick Eliel used to such effect at Cranbrook (1928-1931). While the mass of such a facility in a residential neighborhood

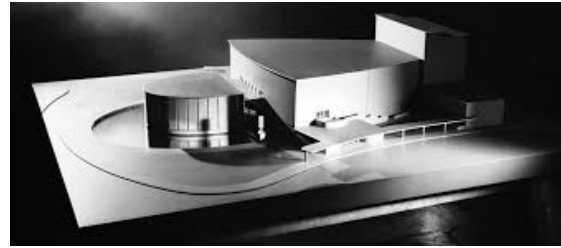
could, absent fenestration and detail, be overpowering, it is not. The larger hall's emergency stairs step down the exterior, providing scale and relief as Aalto's Baker House at MIT would six years later in 1946.

The chamber music hall exterior walls are accented with vertical piers of buff Mankato limestone, which Rbyszynski asserts suggests a classical rotunda like Pope's Jefferson Memorial. The lobby is an arced volume with curved walls, rounded details and a sexy stair that leads to a bar/ restaurant in the lower level. Architects have speculated that the envelope was Eliel's work while the interior shows Eero's hand, which is likely true. Before joining Eliel at his firm, Eero worked for industrial designer Norman Bel Geddes, known for his teardrop-shaped cars, curving desk lamps and organic exhibition pavilions. The influence of the streamlined nature of the work of Bel Geddes is evident, even in the custom lobby seating designed by Eero and Charles Eames.

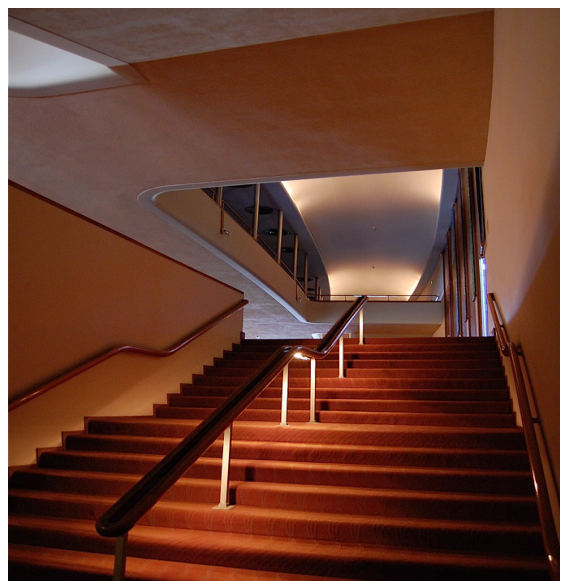
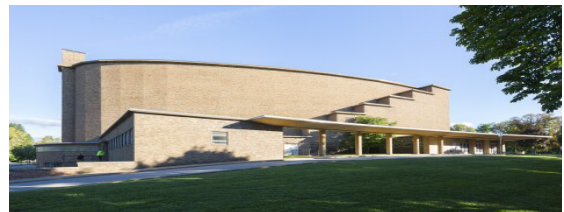
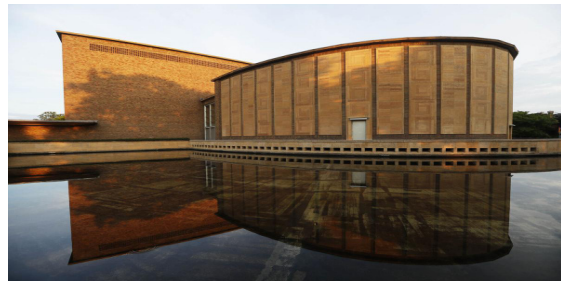
The chamber music hall is accessed through five full-height wooden doors off the lobby. The hall interior walls are zebrawood with curved rosewood screens flanking a raised stage. Like the lobby, the design is modern but not over-detailed. Most lighting is recessed.

While the main concert auditorium has a relatively short reverberation time by today's standards, Sergei Rachmaninoff, who performed in Kleinhans shortly after it opened, considered it "one of the best acoustical arrangements in this country." The violin virtuoso Jascha Heifetz called it "a joy to play in." Rbyszynski observed, "It's rare that a room takes one's breath away—this one does. There is none of the distracting techno-clutter that you find in so many modern concert halls; no suspended sound reflectors and chandeliers, no banks of spotlights, no sculptural wall treatment. The softly modeled plaster ceiling and the subtly shaped wooden walls lead the eye to the stage. There is no proscenium to separate the audience from the musicians. We are all together in this serene space."

"Eliel Saarinen was close to music—and to musicians. In Finland, he had known Jean Sibelius – and had an extensive correspondence with him - and Gustav Mahler, and he was friends with Serge Koussevitzky, the conductor of the Boston Symphony Orchestra. Koussevitzky, who recommended Saarinen for the Kleinhans job, had commissioned him in 1937 to plan the orchestra's summer home at Tanglewood in western Massachusetts. As he did in the Tanglewood "Shed," Saarinen used a fan-shape for Kleinhans, which is a very large hall—the original capacity was 2,800, recently reduced to 2,400 to provide more comfortable seating. But because of its shape all the seats in the steeply raked auditorium, and on the large balcony, are close to the stage. Significantly, new seating and carpeting—both matching the original—are the only notable changes to the hall in 75 years."



Top to Bottom:
1. Kleinhans Concert Hall Model
2. Kleinhans with Moat
3. Side Elevation from Parking Lot
4. Kleinhans Stair

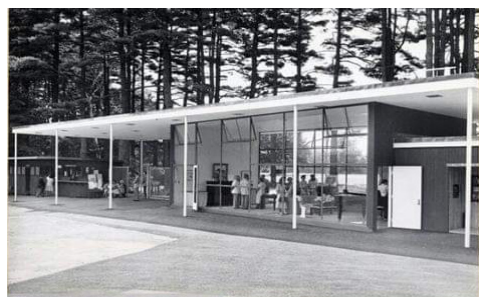




Top to Bottom:
1. Kleinhaus Seaton Hall Paneling
2. "The Kleinhaus Chair"



Below: Berkshire Music Center, Saarinen & Swanson; 1943



The Saarinens created warmth with primavera wood paneling - the same wood Mies van der Rohe would design into the Farnsworth House in 1945, completed in 1951. To save money, the wood veneer is paper thin and applied to a linen backing and glued like wallpaper to the plaster walls. Sound absorbing panels were placed behind perforated asbestos-cement sheets, which were painted to look like the primavera wood.

Eero in an interview stated that he deferred to his father when working together; "Until his death, I worked in the form of my father."

David De Long has observed that by 1938, Eero's work was coming to the attention of the "modernist Harvard architecture police," namely Gropius and Siegfried Gideon, whose praise Eero was seeking since they were recognized as the leaders of the new modern design orthodoxy at that time. DeLong compares the pinwheel plan and flat roof massing of the Crow Island School (1938-1940) in Winnetka with the form and plan of the Bauhaus building at Dessau, though he acknowledged that Saarinen retained a traditional quality with the brick framing projections at all of the windows "that the Harvard police hated." De Long also noted that the family collaborated with decorative tiles at Crow Island contributed by Saarinen's wife.

The Kleinhaus Concert Hall cost \$1.5 million to construct with \$1M contributed from the Kleinhaus estate and the balance from the Public Works Administration from President Roosevelt. In 2020, the cost would be \$27,533,000.

MoMA "Design for Postwar Living" Competition; 1943

A jury consisting of Gregory Ain, Charles Eames, Richard Neutra, John Leon Rex and Sumner Spaulding selected Eero Saarinen and Oliver Lundquist's scheme for the first prize among 512 submissions in August 1943. The competition program, open to all U.S. designers, was announced in April 1943.

Berkshire Music Center/ Tanglewood; Lenox, MASS; 1938-1959; with Joseph Franz; Chamber Music Shed with Eliel Saarinen; 1947

In 1938, Saarinen was asked to develop a master plan for an extensive music center by Serge

Essays on Architecture:

Eero Saarinen - America's Modern Form-Giver

Koussevitsky, conductor of the Boston Symphony Orchestra. The complex was to include a music pavilion, an open-amphitheater, school and inn.

Saarinen's design for the music pavilion – the Tanglewood Shed, was a clear-spanned fan-shaped structure clad in wood. Before construction got underway, the symphony tried to save money and decided to incorporate interior columns. Saarinen resigned in protest. The orchestra hired local architect Joseph Franz who executed Saarinen's design with interior columns.

In 1947, Saarinen designed a chamber music and opera structure, referred to as The Shed, with a stepped roof to distribute sound waves and wood siding. In 1959, Eero collaborate with noted acousticians Bolt Beranek & Newman to add an interior canopy of triangular panels to the Shed, now called the Koussevitsky Shed.

First Christian Church; Columbus, IN; 1939 - 1942:

The First Christian Church in Columbus, Indiana, was completed in 1942. It was the first contemporary building in Columbus and one of the first churches in the United States to be built in a contemporary architectural style. Yet it was Eliel's version of traditional modernism and not the stripped down orthodoxy of Mies at IIT. Eliel could not resist his affection for embellishments at entries and textural accentuations. For context, the church was conceived only 13 years after Cranbrook's Gothic Christ Church by Bertram Goodhue and Oscar Murray in 1926.

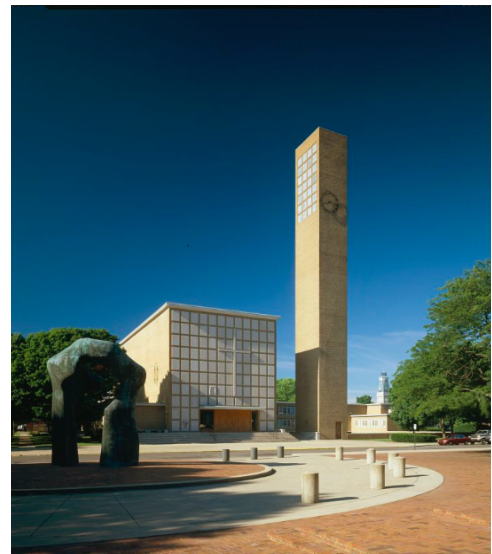
A larger church was needed to accommodate the growing needs of this congregation between World War I and World War II. Linnie I. Sweeney, the wife of Reverend Z. T. Sweeney, and her brother W. G. Irwin first discussed plans for a Gothic or Early American church, but her son and his nephew J. Irwin Miller, who had been following an architectural appreciation course at Yale University, proposed the idea for a Modern church instead. The design and construction of the church became a two-generation family affair.

An initial architect was unable to produce a design that suited the church leaders. Frank Lloyd Wright was briefly considered, but rejected due to his 'moral failings.' The family was introduced to Eliel Saarinen through the Reverend's daughter Nettie Sweeney Miller, who became chairwoman of the

Below: Berkshire Music Center, Saarinen & Swanson; 1943

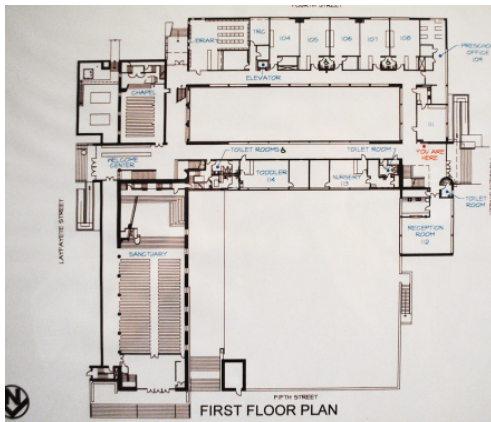


Below: First Christian Church; Columbus, IN; 1942





Top to Bottom:
First Christian Church, Columbus, IN



building committee. Nettie Sweeney Miller was the mother of J. Irwin Miller who became chairman of the Cummins Engine Co. and chairman of the Irwin Union Bank and Trust Company. Her son became the greatest patron of architects and modern architecture in the twentieth century, who would then hire Eero to design their house, itself an icon of modern architectural design.

Eliel Saarinen had only built one church before - St. Paulus, in Tartu, Estonia (1911- 1917), and was apprehensive about the project until he heard the proposal for the building from Nettie Sweeney Miller: "Our town is small and there are all sorts and conditions of men. While we should like the church to be beautiful, we do not want the first reaction to be, how much did the church cost. We want the poorest women in town to feel at home there and able to worship her God in those surroundings."

Eliel Saarinen was the son of a Lutheran pastor, and was thrilled by the idea and agreed to design the project. He disliked overly indulgent and theatrical churches and believed Gothic and Georgian style churches were overdone and were no longer relevant.

Rather than imitating an historic style with no personal or cultural relevance to Columbus, Saarinen chose to reflect the fundamentals of Christian faith in the church design in an effort to unite the different denominations in the town. He believed Modern architecture was particularly appropriate for this form of Christianity – the church would be based on the fundamentals of religion and architecture and freed from traditional theology and style.

The building consists of a glass-fronted main hall, with a tower and bridge section. Interior details such as light fixtures, screen and furniture were designed by Charles Eames and Eliel's son Eero Saarinen who would later design the North Christian Church in Columbus. The building was designated a National Historic Landmark by the National Park Service in 2001.

The church is divided into four major elements: the East Wing, containing the church sanctuary, the chapel, and the auditorium; the West Wing, containing part of the Bible school; the connecting bridge between the East and West Wings, containing the rest of the Bible school and the tower. The building layout creates a balanced mass that is lively, yet restful.

The area between the East and West wings is set 8 feet below street level. The northern part of this sunken area contained a pool of 140 by 120 feet that was drained and filled in 1957 due to persistent leaks. Today it contains a grassy area used for outdoor gatherings. The rest of the area forms a terrace that is bordered by the wings of the building on three sides and partially covered by the connecting bridge. The entire terrace is paved in a mosaic pattern and surrounded by plant and

flowerbeds. Weather permitting, the area is used for church and Bible school activities.

The church tower was designed as a separate mass, detached from the rest of the church, rising from the terrace level in an unbroken line of 166 feet. The base, measured at 17 by 23 feet, is located at the northeastern corner of the original terrace pool. The tower is a simple, geometric form with plain brick walls that open into a perforated design at the top. The perforated section surrounds the sounding chamber from which the organ chimes are broadcast. The simple design of the tower gives it dignity and strength, and its separate placement in relation to the church proper provides balance to the sanctuary building.

The church sanctuary is located on the northeastern corner of the property, set on a platform reached from the street by a set of nine steps. The street entrance leads to the narthex, to the right of which is a coatroom and to the left of which are stairs that lead to the upper gallery. Three doors symbolizing the Holy Trinity connect the narthex to the church nave, one to the central aisle, the second to the side aisle, and the last to a low passage that connects the church with the Bible school.

The plan owes its organization and strict articulation to modern Scandinavian sacred architecture as well as the work of Finnish architect Erik Bryggmann whom Saarinen knew. Bryggmann (1891-1955) also had an early tradition with Nordic Classicism and became a pioneer of modern architecture in 1927 when he began collaborating with Alvar Aalto. Like the Saarinens, Bryggmann was credited with blending classicism and modernism with local and international influences. His Resurrection Chapel in Turku (1938-1941) in plan and section was designed just prior to the Saarinens' engagement in Indiana.

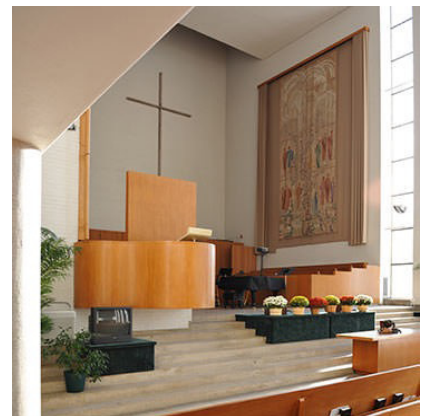
The sanctuary was designed to create a serene, spatial atmosphere and thus has a unique asymmetrical design.

Saarinen did not believe in forced symmetry because it created an artificial and sterile environment. Instead, he chose to focus on creating balance between various features and points of interest in the room. To this end, the cross at the end of the chancel is off center, but the communion table, integral to the service, is placed at the central axis of the church. The backing wall of the altar is bathed in light from a skylight above, the subject of recurrent repairs. Symmetry is used to accentuate the spirit of the service, instead of creating an artificial environment. Similarly, the middle aisle of the nave and the pulpit are slightly off center as well.

Unlike many traditional churches, there are no stained glass windows. Instead, Saarinen designed windows with the same pattern used in the perforated part of the tower, adding to the unity and natural symmetry of the building. The flow of light into the room was designed to highlight the serenity of the room. Daylight from the floor-to-ceiling windows light up the nave and chancel during morning services, adding to the spiritual nature of the service.

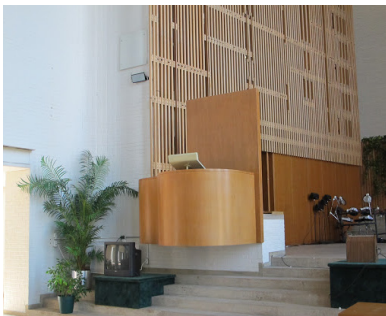


Above: St. Paul's Evangelical Lutheran Church, Tartu, Estonia, Eliel Saarinen, 1913
Below: First Christian Church; Columbus, IN





Top to Bottom:
First Christian Church; Columbus, IN



The church's sanctuary is 144 feet in length, 46 feet in width, and seats 580 people. With an additional rear gallery that holds 180 and a choir of 40, its total capacity is 800 individuals.

The chapel, like the church, also features Saarinen's asymmetrical design. Instead of a central aisle, there is a wide aisle on the west side and a narrow aisle on the east. Similar floor to ceiling windows provide light here too.

The Baptistry is placed at the rear of the chancel, screened from the audience with swinging doors. It is lit with daylight from the windows in the church proper, and the light flows above those being baptized. The use of natural light to light the ceremony symbolizes the belief in the natural arrangements of death, burial, and resurrection. Facilities like dressing rooms, showers, and toilets for men and women are located on the second floor above.

At the time of its installation, the church organ was the latest model by the Aeolian-Skinner Organ Company at the time and consists of 4 manuals and pedals, 72 speaking stops, 4695 pipes, 61 harp bars, 25 chimes, and 73 other couplers and accessories. The sizes of pipes vary from 32 feet to $\frac{3}{4}$ of an inch long. It is housed in a chamber on the left of the chancel.

The organ was adapted to suit the needs of the church. It is based on an 18th-century organ with great tonal richness and clarity, but modern mechanical additions were made to make it easier to play. This resulted in an organ based on a classical foundation with enough flexibility to perform music of all periods.

The 35' by 11.5' foot tapestry decorating the church was designed by Saarinen and woven by trained Scandinavian weavers under the direction of his wife, Loja Saarinen. Woven with wool and flax, it depicts the Sermon on the Mount in an image of animals and listeners. It was the largest tapestry in the country at the time.

The auditorium space is used for dinners, plays, and other entertainment involving a large number of people. The 500 seats can be stored under the stage to create an open space. Floor length windows open out into the terrace and pool for outdoor entertainment as well. The entire room is 92 feet long, 46 feet wide, and a little more than 12 feet high. The stage is 31 feet deep. Connected to the auditorium is a reception room, used for a variety of activities and providing access to coat and toilet facilities. The room is 24 by 64 feet in size.

"It's amazing that a city could raise that kind of money to build a church the size of a city block in the midst of World War II, especially one that's so radical in its design," says Richard McCoy, founder of Landmark Columbus, a preservation organization dedicated to protecting the town's architectural heritage. "The total budget *Newsweek* published for the church, \$950,000, would be \$15 million in today's dollars."

The Harvard design police were critical of aspects of the church's design. They felt that the bell tower was too tall and that the

sanctuary's 'formal' windows and the masonry textures on the exterior to give the building scale were anti-modern. The progressive design was considered "the most daring innovation in American church architecture," according to a reporter from *Christian Century*, and would become both a model for 20th century ecclesiastical architecture. It was also the first of many stunning contemporary buildings that make Columbus a mecca of modern design. In a town of less than 12,000 residents at the time of its dedication, more than 10,000 visitors signed the guest book in its first six weeks.

OSS – CIA; 1942-1944:

Shortly after World War II broke out, Eero became a naturalized citizen of the United States, though son Eames has claimed that Eero became a US citizen in 1923. In 1942, President Franklin Roosevelt established America's first intelligence agency, the Office of Strategic Services (OSS) with William Donovan as its head. Saarinen was recruited to the OSS by a friend from his days at Yale, Donal McLaughlin, who was the same classmate who several years earlier had recruited Eero to work on the Futurama exhibit for the New York World's Fair, an experience they now found directly relevant to their work at the OSS.

Saarinen was appointed consultant in research and analysis in the Presentation Division at a salary of \$10 per day. Within four months, he was appointed chief of the Special Exhibitions Section. Saarinen's selection was due to by his supervisor's description of him: "Mr. Saarinen came to the OSS with the reputation of being the most versatile and gifted young designer and architect in this country."

At the age of 32, Eero was appointed Chief of the Special Exhibits Section of the Presentation Division. He was responsible for designing and constructing military schools and situation rooms, along with the display equipment used in the various War Department conference rooms. He created a revolutionary three-dimensional organization chart that was instrumental in presenting problems of procedure and workflow through various parts of the organization. Eero also used his creative talents to build scale models. He built models of weapons for use in training scenarios, and he created models and props for use in films.

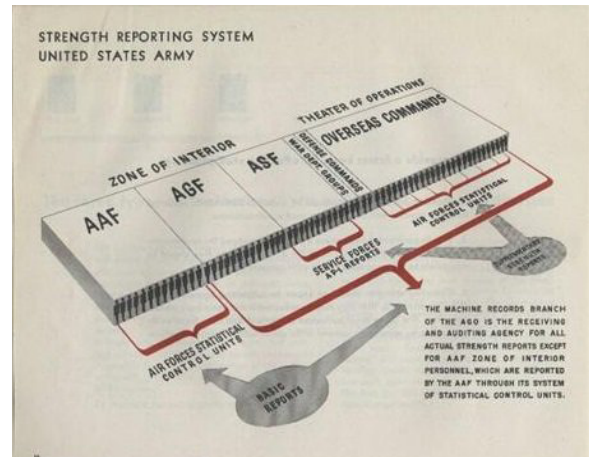
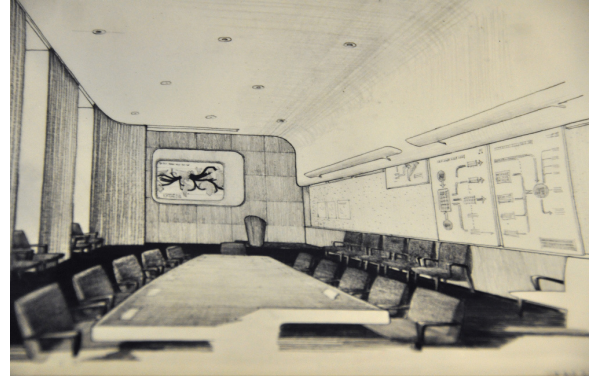
Saarinen lent his creative talents to other government organizations as well throughout the war. His architecture firm was chosen by the National Capitol Housing Authority to aid the war housing program by designing the Hillside Dwelling. While undertaking this project, Eero continued to work for the OSS twice a week.

Saarinen's work for the OSS was highly commended by the Undersecretary of War, the Chief of the Bureau of Ordnance, the Director of the Women's Army Corps, and many others.



Top to Bottom:

1. First Christian Church Entry; Columbus, IN
2. Eero Saarinen's Design for Meeting Room for OSS; 1942
3. Eero Saarinen's Diagram for Army Strength Reporting System; 1942



His experience and experiments during his time with the OSS are reflected in his later design work. Because of his unique talents and specialized experience, Eero was deemed irreplaceable.

At the war's end, Eero returned to Michigan to resume work with his father. Their first major undertaking together was designing the General Motors Technical Center, which was constructed in 1956. That same year, Eero landed on the cover of *Time* magazine, a rare accomplishment for an architect to achieve. He shared this privilege with other greats such as Bucky Fuller and Frank Lloyd Wright. Eero was 45 years old when he appeared on *Time*'s cover, one of the youngest architects to do so.

It is intentionally unclear precisely what Saarinen's OSS tasks involved as his supervisor's application stated that 'due to the confidential nature of the work of this office, it is not in accord with the public interest to reveal the specific assignments of the registrant.' However, declassified documents reveal he was 'responsible for planning, organizing, developing and administering all activities of the Special Exhibitions Section engaged in the design, construction, installation and operation of exact scale models [...] for specific use in planning the strategy of actual military operations.' Wikipedia reports that Saarinen drew illustrations for bomb disassembly manuals and provided designs for the Situation Room at the White House, and that he worked full time for OSS until 1944.

Saarinen's background was perfect for the job to which he volunteered his services. His model making was honed throughout his youth at Cranbrook where, under the tutelage of his sculptor mother, he helped make models for Eliel's buildings. His design skills were displayed in the many furniture pieces he designed while still in his teens. Saarinen initially wanted to pursue his mother's profession but went on to study architecture at Yale, where he gained a reputation for winning competitions. After graduating, it was no surprise that he was recruited by McLaughlin to work on Norman Bel Geddes' Futurama exhibit for the New York World's Fair. It was the same Yale classmate, Donal McLaughlin, who would be his connection in Washington during the war.

McLaughlin, who graduated Yale in 1933, worked with a New York industrial design firm that recruited for Donovan's team. McLaughlin later confirmed that their experience at the New York World's Fair was directly relevant; the futuristic world of the fair found practical application in the war efforts.

Saarinen was in charge of all the exhibits work of the Presentation Division of the OSS, leading a large group of specialists engaged in production of exact scale models to equip the situation room, or war room, where the president and the Joint Chiefs of Staff conducted briefings. Equipped with projection equipment and props, the room relied on visual communication to inform these busy decision-makers

about complex problems in the shortest time possible.

Saarinen's OSS work also involved developing 'special display equipment for conferences, pilot models of new weapons and devices, models for use by military schools, props and models for film reports'. Documents establish the breadth of a contribution that was not confined to architecture but significant in redefining design in the broadest sense. 'A notable example is his invention of the three-dimensional organization chart, which has proven so useful in presenting problems of procedure and work-flow through various parts of an organization,' they reveal. Aware of the power of visual presentation, OSS leadership harnessed the creative energies of Saarinen and his peers by extending the use of visual tools into crucial public propaganda efforts.

Although most of his OSS work was highly secret, Saarinen was free to consult with other specialists and technicians in private industry and other government agencies. During his tenure at OSS, Saarinen lived in a Georgetown townhouse with his wife Lily and one-year-old son, setting up an architectural practice with his brother-in-law Robert Swanson. He was permitted to take time off from the OSS for private commissions such as large-scale war housing projects. After the war, he returned to Michigan to work with his father until Eliel's death in 1950.

When he established his own practice that year, Saarinen quickly emerged at the forefront of the profession, well known within architectural circles and in public after newspapers and magazines such as *Vogue*, *Esquire* and *Playboy* published his buildings and furniture.

In 1953, he divorced Lily to marry Aline B. Louchheim, a recognized art critic who had fallen in love with him while profiling him for a piece in the *New York Times*. Aline would prove a compassionate partner and formidable ally who helped him get plum commissions including Vassar College and the CBS headquarters in New York City.

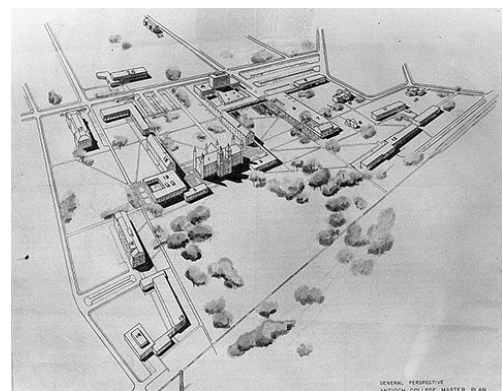
Hugh Taylor Birch Hall, Antioch College; Yellow Springs, OH; 1944-1947; with Eliel & Swanson:

The Saarinens prepared a new master plan for Antioch College (1944-1945) prior to designing a new residence hall. Originally proposed to have two interlocking dormitories, Birch Hall was the only project implemented with Eero managing the project.

Saarinen's design for the Birch Hall dormitory arranges its simple program to create interest and deliver a sunken plaza area off of the dining room. Simple ribbon windows in a brick envelope with operable awning sashes deliver daylight to dorm rooms, while the taller public area curtainwall at grade is set back behind the concrete columns. A horizontal slab and

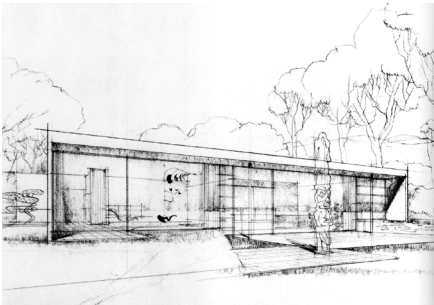
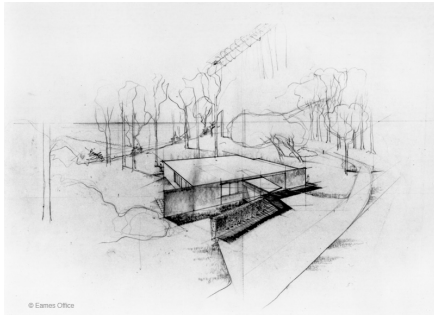


Top to Bottom:
1. Taylor Birch Hall, Antioch College; 1947
2. Antioch College Master Plan; 1947
3. Taylor Birch Hall; Antioch College; 1947





Above: John Entenza
Below: Entenza House; Pacific Palisades, CA; 1950



masonry knee wall extend outward to the walkway to announce the right of entry. Dorm rooms featured birch paneling, space saving built-in furniture and other features, unusual at the time:

- Large double rooms
- Wall-to-wall windows
- Built-in closets and dressers with mirror; originally designed for two students
- Built-in desks
- Twin beds
- Air conditioning individually controlled for comfort

Partnership; 1945:

In 1945, Eero joined a partnership with Eliel Saarinen and J. Robert F. Swanson that had been organized in 1939. This partnership was dissolved in 1947 and a new partnership of Saarinen, Saarinen and Associates was then formed that lasted until the elder Saarinen's death.

Case Study House #9/ Entenza House; Pacific Palisades, CA; 1945 – 1950:

The Case Study House Program, initiated by John Entenza in 1945 in Los Angeles, was conceived to offer to the public models of a low cost and modern housing. Predicting the building boom after World War II, Entenza invited renowned architects such as Richard Neutra to design and build houses for clients, using donated materials from manufacturers and the building industry.

Entenza was the editor of the monthly magazine *Arts & Architecture*, in which he published the ideas of the participating architects that he had invited. Entenza commissioned Eero Saarinen and Charles Eames to design Case Study House number 6 as his own home. The house was built just a few meters away from Charles and Ray Eames' house, which the duo also constructed as part of the Case Study program.

The Case Study Houses were experiments in American residential architecture sponsored by *Arts & Architecture* magazine, which commissioned major architects of the day, including Richard Neutra, Raphael Soriano, Craig Ellwood, Charles and Ray Eames, Pierre Koenig, Eero Saarinen, A. Quincy Jones, Edward Killingsworth, and Ralph Rapson to design and build inexpensive and efficient model homes for the United States residential housing boom caused by the end of World War II and the return of millions of soldiers.

The program ran intermittently from 1945 until 1966. The first six houses were built by 1948 and attracted more than 350,000 visitors. While not all 36 designs were built, most of those that were constructed were built in Los Angeles, and one was built in San Rafael, Northern California and one in Phoenix, Arizona. The Entenza house was designed between 1945 and 1949 and

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construction was completed in 1950. In 2013, the building was added to the National Register of Historic Places.

The Entenza house was built in 1949 almost exactly the way it was published in *Arts and Architecture*, as a rigorous steel and glass construction with an open and adaptable space, which could be modified depending on the number of family members and guests. The architects placed four columns in the center of the structure with the goal of creating a spacious interior with as little obstruction as possible. In keeping with this principle, the communal area of the house, which was 36 feet long, could be divided into different relaxation, dining and meeting areas. The floor in the living room had different levels, which created steps that could be used as informal seats.

The materials inside the house consisted of plastered floors and wood-paneled walls, while the ceiling was covered with birch wood slats. A chimney was placed in the center of the living space, and the bedroom was exposed to the seating area – on a slightly raised level so that the floor of the bedroom encountered the top of the seat-backs – but could also be shut off from view by sliding walls. Sliding glass doors created the impression of an expansive inside space. They gave a view to the exterior prairie landscape and the nearby ocean.

The house structure involves four steel columns in the center of the structure with a concrete rook. The interior finish of the roof slab are birch wood slats. The entrance at the north is separated from the garage by translucent glass and a skylight above. A corridor to the left leads to the bedrooms, a den and bathroom. The house is 52 feet square.

The public areas to the south are open to the outside with a sunken living area and fireplace. A wardrobe wall separates living/ dining from the kitchen. Entenza lived and worked in his house for five years. Once he sold the house, the original design was changed several times. Other houses were built on the plot, which had a significant impact on the overall appearance of the site.

The Los Angeles Conservancy described Case Study House 9's design plan:

"Designed by Charles Eames and Eero Saarinen and completed in 1949, the house is modular in plan and features steel frame construction. But in contrast to many modern residences utilizing steel frame construction, that of the Entenza House is not actually revealed, but concealed with wood-paneled cladding. Entenza frequently entertained, so the house consists of mostly public and very little private space.

The room arrangement included two bedrooms, a study, two bathrooms, kitchen, large open living/dining area, utility room and garage. A large, sunken living room with a built-in seating area facilitates conversation.



Top to Bottom: Entenza House; Pacific Palisades, CA; 1950





Top to Bottom: Entenza House; Pacific Palisades, CA; 1950



The house is primarily sheathed in Truscon Ferrobord with the ocean-facing elevation glazed by Libby-Owens-Ford glass with Truscon steel window framing. The east elevation consists of lightweight concrete block by Rocklite. This design exemplified the concept of merging interior and exterior spaces through glass expanses and seamless materials.

The design of Case Study House 9 exemplifies the concept of merging interior and exterior spaces through glass expanses and seamless materials."

REFLECTIONS ON GROWING UP AT 205 CHAUTAUQUA

By Linda Cervon

My parents bought Case Study House #9 from John Entenza, editor of *Arts & Architecture* magazine and the original owner, in 1955 for \$55,000.

My mother was the very first person to go through the house when it was opened to the public. She told my dad that this was her dream house and a few years later when it came on the market they bought it! (She was Raphael Soriano's draftsman for a few years in the 1940s, so could appreciate what she saw.)

Being a child growing up there was great as the Eames' were wonderful neighbors, always willing to have me play in the studio or house or the grounds. Once Charles assembled a whole bunch of foot-sq cardboard boxes and 2 other neighbor kids (they lived in the Neutra, that Chautauqua cul-de-sac is a regular Case Study House hotbed) and I made forts and buildings in the studio and swung on a thick rope tied to a beam and knocked down the boxes! Can you imagine?! With all of Ray's little stuff and collections everywhere. I was in a few of their movies and some still-photo projects.

Our house was actually not much of a house for a family. My room was the garage, made over slightly (the garage door being replaced with a sliding glass door after about 5 years). The house was sort of creepy for a kid with all those huge windows. I never really liked being home alone, even in high school. There were always architecture students walking around the grounds, taking pictures and peeking in. It was like being a movie star! I honestly had to get dressed, fix my hair, and put on makeup just to go to the kitchen.

But the house was such a great conversation piece. My mom and dad knew all the art/architecture people of the time and the house was filled with Natzler pots and Beatrice Wood stuff, Carroll Barnes sculpture, all the Eames furniture, toys, etc. I'm sure I just took it for granted at the time. I wish my mom had just taken me by the shoulders and said "LOOK AROUND AND WAKEUP!"

One really neat thing were the packing boxes the Eames furniture came in. . .it was printed on the outside to be used (after the furniture was removed) as playhouse modules. If you bought several pieces, you could put them together and they'd make a mini Eames-designed house! I bet there aren't many of those crates around or even people who remember them.

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After my mom died in 1970, my dad remarried the wickedest stepmother of all time and she decided to REMODEL and ADD ON!!!!!!! Shortly after that travesty was complete (thank goodness Charles wasn't around to see it), my Dad died. WSM (wicked stepmother) sold the house rather than keep it in the family. I was devastated as I figured I'd be raising MY kids there. It had been designated a historical landmark and so the people who bought it had to restore it and then they built a NEW house practically on top of it. The property is about 1-1/2 acres. When they cut down all the eucalyptus trees in the meadow to have more view of the ocean they lost a lot of land when the 1994 earthquake hit. (There's sweet justice!)

I have only seen it once since I was there having the granddaddy of all estate sales in 1991 after dad died. (He was an inventor and scientist and collector and had hundreds of square feet of wonderful stuff, which we needed to liquidate.) When I was there last in 1994, they were just beginning to build the new house and it was actually painful to watch. I live about 60 miles north of Pacific Palisades now but occasionally if I'm on Pacific Coast Highway I look up and see the new house and it's awful!

In June 2010, it sold for \$10 million!

Q&A

"I find it so odd that lots of other people haven't been fascinated to hear about your past. Maybe not so odd, though, when you see what's happened to southern California. It's not exactly what John Entenza and the other Arts & Architecture people had in mind."

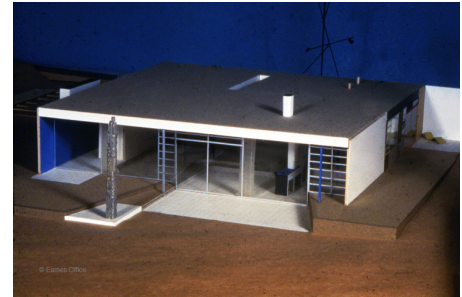
You are so right! So Cal is the most impermanent place for architecture. The wonderful stuff they tear down for yuppie malls. I have a neat book published in the late 1920s showing all the most fabulous Los Angeles area homes of the day. So I decided to find them and photograph them. What a SHOCK! A lot had been demolished for the Santa Monica Freeway! Some had been made into apartments. Unfortunately most were in a "bad" neighborhood now, and very run down. It was a horrifying experience. Edifying, but horrifying!

"Your parents must have been pretty remarkable people to have chosen to live in what by any measure was a pretty avant garde, even radical, house."

My dad was an inventor and designer (toys, gadgets, he had been working on an unconventional new bicycle design at the time of his death), and they both loved MODERN International style. My mom had a subscription to Arts & Architecture when she was still in high school in 1940 ... how's that for devotion.

"You said your mother worked in Soriano's office for a while. Did she do any architecture on her own?"

No, just drafting.



Top to Bottom:
Entenza House; Pacific Palisades, CA; 1950





Top to Bottom: Entenza House



“Did she continue to associate with these great California modernists while you were growing up?”

Oh, yes. Eames, Soriano, Ellwood, etc. Lots I never really connected with as a child, unless they had kids or tried to have a relationship with me. Craig Ellwood had children around my age and we went on field trips together. (After my mom died, my dad was dating Craig Ellwood's ex-wife. She was the mom on the Dennis the Menace TV show.) I even dated 2 of Rodney Walker's sons (at different times). Walker had designed the Case Study House next door to ours, and I understand one of the sons is living in the house his dad designed in Ojai.

“Did you get to know any of them or visit any of their buildings?”

Yes, but I'm sure I would rather have been at the beach or a Beatles concert. Funny what we take for granted as kids. Some of the people were very remarkable, and some were pretty dull. I think I realized the remarkable ones were the ones to pay attention to, Eames (both) and Raphael Soriano, in particular.

“What was the nearby Neutra house like? Was that the Bailey house?”

Yes. The Bailey's were next door and luckily they had 3 kids near my age. The CSH tract in the Palisades was in a very secluded area, hard to find and not really a neighborhood. The Bailey house was very nice. The landscaping was lush (thanks to the kids' job of watering it for hours it seemed on Saturday mornings when I wanted to play!), Dr. Bailey was a dentist and loved to garden with his wife. The house was rather odd as it had the bedrooms detached from the main house. Scary for sleepovers and not fun when it was raining! Also for years they didn't have a phone in the bedroom part so it was hard to get a hold of the kids to play. The house was actually very small. The kitchen was rather tiny; nice living room with one wall, facing the garden and pool, all glass. It was a low house. I don't know exactly how to explain it, but it seemed to fit the plot so well, rather FL Wrightish. The Bailey family sold the house when Dr. Bailey died. I heard it had been “restored”.

“Did your parents know John Entenza and did he continue to have an association with the house?”

No, I don't believe there was any association after the sale of the house was complete.

“Where did he live after CSH#9?”

He took an apartment near the magazine's office on Wilshire in Midtown.

“Why did he decide to leave it after so short a time?”

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He lived there for 5 years. Probably needed the money! My folks paid \$55,000 in 1955. A few months earlier it was advertised in A&A for \$65,000.

“When your parents bought the house, did it come with the original furnishings?”

He left some Eames and Saarinen furniture for us, which was photographed in the magazine.

“How did your parents have it decorated?”

Lots of Eames furniture from our previous house. A few Japanese and Chinese pieces. Saarinen pedestal table and chairs in the dining area. Some Victorian big stained glass panels hung on chains against the big windows overlooking the meadow/ocean. Quite eclectic. The house, in its simplicity, was a perfect showcase for a Thonet bentwood rocker and other antiques.

“Did they keep the original color scheme?”

Pretty much. Pale earth/nature tones. The color scheme mirrored the outside, brought the trees and landscape inside. With the huge glass windows, it was disconcerting to have bright colors on the walls. After my mom died, one of my dad's girlfriends actually redecorated the house as her thesis for her doctorate. When you walked in you expected to hear calliope music. She loved color and the interior reverberated with circus tones. I found it jarring and much preferred the original color scheme.

“What was Ray like?”

Ray was a very neat lady. She wasn't flamboyant nor flashy, always sophisticated in a quiet, thoughtful way. Not to say she was stuck-up or snooty, but just refined and dignified. Her fame and money (and I'm not really sure there was all that much money) didn't affect her.

“How well did you know Charles and Ray?”

I knew Ray quite well as I literally grew up with her! I was 7 when we bought the house. Ray influenced me in lots of ways. From her wonderful sense of style and decorating, to her handwriting and her signature hearts. I even drive a Jaguar like she did and have been known to wear ballet slippers as non-dance footwear. I always knew if Mrs. Eames liked it, or gave it to me it was the “right” thing. (I never got up the nerve to call her “Ray” to her face, however Mr. Eames was always “Charles”!) I know also she influenced my mom who was a tremendous fan of the Eames' from her high school days in the early 1940s. So buying the house AND living next door to Ray and Charles was a dream come true for my mother!

“Did Charles give Ray credit?”

I think Charles gave her a lot of credit as she was involved in a



Above: John Entenza (R) with Charles & Ray Eames
Below: Entenza House





Top to Bottom: Entenza House Interiors & Patio



different aspect of their creations. They were a team... it wasn't just about Charles. And he was very nice and charming and even a bit flirtatious! He didn't mind being hugged! But I was always much more in awe of Ray than him. She was more aloof, maybe never having had any children of her own explains some of it.

"Did you get to know the Natzlers?"

Yes, they were long time family friends. In the 1940s my dad designed a kiln for Gertrud. Otto's second wife Gail, (closer to my age) became a dear friend. When I was about 7 we were having dinner with Gertrud and Otto at their home in the Hollywood Hills. And as usual I was allowed to make something of clay in Gertrud's studio. It was a silly thing with lots of finger pokings in it, but when she picked it up to fire it I remember she was very rough with it and changed the shape, it really hurt my feelings. Funny the things kids remember. They never had children, the story goes that early on in their marriage she wanted them and Otto didn't ... then later when he did, SHE didn't! Gertrud, from Austria, used to make a great dessert called Nut Noodles. It was buttered egg noodles with finely ground walnuts and brown sugar.

"Beatrice Wood?"

She was a student of Otto Natzler, and never really cared much for children as I recall. My parents visited her frequently in Ojai (not far from Ventura) where she lived until her death recently.

"Raphael Soriano?"

Raphael, in his later years, lived at the end of a pier in Tiburon across the bay from San Francisco. Prior to that I believe he lived in an apartment in Hollywood. Every time we would vacation in San Francisco in the 1950s and 1960s, we would visit him. Seemed like 4 or 5 times a year. He was quite a character and even after my mom died, and I, as an adult, had moved to Carmel, we kept in touch and I'd visit him. He was charming and flamboyant, a generous and affectionate Greek. One of his designs was for Fred McNabb in Sausalito, a gorgeous home on the side of a hill. The McNabbs owned the Halliwell Seed Company in SF. That building was also designed by Soriano. Fred and Esther McNabb were long time family friends and I spent many happy days staying with them in their guest room.

"When your 'Wicked Stepmother' started altering the house, were there protests?"

No, Ray Eames was too polite! But you can guess what she was thinking! There was a weird story going around about the CSH tract being cursed because my mom, my dad, my WSM all died of cancer, as did Mrs. Bailey, and Mrs. Eames. The story spreaders forgot ALL the people who lived there who DIDN'T die of cancer though!

"Do you know about Alexander Girard's fabrics and draperies in this house?"

Only that I believe he designed the drapes which hung on the huge windows overlooking the meadow towards the ocean.

“Do you know something about the beautiful Van Keppel Green garden furniture?”

We had a bunch of it and my dad repeatedly had to RESTRING it! I guess the cotton wore out quickly being so near the sea with the salty air and sun. Finally he restrung it with nylon (actually clothes line cord). Beautifully designed pieces, but not very practical! John Entenza left it for us. I gave the few pieces that I had to Dr. Bailey a decade ago and then he was robbed and it was all stolen.

“When I was in LA 5 years ago, I visited CSH #8 + 9, it was great!”

How lucky for you! I hope it was a wonderful experience! Growing up there, with all the land and trees and being so isolated, was a fabulous experience. I was a very imaginative child so the setting was perfect for my games. My brother wasn't born until I was 12 years old, so I had a lot of time alone.”

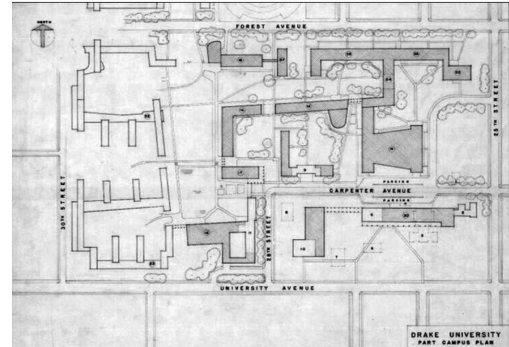
Drake University; Des Moines, IA; 1945-1957;

- Harvey Ingham Hall of Science; 1945 with Eliel & J. Robert F. Swanson
- Fitch Hall of Pharmacy; 1945 with Eliel & J. Robert F. Swanson
- Women's Dormitory & Dining Hall; 1945 with Eliel & J. Robert F. Swanson
- Bible School & Prayer Chapel, 1952

Drake University commissioned Eliel and Eero Saarinen to create a campus plan and buildings to house the science departments and pharmacy school — Harvey Ingham Hall and Fitch Hall. Following his father's death in 1950, Eero Saarinen went on to design the Quad Residence Halls, Hubbell Dining Hall, Medbury Hall and Scott Chapel for the Divinity School.

By physically clustering these structures, the Saarinens introduced a new spatial organization to the campus that unified functionally separate spaces for living, studying, socializing and worshipping.

Maura Lyons PhD and professor of art history and architecture at Drake notes, “What is notable, and was risky at the time, is their use of an architectural language previously associated with factories for



Above: Drake University Dormitory Site Plan; 1950
Below: Drake President Henry Harmon with Master Plan Model



Below: Drake University Ingham Hall Rendering at night





Above:

1. Drake U. Ingham Hall of Science

Below:

2. Drake U. Ingham Hall of Science Laboratory

3. Drake U. Fitch Hall of Pharmacy



academic buildings. In accepting designs that featured brick, glass and metal rather than classical columns, the University capitalized on the contemporary equation of industrial technology with progress. The visual association with industry identified Drake as a forward-looking, modern university that was committed to innovative design, yet practical and efficient." Drake University has the distinguished honor of having a campus plan and nine buildings designed by two of the greatest architects of the 20th century.

Master Plan:

In 1945, Saarinen, Swanson, and Saarinen were hired to create a new master plan for Drake University. The board of trustees had originally entertained ideas of a traditional campus plan, like that of the University of Virginia. However, in a letter to the mid-century president of Drake, Henry Gadd Harmon, a Mrs. Mather wrote about her surprise at the traditional nature of the proposed architectural design. She believed that creating a campus for future students required modern architecture and a campus plan that allowed for expansion. Some of the university's trustees suggested the work of Eliel Saarinen, familiar due to his work on the Des Moines Art Center. After President Harmon visited Eliel Saarinen and J. Robert F. Swanson at Cranbrook, the university hired the Saarinen firm.

After World War II, science and technology were synonymous with American progress and the Saarinens sought to use a forward-looking style for their buildings to suggest the potential for expansion and change. The use of an industrial aesthetic at Drake also communicated the importance of higher education in the post-war economy.

The Saarinens' style utilized a modern aesthetic and building strategies to achieve harmony between landscape and architecture, and look to the future, anticipating needs and room for growth.

Harvey Ingham Hall of Science:

Harvey Ingham Hall of Science (1949) is dedicated to Harvey Ingham, an Iowa newspaper man, who in the 1880's took editorial charge of the Upper Des Moines newspaper, and soon after became editor of the Des Moines Register and Tribune. The building was made possible from a donation by Mr. and Mrs. Gardner Cowles.

Designing during the burgeoning International Style of the early and mid-twentieth century, Eliel and Eero Saarinen were influenced by Walter Gropius, founder of the Bauhaus school in Germany, and other innovative architects of the time. Forgoing ornamentation and ostentation for simple lines and functional form, modern architects were striving to create economical, optimistic buildings that broke from the past and helped to realize a new vision of the future. One of Eliel Saarinen's contemporaries was Ludwig Mies van der Rohe, who also came from the Bauhaus



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school.

These European “form givers” were all living and working in the United States after the World War II, and two decades later, Mies van der Rohe would design Meredith Hall on Drake's campus, a project that was originally to be completed by Eero Saarinen and Associates. The relationship with the Saarinen firm ended with Eero Saarinen's sudden death at age 51 in 1961. But Drake's continuing commitment to progress and change was evident in this choice for Meredith Hall. For while both Eero Saarinen and Mies van der Rohe worked within the modern period, their forms were very different.

Harvey Ingham Hall was the first building to be erected in a long-range expansion plan for Drake in the years following WWII.

The facility's modern labs and large classrooms were important in America's post-war era. Because of the G.I. Bill, college enrollment was up by 12.5%, and advances in science and industry were critical to America's growing strength as a nation and world power. In order to accommodate the growing population of students that would be using the facilities in the science and pharmacy halls (Fitch Hall), the function and form of the buildings had to be efficient and spacious.

The enclosed footbridge that connects Harvey Ingham to Fitch Hall of Pharmacy was an innovative and functional way to unite the two schools while allowing each its individual identity. The footbridge connected the top floors of each building, and its design was appropriated from Gropius' connecting skyway at the Bauhaus school in Dessau.

Fitch Hall of Pharmacy

Fitch Hall of Pharmacy (1949) is named for Fred Fitch (1870-1951), its benefactor of \$100,000. Fitch, by age twenty-two, had become a barber, experimenting with hair products. Soon he was manufacturing over forty hair-care products and cosmetics at the F. W. Fitch Co. in Boone, Iowa. By 1917, the W. Fitch Co. had moved to Des Moines, and subsequently had plants in California, New Jersey, Mississippi, and Canada.

Fitch Hall was one of the first two buildings to be erected in an expansion plan for Drake University in the years following the World Wars. Fitch Hall and its sister building, Harvey Ingham Hall of Science, were joined in academic purpose, as well as physically connected by Des Moines' first skywalk.

Fitch Hall sits perpendicular to Harvey Ingham Hall of Science and is connected at its top level to the Hall of Science by an enclosed footbridge. This walkway is also a predecessor to the many skywalks that adorn downtown Des Moines today.

At a time when the U.S. was expanding its role on the world stage, the Saarinens were expanding the canon of architecture with their particular attention to internal and external

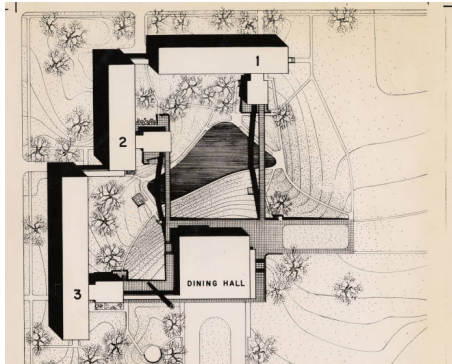


Above: Drake University Footbridge
Below: Drake University Carpenter Hall & Footbridge



Below: Drake University Stalnaker Hall

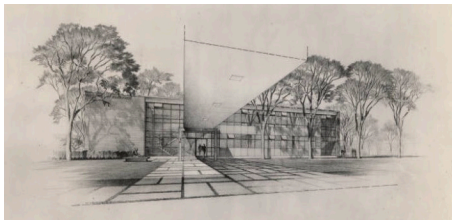




Above: Drake Univ. Quad Dormitory & Dining hall Site Plan
Below: Drake Univ. Quad Dorm Interior



Below: Drake Univ. Hubbell Hall Rendering, Completed Bldg.



connections. The dominant window walls and placement of the staircases at Fitch Hall, for example, create a dialogue between the interior of the building and its surroundings.

Signature elements of the Saarinens' design aesthetic are found in Fitch Hall in the details that create adornment and function. The large oak panels, combined with blue and grey ceramic acoustic tiles, and asphalt floor tiling, are juxtaposed to offer myriad textures, sizes, shapes, and colors. These same elements help to unite Fitch and Harvey Ingham Halls.

Quad Dormitories

After the end of World War II, a sudden influx of new students entered college campuses nationwide. In order to accommodate the increase, plans for the construction of three dormitories on Drake's campus were set into motion. Carpenter, Crawford and Stalnaker Halls were completed in 1955, with Herriott Hall following as an addition in 1957.

The residence halls were placed on top of a small ravine, requiring footbridges to access Crawford and Carpenter. The bridges allowed for nature to remain undisturbed below, with the exception of a large cement pool placed in this area. This pool served as a spot for reflection, a location where Drake students could come to contemplate life or delve deeply into their studies. The individual dormitories were also connected by multi-level metal balconies that were meant to allude to the ironwork present in the French Quarter of New Orleans.

The residence halls are primarily composed of reinforced precast concrete and steel, using a brick façade with projected steel sashes. Much like the structure of a house of cards, the buildings were constructed using tilt-up slabs, wall panels poured on the ground and lifted into place to form the letter "H". This structural plan ensured equal partitions and provided solid structural support throughout the buildings.

The lobby of each dorm building includes a front desk, with mailboxes placed behind it. Each floor of the dormitories includes a living room, furnished with card tables, desks, couches, floor lamps, waste baskets, Venetian blinds, window benches and lounge chairs. In 1954, the pricing of all of those items equaled \$432.00, costing each student only \$11.37, included in their tuition and housing fees.

The double bedrooms each contained beds, matching tack board and mirror combinations, a window bench, 5 x 5 foot rug, Venetian blinds, and desks with matching chairs, priced at \$281.13 per student. With the exception of a varied system of wall colors, the dorm rooms were kept relatively neutral, allowing individual students to decorate their living spaces according to their own aesthetic sense.

All the lines of the interior spaces complemented those of the exterior. Saarinen's clean, smooth lines and uncluttered, modern

style echoed throughout the halls of the dormitories, both in the furniture and spacing of the rooms.

These clean lines and shapes were kept in mind during the summer 2007 and 2008 renovations, influencing everything from the new furniture to the revamped front desk space. Sleek, new sofas replaced the old, and flat screen TV's now adorn the walls. While the look of the interior has changed, Saarinen's basic principles remain the same.

Hubbell Dining Hall

Creating an area on campus for student living quarters separate from academic buildings was an idea Eliel Saarinen presented in his master plan for Drake University. Along with three new dormitories, a two-story dining hall was to be constructed within walking distance. Pedestrian bridges were constructed to preserve the beauty of the site and link the dorms to the rest of campus. Hubbell Dining Hall opened in 1954 in honor of Grover Cooper Hubbell, a prominent Des Moines businessman and Drake Board Trustee.

The first floor contained a snack shop, soda fountain and bakery along with seating for 125–175 students. This seating area could be sectioned off into four smaller dining areas for student groups and clubs to meet. The exterior of this level was made in red brick, matching the exterior of the dormitories.

Two wide birch wood staircases on the east and west sides of the building lead up to the main dining hall. The main dining hall could seat and serve 400 students at a time with two separate serving areas. Because of the provision of large glass windows, students enjoyed a spectacular view north towards the pond while they ate. To help control the climate of the room the smaller square windows opened up to allow airflow. High ceilings ranging from 8-12 feet add to the openness and engaging nature of the room.

Stuart Davis, one of America's leading painters of the time, visited Drake in June of 1954 to meet with Eero Saarinen to select a location for his commissioned mural. Davis' painting, entitled *Allée*, measures 8 x 33 feet and was a generous gift from the Gardner Cowles Foundation to Drake. During his visit to campus Davis noted about Hubbell dining hall,

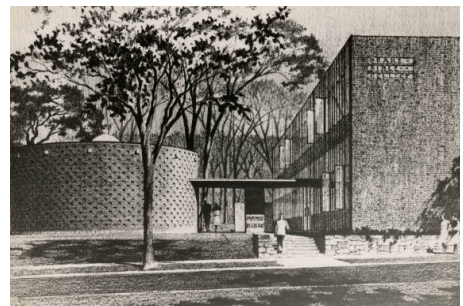
"I remembered the whiteness of the room – its ceiling and walls – the black floor, the blue sky outside those huge window, and the red rectangles of the brick dormitories."

This observation is clearly present in Davis' creative expression of the mural. The painting is now located on the second floor of Olmsted, Drake's student union.

In 1966, an addition to Hubbell was commissioned to expand the building to the south, moving the main dining room to the new area. This new dining hall can seat 330 students and boasts

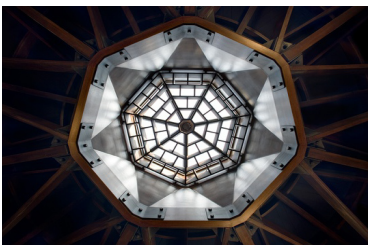
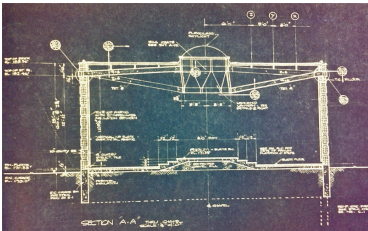


Above, Top to Bottom:
1. Drake University Hubbell Dining Hall Interior
2. Hubbell Dining Hall Stuart Davis Mural; 1955
3. Scott Chapel Rendering
4. Scott Chapel & Medbury Hall
5. Scott Chapel Entry





Top to Bottom:
1. Drake University Medbury Hall
2. Drake University Medbury Hall Entry
3. Scott Chapel Interior
4. Scott Chapel Section
5. Scott Chapel Skylight



several service lines. The new addition continued the same red brick exterior of the original first level of Hubbell. Large floor to ceiling windows were also used, mimicking the original dining hall.

After the main dining hall was moved, a coffee shop/student lounge utilized Hubbell's second floor. Hubbell's lower level is now the home to a quick sub and pizza shop and convenience store for students. Throughout all the changes that have taken place, Hubbell still remains a center for students to gather and an essential part of Drake's campus.

Medbury Hall

Drake University was founded by the Disciples of Christ in 1881. Although the University separated from the church, it maintained the Bible College (later known as the Divinity School), founded in 1888. In 1954, the School began construction on a new facility, completing Charles Medbury Hall in one year. Individual donors and more than 170 Iowa churches made it possible through contributions amounting to \$265,000. Furnishing of the new building alone cost \$40,000. Each church and individual donor that made a contribution toward the construction of the structure has their name inscribed on a stone slab between Medbury Hall and Oreon E. Scott Chapel. Memorial plaques throughout the building honor donors for the furnishings.

The Saarinen firm had substantial experience with religious commissions, as evident in the design of Medbury Hall. For example, a circular skylight allows a solid beam of natural light into the otherwise dark stairwell. This element has obvious spiritual references. Eero Saarinen believed that architecture should "stimulate man's imagination or give man confidence or make him feel proud." This is an instance in which the dramatic qualities of the architecture make its intentions clearly evident. A similar light is the focus of Scott Chapel.

Because the Divinity School closed in 1968, Medbury Hall now houses the religion and philosophy department and the headquarters of the Honors Program. The building was originally made up of different units designed to fit specific purposes such as study, discussion, lecture, fellowship, and meditation. The building's spacious lounge continues to foster community and learning by providing a space for everyday interactions.

Oreon E. Scott Memorial Chapel

Oreon E. Scott Memorial Chapel was dedicated in 1955 as a place "of worship to preaching, to communion, to meditation, to searching of the soul and renewal of the spirit of those who would be spiritual guides to others." Originally designed to be the chapel for Drake's Divinity School, it has served as a place of contemplation for both Christians and

non-Christians alike.

The Saarinen firm drew connections among Scott Chapel, Medbury Hall, and Fitch Hall of Pharmacy through their use of materials and siting. This decision linked the Divinity School to the larger university.

The donor for whom the chapel is named, Oreon E. Scott, was one the leading laymen of the Disciples of Christ Church at the time. Scott was on the Board of Trustees at Drake and received an Honorary Degree of Doctor of Laws from the University in 1933. Scott also created multiple funds for the strength and development of the Divinity program.

Eero Saarinen's attention both to detail and to the flow of space is very evident in this religious commission. The brick exterior of the chapel is contrasted with the wood-slatted interior. The only brick visible on the inside resides above the door. This gives a reminder of what exists on the outside while the visitor makes an adjustment to the interior. The skylights in both Medbury and Scott Chapel creates a constant interplay between the interiors and exteriors of the buildings.

Spiritual symbols can be found throughout the space of the chapel. For example, the number of high back chairs, twenty, is a reoccurring number in both Christianity and Hinduism. The number three, which traditionally represents ideas like past, present and future and the Father, Son, Holy Ghost trinity, is repeated in a variety of materials. Along with numbers, shapes like triangles and circles create complex meanings as well as physical depth in the chapel. Traditional spiritual symbols contribute to Scott Chapel's role as a sacred space.

Eero expanded his masonry cylinder concept for a chapel immediately after the Drake project with his MIT Chapel (1956) in Cambridge, MASS, which has been termed one of the most successful mid-century modern works of architecture in the world.

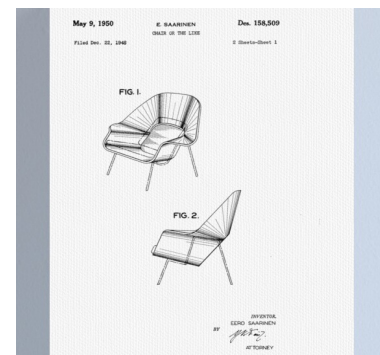
Knoll; Womb Chair & Ottoman; 1946-1948:

After winning the Museum of Modern Art Organic Design Competition with Charles Eames for their experiments with bent plywood in 1941, Eero Saarinen was eager to continue exploring the possibilities of a chair that achieved comfort through the shape of its shell, not the depth of its cushioning. Initially, he began the investigation with designs for smaller fiberglass task chairs, but changed direction when Florence Knoll approached him and asked, "Why not take the bull by the horns and do the big one first? I want a chair that is like a basket full of pillows...something I can curl up in." Her suggestion inspired one of the most iconic, and comfortable, chairs of the modern furniture movement.

Like many of Saarinen's furniture designs, the Womb Chair required production techniques and materials still in the infancy of their existence. Saarinen and Florence Knoll found a boat builder in



Top to Bottom:
1. Florence Knoll with Eero Saarinen
2. Knoll Womb Chair & Ottoman
3. *Saturday Evening Post* Cover by Normal Rockwell with Womb Chair
4. Womb Chair Patent Drawing





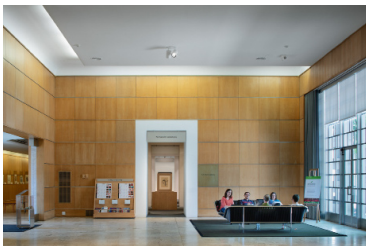
Top to Bottom:
1. Des Moines Art Center Model; 1945
2. Des Moines Art Center Entry
3. Des Moines Art Center Entry Lobby
4. Des Moines Art Center Interior

New Jersey who was experimenting with fiberglass and resin to help develop manufacturing methods for the new chair. Florence Knoll: "He was very skeptical. We just begged him. I guess we were so young and so enthusiastic he finally gave in and worked with us. We had lots of problems and failures until they finally got a chair that would work."

Presented with the challenge, Saarinen went primal. Saarinen asked himself what better signifies the very essence of comfort than the womb? "It was designed on the theory that a great number of people have never really felt comfortable and secure since they left the womb," he said of his chair, which began production in 1948. "The chair is an attempt to rectify this maladjustment in our civilization."

The Womb chair is genius in its simplicity. Comprised of few materials, the chair consists of a fabric-wrapped, molded fiberglass bucket set atop legs of tubular steel. The skeletal look of the frame keeps the chair from appearing bulky despite the seat's oversized silhouette, making it inviting to people of all sizes.

"There seemed to be a need for a large and really comfortable chair to take the place of the old overstuffed chair," Saarinen once said of his concept. Indeed, despite being indisputably comfortable, the Womb doesn't require an abundance of padding and tufting — instead, its comfort owes to a perfectly shaped shell of fiberglass. This new approach to ergonomics both reflected Saarinen's love of streamlined forms and echoed the kind of experimental work being done by his other former Cranbrook peers Charles and Ray Eames.



The Womb Chair became a cultural phenomenon; in the decade following its release, it appeared in a Coca-Cola commercial, a *New Yorker* cartoon and in a Norman Rockwell painting on the cover of *The Saturday Evening Post*. Today, Knoll offers the seat in some 15 upholstery options, and when Saarinen's famous TWA terminal in New York reopened as a hotel in 2019, Womb chairs featured prominently in the guest rooms, continuing the legacy of this classic design.

Des Moines Art Center; 1948:

The Art Center's origin can be traced to the Des Moines Association of Fine Arts, which operated out of the turn-of-the-century Beaux Arts-style Main Library building on the banks of the Des Moines River in downtown Des Moines beginning in 1916. A separate museum became possible with a bequest from James D. Edmundson. At the time of his death in 1933, a trust worth more than half a million dollars was established with the stipulation that the money be held for 10 years in the hope that the assets would recover from the Depression.

They did, and in 1943, leading citizens of Des Moines engaged Eliel Saarinen to design a modern museum of art. Saarinen came to the attention of the Des Moines museum board from his 1939 winning competition entry for the Smithsonian Gallery of Art—never constructed due to Congressional failure to fund the project. Drawings of his proposal were shown in Des Moines in

Essays on Architecture:

Eero Saarinen - America's Modern Form-Giver

that same year, and this exhibition led directly to his Art Center commission. The Des Moines Art Center is the clear offspring of Eero Saarinen's groundbreaking Smithsonian proposal in that both emphasize a harmonious relationship to their site.

Both designs feature low stone masses that hug the ground, with a courtyard focusing on a reflecting pool - both including a proposed sculpture by Carl Milles - and beyond to open space. Saarinen's insistence on the connection of his architecture to its surroundings was furthered in both designs by the view afforded from the courtyard: to the National Mall in the case of the Smithsonian and to Greenwood Park in the case of the Des Moines Art Center. Saarinen's building utilizes a warm limestone cladding quarried in Wisconsin known as Lannon stone.

The stone is rough-cut and laid in a random pattern for the exterior walls, with an elongation and refinement of the stone at the moment where the walls meet the sky or where visitors enter the building. Along the public front the building is quite solid, pierced by the transparent entry's walls and canopy that sweep outwards to welcome visitors. The mass of the building snakes across the site enclosing a dramatic courtyard which, before 1968, opened southward to the rose garden over a tranquil reflecting pool.

Saarinen's vision for the facility always balanced the physical prominence of the site with the cultural status of the building, protecting the integrity of each. Upon its completion in 1948 it represented innovation in American museum design as well as a new type of institution—a blend of museum and education center—an Art Center.

The three architects who have collaborated in the design of the museum evident today, Eero Saarinen, I. M. Pei and Richard Meier, are among the greatest names in architecture of the 20th century. Though each represents a very different style and period of modern architecture, their combined efforts, starting with Saarinen's original Lannon stone building, followed in 1968 by Pei's bush-hammered concrete addition, and Meier's three-part clad porcelain and granite addition in 1985, have resulted in a unique architectural achievement.

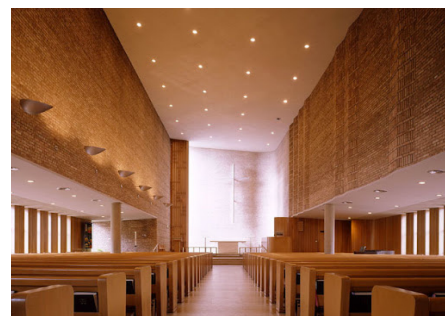
Christ Church Lutheran; Minneapolis, MN; 1947-1949-1962:

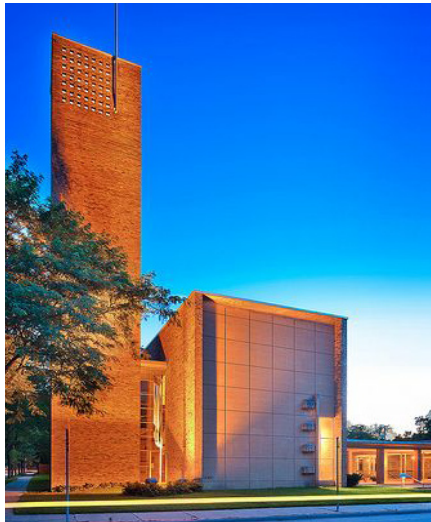
Christ Church Lutheran is a congregation of the Evangelical Lutheran Church in America established in 1911 as part of the Lutheran Church–Missouri Synod, but left in the 1970's in a dispute that led to the formation of the Association of Evangelical Lutheran Churches, which in turn was among the founding denominations of the ELCA.



Top Down:

1. Des Moines Art Center "Saarinen Wing"
2. Christ Church Lutheran Exterior
3. Christ Church Lutheran Plan
4. Christ Church Lutheran Sanctuary





Above: Christ Church Lutheran at Dusk
Below:

1. St. Louis Mayor Bernard Dickman
2. Luther Ely Smith
3. Gateway to the West Saarinen Rendering Submission
4. St. Louis Arch Model with Saarinen



The congregation's International Style worship building was Eliel Saarinen's last completed building. The sculptured stone panels were designed by William M. McVey (1922–1976). The church's design is a strikingly similar composition to the First Christian Church in Columbus, IN, which has received wider praise and was completed in 1942.

The church was dedicated in 1949, and was acknowledged as an architectural masterpiece from the day it opened. As an early outstanding example of modern religious architecture in the United States, it was widely published in the architectural, popular, and religious press, and provided inspiration for countless modern churches that were to be built in the 1950's and 1960's. Noted conductor Osmo Vänskä said of the church, "It's a good place to play. The acoustics are good for music — for chamber music — and it's a good place for the audience to listen. It's a place not only for the congregation but also a venue for concerts."

The congregation opted to go with the design after finding that their plans for a traditional Gothic Revival building would be too costly. In 1946, a new pastor, Reverend William A. Buege, contacted the elder Saarinen, then the president of the Cranbrook Academy of Art, and convinced him to take the commission. Saarinen had designed the pioneering First Christian Church in Columbus, Indiana in 1941 and used it as a model. Eliel Saarinen died the following year. Upon the church's opening, Saarinen noted, "if a building is honest, the architecture is religious."

An addition, the education building (connected by an arcade and interior hallways) was designed under the supervision of Eero Saarinen by his former employee Glen Paulsen, and completed in 1962. By coincidence it was also Eero's last completed project; he died the year before. The addition is organized around a courtyard and was carefully designed to complement and complete their earlier worship building.

In 1977, the building was the eighth recipient of the American Institute of Architects Twenty-five Year Award, one of only two places of worship to have been so honored. Notably, it was chosen for this award ahead of Mies van der Rohe's iconic Farnsworth House, though both buildings were eligible in the same year. It is listed on the National Register of Historic Places. The entire building was named a National Historic Landmark by the National Park Service by the Secretary of the Interior on January 16, 2009.

Gateway Arch; St. Louis, MO; 1947-1965:

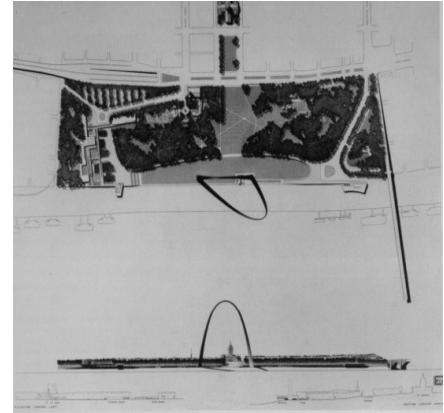
The Gateway Arch is a 630-foot tall monument in St. Louis, Missouri on the west bank of the Mississippi River, at the site of the founding of St. Louis. Clad in stainless steel and

built in the form of a weighted catenary arch, it is the world's tallest arch, the tallest man-made monument in the Western Hemisphere, and Missouri's tallest accessible building. Conceived and built as a monument to the westward expansion of the United States, and officially dedicated to "the American people," the Arch, commonly referred to as "The Gateway to the West," is the centerpiece of Gateway Arch National Park and has become an internationally recognized symbol of St. Louis, as well as a popular tourist destination.

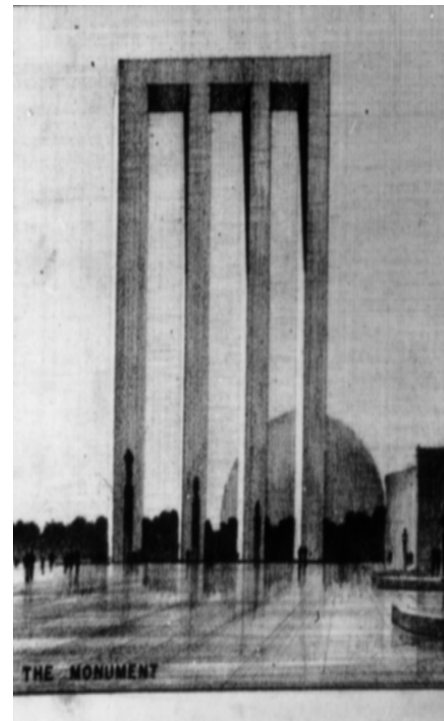
The Arch's design by Eero Saarinen was the winner of an international design competition in 1947. Almost exactly 21 years would elapse from the initiation of the design competition for the project until its dedication and opening in 1968. Construction did not begin until February 12, 1963, two years after Saarinen's untimely death. Construction was completed on October 28, 1965 at a cost of \$13 million (equivalent to \$97 million in 2020). The monument finally opened to the public on May 25, 1968, and draws over four million visitors annually.

In 1933, St. Louis civic leader Luther Ely Smith returned from a visit to the George Rogers Clark National Historic Park in Vincennes, IN, and imagined that a memorial on the Mississippi would revive the city's waterfront and help stimulate the economy. He spoke to Mayor Bernard Dickmann who involved other civic leaders and they formed the non profit Jefferson National Expansion Memorial Association (JNEMA) to create "a suitable and permanent public memorial to the men who made possible the western territorial expansion of the United States, particularly President Jefferson, his aides Livingston and Monroe, the great explorers, Lewis and Clark, and the hardy hunters, trappers, frontiersmen and pioneers who contributed to the territorial expansion and development of these United States, and thereby to bring before the public of this and future generations the history of our development and induce familiarity with the patriotic accomplishments of these great builders of our country."

The group projected a \$30 million cost and asked the federal government for \$22.5M. While there was some local opposition to utilizing public funds, the adverse impacts of the Great Depression softened resistance to such a project that would supposedly create the 5000 jobs that were projected for three years. The group began to raise



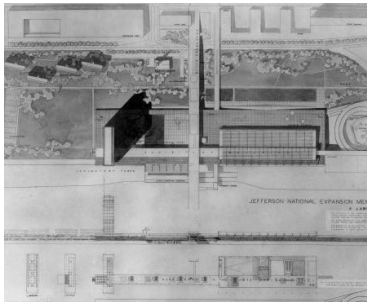
Top Down:
1. Eero Saarinen St. Louis Gateway Plan & Elevation
2. Eliel Saarinen Jefferson Memorial Competition Submission
3. St. Louis arch Site Preparation





Top to Bottom:

1. Jefferson National Expansion Memorial Railroad Relocation
2. Jefferson National Expansion Memorial Competition J. Henderson Barr Rendering; 1948
3. Jefferson Memorial Louis Kahn Entry
4. St. Louis Arch Site Clearing



awareness and investigate land acquisition of their preferred site since the riverfront was occupied and included an active elevated railroad.

In January 1934, Senator Bennett Champ Clark and Representative John Cochran introduced to Congress an appropriation bill seeking \$30 million for the memorial, but the bill failed to garner support due to the large amount of money solicited. In March of the same year, joint resolutions proposed the establishment of a federal commission to develop the memorial.

Although the proposal aimed for only authorization, the bill incurred opposition because people suspected that JNEMA would later seek appropriation. On March 28 the Senate bill was reported out, and on April 5 it was turned over to the House Library Committee, which later reported favorably on the bills. On June 8, both the Senate and House bills were passed. On June 15, President Franklin D. Roosevelt signed the bill into law, instituting the United States Territorial Expansion Memorial Commission. The commission comprised 15 members, chosen by Roosevelt, the House, the Senate, and JNEMA. It first convened on December 19 in St. Louis, where members examined the project and its planned location.

Concurrently, the JNEMA discussed organizing an architectural competition to determine the design of the monument. Local architect Louis LeBeaume had drawn up competition guidelines by January 1935. On April 13, 1935, the commission certified JNEMA's project proposals, including memorial perimeters, the "historical significance" of the memorial, the competition, and the \$30 million budget.

Between February and April, the Missouri State Legislature passed an act allowing the use of bonds to facilitate the project. Dickmann and Smith applied for funds from two New Deal agencies—the Public Works Administration (headed by Harold Ickes) and the Works Progress Administration (headed by Harry Hopkins). On August 7, both Ickes and Hopkins assented to the funding requests, each promising \$10 million, and said that the National Park Service (NPS) would manage the memorial. A local bond issue election granting \$7.5 million for the memorial's development was held on September 10 and passed.

On December 21, President Roosevelt signed an Executive Order to approve the memorial and allocating the 82-acre area as the first National Historic Site. The order also appropriated \$3.3 million through the WPA and \$3.45 million through the PWA to commemorate westward expansion and create jobs. Some taxpayers began to file suits to block the construction of the "boondoggle" monument.

Initial Planning; 1936–1939:

Using the 1935 grant of \$6.75 million and \$2.25 million in city bonds, the National Park Service acquired the buildings within the historic site through condemnation and demolished them. By September 1938, condemnation was complete. The condemnation was subject to many legal disputes that culminated on January 27, 1939 when the United States Circuit Court of Appeals ruled that condemnation was valid. A total of \$6.2 million was distributed to land owners. Demolition began in October 1939.

Because the Mississippi River played an essential role in establishing St. Louis's identity as the gateway to the west, a memorial commemorating it should be near the river. Railroad tracks that had been constructed in the 1930's on the levee obstructed views of the riverfront from the memorial site. When Ickes declared that the railway must be removed before he would allocate funds for the memorial, that can of worms took time and effort to successfully address and reconcile as well.

Design Competition; 1945–1948:

In November 1944, Smith discussed with Newton Drury, the National Park Service Director, the design of the memorial, asserting that the memorial should be "transcending in spiritual and aesthetic values", best represented by "one central feature: a single shaft, a building, an arch, or something else that would symbolize American culture and civilization."

The idea of an architectural competition to determine the design of the memorial was favored at the JNEMA's inaugural meeting. They planned to award cash for the best design. In January 1945, the JNEMA officially announced a two-stage design competition that would cost \$225,000. Smith and the JNEMA struggled to raise the funds, garnering only a third of the required total by June 1945. Then mayor Aloys Kaufmann feared that the lack of public support would lead officials to abandon hope in the project. The passage of a year brought little success, and Smith frantically underwrote the remaining \$40,000 in May 1946. By June, Smith found others to assume portions of his underwriting, with \$17,000 remaining under his sponsorship. In February 1947, the underwriters were compensated, and the fund stood over \$231,199.

Local architect Louis LaBeaume prepared a set of specifications for the design, and architect George Howe was chosen to coordinate the competition. On May 30, 1947, the contest officially opened. The seven-member jury that would judge the designs comprised Charles Nagel Jr., Richard Neutra, Roland Wank, William Wurster, LaBeaume, Fiske Kimball, and S. Herbert Hare. The competition comprised two stages—the first to narrow down the designers to five



Top to Bottom:

1. Louis LaBeaume; 1873-1961

2. Sen. Bennett Champ Clark (L), Rep. John Cochran

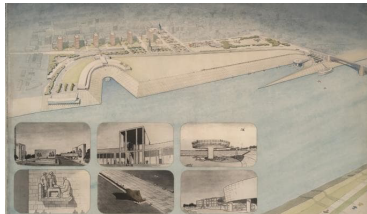
4. Harold Ickes

5. Franklin Roosevelt & Harry Hopkins





Top to Bottom:
1. St. Louis Riverfront Site Demolition
2. St. Louis Riverfront Site Clearing
3. Jefferson Memorial Competition Entries:
4. Harris Armstrong
5. Phillips, Eng & Associates
6. Newspaper Coverage Regarding Mussolini



and the second to single out one architect and his design.

The design was required to include:

- (a) An architectural memorial or memorials to Jefferson dealing with;
- (b) The preservation of the site of Old St. Louis—landscaping, provision of an open-air campfire theater, re-erection or reproduction of a few typical old buildings, provision of a Museum interpreting the Westward movement;
- (c) A living memorial to Jefferson's 'vision of greater opportunities for men of all races and creeds;'
- (d) Recreational facilities on both sides of the river; and
- (e) Parking facilities, access, relocation of railroads, and placement of an interstate highway.

Saarinen's team included himself as designer, J. Henderson Barr as associate designer, and Dan Kiley as landscape architect, as well as Lily Swann Saarinen as sculptor and Alexander Girard as painter. In the first stage of the competition, Carl Milles advised Saarinen to change the bases of each leg to triangles instead of squares. Saarinen said that he "worked at first with mathematical shapes, but finally adjusted it according to the eye." At the time of submission, Saarinen's design laid out the arch at 569 feet tall and 592 feet wide from center to center of the triangle bases.

On September 1, 1947, submissions for the first stage were received by the jury. The submissions were labeled by numbers only, and the names of the designers were kept anonymous. After four days of deliberation, the jury narrowed down the 172 submissions, which included Saarinen's father Eliel, to five finalists, and announced the corresponding numbers to the media on September 27. Saarinen's design (#144) was among the finalists, and comments written on it included "relevant, beautiful, perhaps inspired would be the right word" (Roland Wank) and "an abstract form peculiarly happy in its symbolism" (Charles Nagel).

Hare questioned the feasibility of the design but appreciated the thoughtfulness behind it. Local St. Louis architect Harris Armstrong was also one of the finalists. The secretary who sent out the telegrams informing finalists of their advancement mistakenly sent one to Eliel rather than Eero. The family celebrated with champagne, and two hours later, a competition representative called to correct the mistake. Eliel "'broke out a second bottle of champagne' to toast his son."

At the second stage, each finalist was given a \$10,069 prize. Saarinen changed the height of the arch from 580 feet to 630 feet and wrote that the arch symbolized "the gateway to the West, the national expansion, and whatnot." He wanted the landscape surrounding the arch to "be so densely covered with trees that it will be a forest-like park, a green retreat from the tension of the downtown city," according to *The New York Times* architectural critic Aline Bernstein Louchheim.

The deadline for the second stage arrived on February 10, 1948, and on February 18, the jury chose Saarinen's design unanimously, praising

its “profoundly evocative and truly monumental expression.” The following day, during a formal dinner at Statler Hotel that the finalists and the media attended, Wurster pronounced Saarinen the winner of the competition and awarded the checks—\$40,000 to his team and \$50,000 to Saarinen. The competition was the first major architectural design that Eero Saarinen developed independently of his father.

On May 25, the United States Territorial Expansion Memorial Commission endorsed the design, and in June, the NPS approved the proposal. Representative H. R. Gross, however, opposed the allocation of federal funds for the arch's development.

The design drew other varied responses. In a February 29, 1969, *The New York Times* article, Louchheim praised the arch's design as “a modern monument, fitting, beautiful and impressive.” Some local residents likened it to a “stupendous hairpin and a stainless steel hitching post,” without realizing that the metaphor was not altogether inappropriate.

The most aggressive criticism emerged from Gilmore D. Clarke, whose February 26, 1948, letter compared Saarinen's arch to an arch imagined by fascist Benito Mussolini, rendering the arch a fascist symbol. This allegation of plagiarism ignited fierce debates among architects about its validity. Douglas Haskell from New York wrote that “The use of a common form is not plagiarism ... [T]his particular accusation amounts to the filthiest smear that has been attempted by a man highly placed in the architectural profession in our generation.”

Wurster and the jury refuted the charges, arguing that “the arch form was not inherently fascist but was indeed part of the entire history of architecture.” Saarinen considered the opposition absurd, asserting, “It's just preposterous to think that a basic form, based on a completely natural figure, should have any ideological connection.” This curious statement from a modern architect of high stature meant that Saarinen felt the user/ observer did not have the right to interpret the object as a symbol with attached meaning.

By January 1951, Saarinen created 21 “drawings, including profiles of the Arch, scale drawings of the museums and restaurants, various parking proposals, the effect of the levee-tunnel railroad plan on the Arch footings, the Arch foundations, the Third Street Expressway, and the internal and external structure of the Arch.” Fred Severud made calculations for the arch's structure.

Railroad Agreement; 1949–1958:

The site contained a significant number of railroad rights-of-way that supported significant rail traffic. Five different alternatives for their relocation were identified and vetted. Frank J. McDevitt, president of the St. Louis Board of Public Service, proposed a levee tunnel to lower the tracks into a tunnel concealed by walls and landscaping.

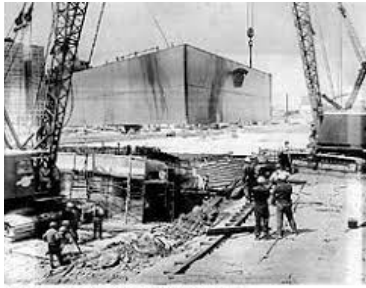
On July 7, 1949, in Mayor Joseph Darst's office, city officials chose the Levee-Tunnel plan. Politics came into play, but an agreement



Above:

1. Jefferson National Expansion Memorial Competition
2. St. Louis Arch Railroad Tunnel
3. St. Louis Arch Railroad Relocation
4. St. Louis Arch Railroad Tunnel Construction





Top to Bottom:
St. Louis Arch Under Construction



THE ARCH'S BASIC BUILDING BLOCKS

Because the Arch has no structural skeleton, it relies on its own skin of stainless steel and carbon steel for support.

The Arch is made up of a series of double-walled triangular sections stacked one on top of another, gradually decreasing in size as they rise.

Carbon steel plates make up interior wall. There is a 3-foot space between the inner and outer wall in the largest piece, and narrows to less than 8 inches on the smallest section.

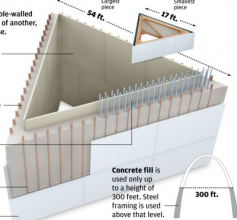
Concrete fill was pumped between the carbon and stainless steel walls after the section was set in place.

Post-tensioning rods, embedded in the concrete, kept the sections pulled tightly together during construction.

Strengthening rods

Stainless steel plates make up the exterior wall.

SOURCE: National Park Service



was reached in December 22, 1949 while it took the Missouri Public Service Commission until August 7, 1952 to ratify the plan. Efforts to appropriate congressional funds began in January 1950 but were delayed until 1953 by the Korean War's depletion of federal funds.

In August 1953, Secretary of the Interior Fred A. Seaton declared that the Department of the Interior and the railroads should finalize the agreement on the new route. In October, NPS and the TRRA decided that the TRRA would employ a surveyor endorsed by Spotts "to survey, design, estimate, and report on" the expenses of shifting the tracks. They chose Alfred Benesch and Associates, which released its final report on May 3, 1957. The firm estimated that the two proposals would cost more than \$11 million and \$14 million, respectively. NPS director Conrad Wirth enjoined Saarinen to make small modifications to the design.

In October, Saarinen redrafted the plans, suggesting the placement of the five sets of railroad tracks into a shortened tunnel 100 feet west of the trestle, with the tracks being lowered sixteen feet. This did not mean that the memorial would be cut off from the river, however, for Saarinen provided a 960-foot-long (290 m) tunnel to be placed over the railroad where a "grand staircase" rose from the levee to the Arch. At the north and south ends of the park, 150-foot tunnels spanned the tracks, and led to the overlook museum, restaurant, and stairways down to the levee. Saarinen designed a subterranean visitor center the length of the distance between the legs, to include two theaters and an entrance by inward-sloping ramps.

From 1953 to 1958, local and Federal politicians rounded up money for the project to proceed. By 1961, \$19.6M of the required \$23M had been appropriated.

Final Preparations; 1959–1968:

Saarinen and city functionaries collaborated to zone buildings near the arch. In April 1959, real estate developer Lewis Kitchen proposed to construct two 40-story office towers across from the arch. In July, after the plan was condemned for its potential obstruction of the arch, Kitchen discussed the issue with officials. A decision was delayed for several months because Saarinen had yet to designate the arch's exact height, projected between 590 and 630 feet (180 and 190 m). By October, Mayor Tucker and Director Wirth resolved to restrict the height of buildings opposite the arch to 275 feet (84 m) - about 27 stories, and the city stated that plans for buildings opposite the arch would require its endorsement. Kitchen then decreased the height of his buildings, while Saarinen increased that of the arch.

Moving the railroad tracks was phase one of the project. In May 1959, the Public Service Commission called for ventilation to accompany the tunnel's construction, which entailed "placing 3,000 feet of dual tracks into a tunnel 105 feet west of the elevated railroad, along with filling, grading, and trestle

work." Eight bids for the work were reviewed in, and the MacDonald Construction Co. of St. Louis was the low bidder at \$2,426,115, less than NPS's estimate of the cost. On June 23, 1959, the groundbreaking ceremony occurred.

Construction:

The bidding date, originally December 20, 1961, was postponed to January 22, 1962, to clarify the details of the arch construction. About 50 companies that had requested the construction requirements were given invitations to bid. Ranging from \$11,923,163 to \$12,765,078, all four bids exceeded the engineer's estimate of \$8,067,000. Wirth had a committee led by George Hartzog determine the validity of the bids in light of the government's conditions. Following a meeting with the bidders, the committee affirmed the bids' reasonableness, and Wirth awarded the lowest bidder MacDonald Construction Co. of St. Louis, the contract for the construction of the arch and visitors' center. On March 14, 1962, the construction contract was signed. The Pittsburgh-Des Moines Steel Company served as the subcontractor for the shell of the arch.

In 1959 and 1960, work on the grading and the foundation for the arch was underway. Construction of the arch itself began on February 12, 1963, as the first steel triangle on the south leg was eased into place. These steel triangles, which narrowed as they spiraled to the top, were raised into place by a group of cranes and derricks. The arch was assembled with 142 12-foot-long prefabricated stainless steel sections. Once in place, each section had its double-walled skin filled with concrete, prestressed with 252 tension bars. In order to keep the partially completed legs steady, a scissors truss was placed between them at 530 feet, and later removed as the derricks were taken down. The whole endeavor was to be completed by fall 1964, in observance of St. Louis's bicentennial.

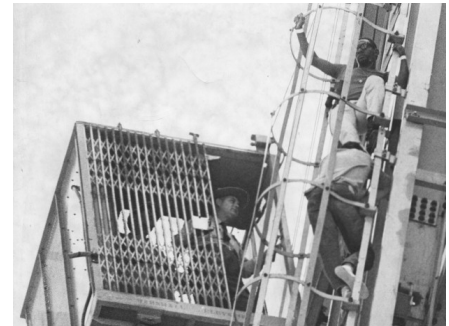
Contractor MacDonald Construction Co. arranged a 30-foot tower for spectators and provided recorded accounts of the undertaking. In 1963, a million people went to observe the progress, and by 1964, local radio stations began to broadcast when large slabs of steel were to be raised into place. St. Louis Post-Dispatch photographer Art Witman documented the construction for the newspaper's Sunday supplement Pictures, his longest and most noted assignment.

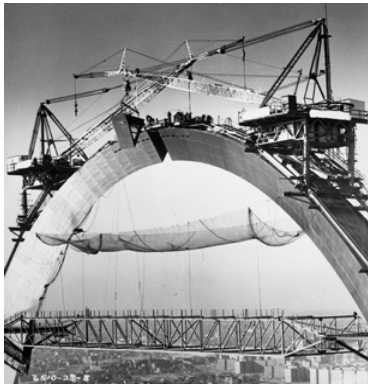
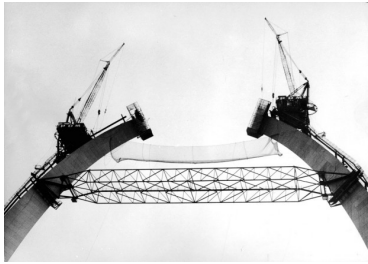
He visited the construction site frequently from 1963 to 1967 recording of every stage of progress. With assistant Reynaold Ferguson, he crawled along the catwalks with the construction workers up to 190m above the ground. He was the only news photographer on permanent assignment at the construction with complete access. He primarily worked with slide film, but also used the only Panox camera in St. Louis to create panoramic photographs covering 140



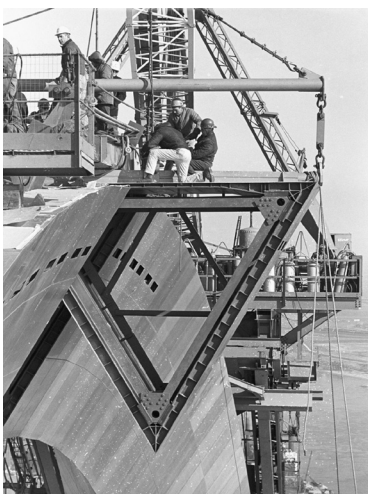
Top to Bottom:

1. St. Louis Riverfront Site Excavation
2. St. Louis Arch Protestors Richard Daly & Percy Green; 7-14-64
3. Protestors Marching Off Site; 7-23-64
4. Protestor Percy Green Going Limp





Top to Bottom:
St. Louis Arch Under Construction



degrees. Witman's pictures of the construction are now housed in the State Historical Society of Missouri.

The project manager of MacDonald Construction Co., Stan Wolf, said that a 62-story building was easier to build than the arch: "In a building, everything is straight up, one thing on top of another. In this arch, everything is curved."

Delays and Lawsuits:

While an actuarial firm predicted thirteen workers would die while building the arch, no workers were killed during the monument's construction. However, construction of the arch was often delayed by safety checks, funding uncertainties, and legal disputes.

Some civil rights activists regarded the construction of the arch as a token of racial discrimination. On July 14, 1964, during the workers' lunchtime, civil rights protesters Percy Green and Richard Daly, both members of Congress of Racial Equality, climbed 125 feet up the north leg of the arch to "expose the fact that federal funds were being used to build a national monument that was racially discriminating against black contractors and skilled black workers." As the pair disregarded demands to get off, protesters on the ground demanded that at least 10% of the skilled jobs belong to African Americans.

Four hours later, Green and Daly dismounted from the arch to charges of "trespassing, peace disturbance, and resisting arrest." This incident inter alia spurred the United States Department of Justice to file the first pattern or practice case against AFL-CIO under Title VII of the Civil Rights Act of 1964, on February 4, 1966, but the department later dropped the charges. The 1966 lawsuit was an attempt by the Office of Federal Contract Compliance (OFCC) to desegregate building-trade unions nationwide. Many technical building unions had little or no African-American representation into the mid-1960s. During Lyndon Johnson's presidency, the federal government recognized the need for more integration in all levels of society and started enforcing equal employment opportunity through federally funded job contracts.

In 1964, the Pittsburgh-Des Moines Steel Company of Warren, PA sued MacDonald for \$665,317 for tax concerns. In 1965, NPS requested that Pittsburgh-Des Moines Steel remove the prominent letters "P-D-M" (its initials) from a creeper derrick used for construction, contending that it was promotional and violated federal law with regards to advertising on national monuments. Although Pittsburgh-Des Moines Steel initially refused to pursue what it considered a precarious venture, the company relented after discovering that leaving the initials would cost \$225,000 and after that, \$42,000 per month, and the NPS dropped its lawsuit.

On October 26, 1965, the International Association of Ironworkers delayed work to ascertain that the arch was safe.

After NPS director Kenneth Chapman gave his word that conditions were "perfectly safe," construction resumed on October 27. After the discovery of 16 defects, the tram was also delayed from running. The Bi-State Development Agency assessed that it suffered losses of \$2,000 for each day the trains were stagnant.

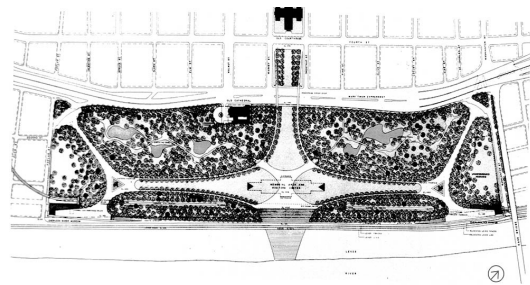
On January 7, 1966, members of AFL-CIO deserted their work on the visitor center, refusing to work with plumbers affiliated with Congress of Industrial Unions (CIU), which represented black plumbers. A representative of AFL-CIO said, "This policy has nothing to do with race. Our experience is that these CIU members have in the past worked for substandard wages." CIU applied to the National Labor Relations Board (NLRB) for an injunction that required the AFL-CIO laborers to return to work. On February 7, Judge John Keating Regan ruled that AFL-CIO workers had participated in a secondary boycott.

By February 11, AFL-CIO resumed work on the arch, and an AFL-CIO contractor declared that ten African Americans were apprenticed for arch labor. The standstill in work lasted a month. Considering how large Federal projects often "go haywire", Secretary of War Newton D. Baker said, "This memorial will be like a cathedral; built slowly but surely."

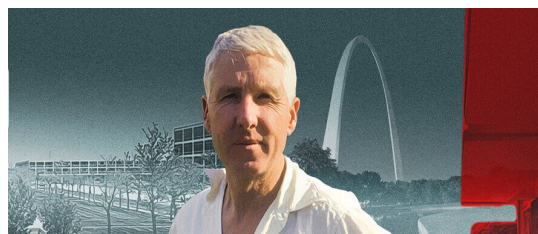
Topping out and Dedication:

President Lyndon B. Johnson and Mayor Alfonso J. Cervantes decided on a date for the topping out ceremony, but the arch had not been completed by then. The ceremony date was reset to October 17, 1965, and workers strained to meet the deadline, taking double shifts, but by October 17, the arch was still not complete. The chairman of the ceremony anticipated the ceremony to be held on October 30, a Saturday, to allow 1,500 schoolchildren, whose signatures were to be placed in a time capsule, to attend. Ultimately, PDM set the ceremony date to October 28.

The time capsule containing the signatures of 762,000 students and others was welded into the keystone before the final piece was set in place. On October 28, the arch was topped out as then Vice President Hubert Humphrey observed from a helicopter. A Catholic priest and a rabbi prayed over the keystone, a 10-short-ton, eight-foot-long triangular section. It was slated to be inserted at 10:00 a.m. local time but was done 30 minutes early because thermal expansion had constricted the 8.5-foot gap at the top by 5 inches. To mitigate this, workers sprayed water on the surface of the south leg with fire hoses to cool it down and contract it. When the keystone was inserted in 13 minutes, only 6 inches remained. For the next section,



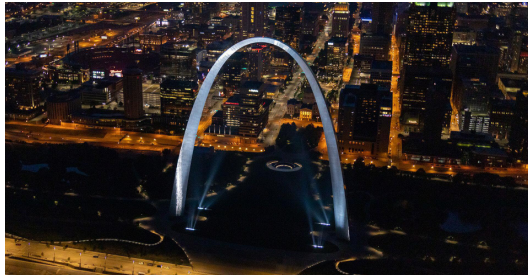
Top to Bottom:
1. Dan Kiley St. Louis Arch Landscape Plan
2. Dan Kiley St. Louis Arch Landscape Elevation
3. Dan Kiley, Landscape Architect
4. St. Louis Arch Dimensions



a hydraulic jack had to pry apart the legs six feet.

By noon, the keystone was secured. Some filmmakers hoping that the two legs would not meet had chronicled every phase of construction.

The Gateway Arch was expected to open to the public by 1964, but in 1967 the public relations agency stopped forecasting the opening date. The arch's visitor center opened on June 10, 1967, and the tram began operating on July 24. Humphrey dedicated the arch on May 25, 1968. He declared that the arch was "a soaring curve in the sky that links the rich heritage of yesterday with the richer future of tomorrow" and brings a "new purpose" and a "new sense of urgency to wipe out every slum." "Whatever is shoddy, whatever is ugly, whatever is waste, whatever is false, will be measured and condemned" in comparison to the Gateway Arch. About 250,000 people were expected to attend, but rain canceled the outdoor activities. The ceremony had to be transferred into the visitor center.



Top to Bottom:
1. The Illuminated Arch
2. The illuminated Arch
3. St. Louis Arch with 2018 Visitors Center
4. St. Louis Arch with 2018 Visitors Center



After Completion:

The project did not provide the 5,000 jobs proponents told the city to expect, but it did function as a catalyst for \$150 million in riverfront development. Building projects included a 50,000-seat sports stadium, a 30-story hotel, several office towers, four parking garages, and an apartment complex. The idea of a Disneyland amusement park that included "synthetic riverboat attractions" was considered but later abandoned. One estimate found that since the 1960's, the arch has incited almost \$503 million worth of construction.

In June 1976, the memorial was finalized by federal allocations—"the statue of Thomas Jefferson was unveiled, the Museum of Westward Expansion was previewed, a theater under the Arch was dedicated in honor of Mayor Raymond Tucker and the catenary-like curving staircases from the Arch down to the levee were built."

Lighting:

The first proposal to illuminate the arch at night in May 1966 was never realized. In July 1998, funding for an arch lighting system was approved by St. Louis's Gateway Foundation, which agreed to take responsibility for the cost of the equipment, its installation, and its upkeep. In January 1999, MSNBC arranged a temporary lighting system for the arch so the monument could be used as the background for a visit by Pope John Paul II.

Since November 2001, the arch has been bathed in white light between 10 p.m. and 1 a.m. via a system of floodlights designed by Randy Burkett, that comprises 44 lighting fixtures situated in four pits just below ground level.

In April 1965, three million tourists were expected to visit the arch after completion. In its first year, 619,763 tourists visited

the top of the arch. The Gateway Arch is one of the most visited tourist attractions in the world with over four million visitors annually, of which approximately one million travel to the top.

The arch was listed as a National Historic Landmark on June 2, 1987, and is also listed on the National Register of Historic Places.

Visitor Center:

The underground visitor center for the arch was designed as part of the National Park Service's Mission 66 program. The 70,000-square-foot center is located directly below the arch, between its legs. Although construction on the visitor center began at the same time as construction for the arch itself, it did not conclude until 1976 because of insufficient funding. However, the center opened with several exhibits on June 10, 1967. Access to the visitor center was provided through ramps adjacent to each leg of the arch.

The center houses offices, mechanical rooms, and waiting areas for the arch trams, as well as its main attractions: the Museum of Westward Expansion and two theaters displaying films about the arch. The older theater opened in May 1972; the newer theater, called the Odyssey Theatre, was constructed in the 1990's and features a four-story-tall screen. Its construction required the expansion of the underground complex, and workers had to excavate solid rock while keeping the disruption to a minimum so the museum could remain open. The museum houses several hundred exhibits about the United States' westward expansion in the 19th century and opened on August 10, 1977.

As part of the CityArchRiver project, the visitor center and museum underwent a \$176 million expansion and renovation that was completed in July 2018 which includes a 46,000-square-foot underground addition featuring interactive story galleries, video walls, a fountain and a cafe.

Modes of Ascent:

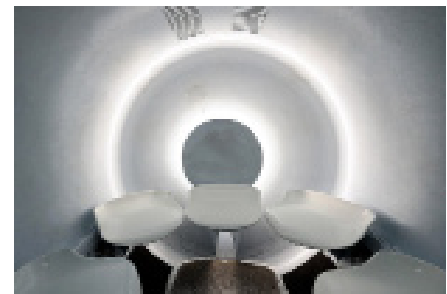
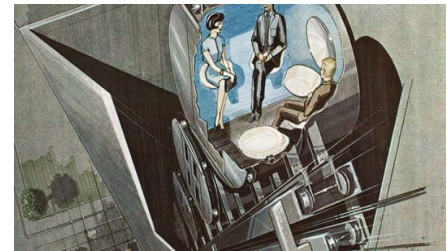
There are three modes of transportation up the arch: two sets of 1,076-step emergency stairs with one stair in each leg, a 12-passenger elevator to the 372-foot height, and a tram in each leg.

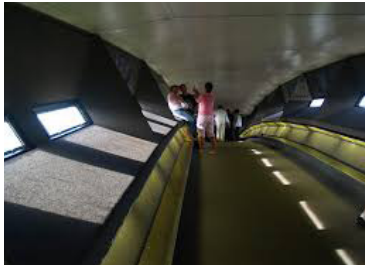
Each tram is a chain of eight cylindrical, five-seat compartments with a small window on the doors. As each tram has a capacity of 40 passengers and there are two trams, 80 passengers can be transported at one time, with trams departing from the ground every 10 minutes. The cars swing like Ferris-wheel cars as they ascend and descend the arch. This fashion of movement gave rise to the idea of the tram as "half-Ferris wheel and half-elevator." The trip to the top takes four minutes, and the trip down takes three minutes.

Because of a lack of funds in March 1962, the National Park Service did not originally accept bids for the arch's internal train system and considered discarding the idea. In May 1962, the Bi-State Development Agency proposed that it issue revenue bonds to obtain the required funds. The Department of the Interior and Bi-State entered into an agreement where Bi-State would construct and operate the tram. Bi-State would have to raise \$1,977,750 for the construction of the tram system. It retired the

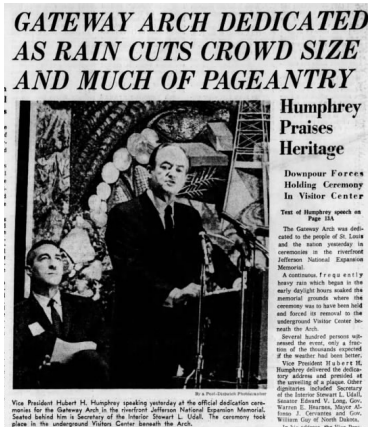


Above: St. Louis Arch Elevator Hoistway
Below: St. Louis Arch Elevator Diagram, Cab, Entry





Top to Bottom:
1. St. Louis Arch Observation Area
2. St. Louis Arch 1950 Dedication with Pres. Truman
3. St. Louis Arch Dedication with Hubert Humphrey
4. Gateway Arch National Park



bonds by setting a \$1 riding fee to the top.

Bi-State put in \$3.3 million revenue bonds and has operated the tram system since. The tram in the north leg entered operation in June 1967, but visitors were forced to endure three-hour-long waits until April 21, 1976, when a reservation system was put in place. The south tram was completed by March 1968. Commemorative pins were awarded to the first 100,000 passengers.

Observation Area:

Near the top of the Arch, passengers exit the tram compartment and climb a slight grade to enter the observation area. This arched deck, which is over 65 feet long and 7 feet wide, can hold up to about 160 people, four trams' worth. Sixteen windows per side, each measuring 7 by 27 inches, offer views up to 30 miles (48 km) to the east across the Mississippi River and southern Illinois with its prominent Mississippian culture mounds at Cahokia Mounds and to the west over the city of St. Louis and St. Louis County beyond.

Symbolism and Culture:

"The Gateway Arch packs a significant symbolic wallop just by standing there. But the Arch has a mission greater than being visually affecting. Its shape and monumental size suggest movement through time and space, and invite inquiry into the complex, fascinating story of our national expansion."

—Robert W. Duffy, *St. Louis Post-Dispatch*, October 4, 2003

Built as a monument to the westward expansion of the United States, the arch typifies "the pioneer spirit of the men and women who won the West, and those of a latter day to strive on other frontiers." The arch has become the iconic image of St. Louis, appearing in many parts of city culture.

Louchheim wrote that although the arch "has a simplicity which should guarantee timeliness", it is entirely modern as well because of the innovative design and its scientific considerations. In *The Dallas Morning News*, architectural critic David Dillon opined that the arch exists not as a functional edifice but as a symbol of "boundless American optimism". He articulates the arch's multiple "moods"—"reflective in sunlight, soft and pewterish in mist; crisp as a line drawing one moment, chimerical the next"—as a way the arch has "paid for itself many times over in wonder."

Awards and Recognition:

In 1966, the arch was given a Special Award for Excellence from the American Institute of Steel Construction for being "an outstanding achievement in technology and aesthetics." On February 9, 1967, the arch received the Outstanding Civil Engineering Achievement Award of 1967 from the American Society of Civil Engineers. The arch was once among *Travel + Leisure's* unofficial rankings for the most-visited attraction in the world, after Lenin's Tomb, Disney World, Disneyland, and the Eiffel Tower. On February 22, 1990, the arch received the American Institute of Architects' (AIA) Twenty-Five Year Award for its "enduring significance that has withstood the test of time." It was declared "a symbolic bridge between East and West, past and future, engineering and art" that

"embodies the boundless optimism of a growing nation." In 2007, the arch was ranked fourteenth on the AIA's "America's Favorite Architecture" list.

When Saarinen's daughter, Susan, visited the St. Louis Gateway Arch for the first time in 1987 at the age of 42, she took the typical tourist's approach. Riding up to the top of the Arch in the capsule tram, she took in St. Louis from the observation deck of her father's structure. As a child, her father's project had seemed so common in her home that she never stopped to consider its importance or uniqueness while growing up. As the Post-Dispatch reported that day, "she said, 'Thank you, everyone'... Then, glancing back over her shoulder, 'Thank you, Daddy.'"

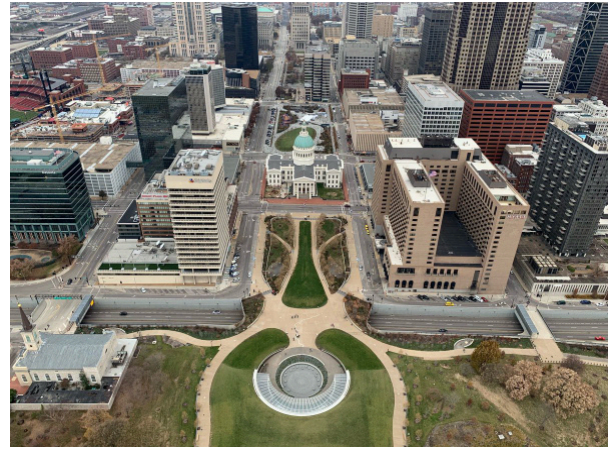
The Arch underwent a \$380 million renovation and visitors center expansion in 2018.

New Visitors Center + New Name:

On July 3, 2018, a half century after Eero Saarinen's Gateway Arch was inaugurated in 1968, it has been reconnected to the city of St. Louis with a sleek underground entrance facing the city, an expanded and redesigned visitor center and museum, a cleaner landscape and an elevated and more elegant waterfront along the Mississippi River. An old parking garage has been removed and a parklike pedestrian platform over Interstate 44 allows visitors from downtown St. Louis to visit the city's most popular attraction without having to brave traffic lanes.

But a new name encapsulates the larger cultural changes to the National Park Service site, which has been given a \$380 million renovation and redesign. What was once known as the Jefferson National Expansion Park has been recast as the **Gateway Arch National Park**. That change simply reflects how people think about the park, says Eric Moraczewski, executive director of Gateway Arch Park Foundation, the nonprofit group that partnered with the National Park Service to raise funds and oversee the renovation.

The museum now concludes with the design and construction of the arch itself, which was an urban renewal project that led to the loss of the colonial-era street grid, and hundreds of buildings, many erected in the 19th century. It was an exercise in branding, a scheme cooked during the Depression and sold on a national scale. It took more than 30 years between the inception and the opening of the arch. Saarinen died in 1961, long after he won the 1947 design competition, and well before construction was completed in 1965. The museum notes that the realization of Saarinen's futuristic vision happened during the tumultuous years of the civil



Above: View of Downtown St. Louis from Arch Observation Area

rights movement and that African-Americans protested at the arch site for not having equal access to construction jobs on the project.

In the intervening years, Jefferson's stock has fallen, and Saarinen's has soared. He is a revered figure of modernism, and the arch is probably his best-known and most-loved project. With the Gateway Arch, he not only created an architectural spectacle grand enough to fill the site, but he helped define one of the essential trends of architecture for the past half century, the dominance of iconic power over function.

The whole idea for a park and a monument to westward expansion was bizarre: Why in St. Louis, when other cities could also claim to be the Western gateway? And why an arch, which suggests the pioneers somehow passed through a giant croquet wicket?

But Saarinen finessed the problem rather like corporate architects today finesse the problem of housing large, impersonal, often rapacious organizations in buildings that suggests transparency, openness and idealism. He found a gesture that overwhelmed skepticism, both skepticism about the viability of the project, but also the larger historical skepticism that Americans have traditionally found inconvenient and dispiriting.

His arch stole the show, which made it possible to avoid the history, except as a passing entertainment. Saarinen understood how essentially American the arch form was, a symbol of triumph and conquest that is hollow at its core.

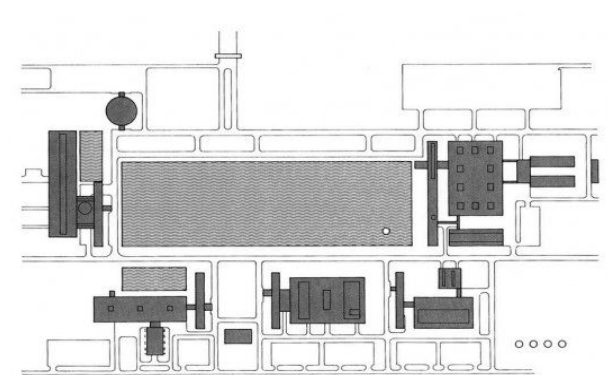
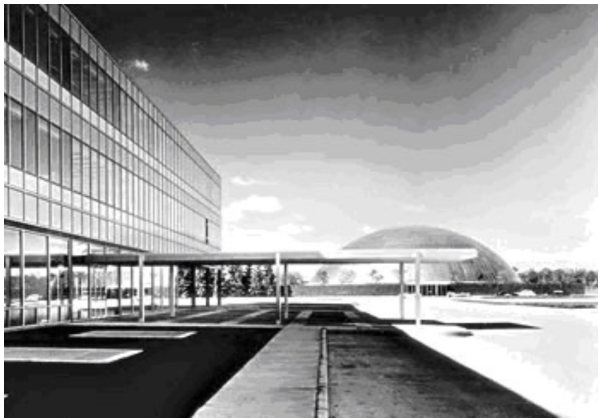
**General Motors Technical Center; Warren, MI;
1945-1956:**



Top to Bottom:
1. General Motors Technical Center Aerial
2. GM Technical Center Entry
3. GM Technical Center Entry



Above, Top to Bottom:
1. GM Technical Center Aerial
2. GM Technical Center Showroom Dome exterior
3. GM Technical Center Site Plan



Eero Saarinen's notoriety is attributable to his landmark projects for TWA at JFK and Dulles airports, the St. Louis Gateway Arch and his three projects in Columbus, IN. But his largest commissions were for corporate research laboratories for General Motors, IBM, and Bell Laboratories. In 1951, *Fortune* magazine sent a photographer to document GM's sprawling "research campus," which was just beginning to take shape in suburban Detroit. The photographs capture what the editors called "a new and serene integration" of modern architecture and modern science and engineering.

The GM Technical Center (1956), the IBM Thomas Watson Research Center (1961), and Bell Laboratories at Holmdel

(1962) symbolized a postwar ideology of corporate research that emphasized basic research and took the university as the appropriate model for organizing science. But as the people who worked in and managed these laboratories over the following decades would learn the hard way, R&D, in the sense of turning scientific inquiry into product and profit, does not necessarily thrive indefinitely in an "Industrial Versailles."

The cultural and geopolitical context for Saarinen's research campus projects was a product of the victory of science and technology in WWII, "the physicists' war." Corporate executives had seen how science would be their not-so-secret weapon for success in post-war markets. They believed historian David Hounshell's prescription for a "linear model" of industrial research with basic science at one end producing profitable products at the other.

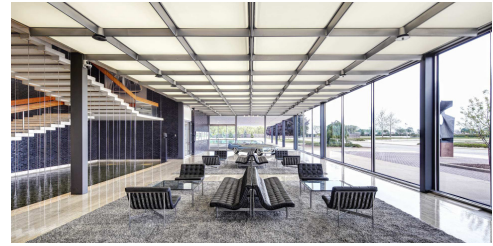
Corporate executives believed that while universities had proven to be useful partners in developing new effective weapons for the war effort, they needed their own version of the university campus to recruit top scientists and engineers away from academic and government positions to a place where science could be pursued without the distractions of deadlines and corporate profits. Hounshell argued, "Seldom have the lessons of war been more fundamentally misunderstood. Seldom have such misunderstandings been more important, for they governed the course of national policy and the direction of the US industrial R&D until the 1960's."

Saarinen shared the belief of corporate executives that the ideal model for R+D was the isolated campus where basic research could be given a new spatial and symbolic identity and public brand. Knowles and Leslie (2001) have asserted that Saarinen's "projected an appropriately modern image but rarely contributed to the corporate bottom line in any direct way. Saarinen's laboratories were the kind of public relations that only monopolies could afford and, conventionally enough, an investment that could pass muster with antitrust watchdogs, who had long interpreted R&D, especially fundamental science, as a legally acceptable strategy for securing future markets."

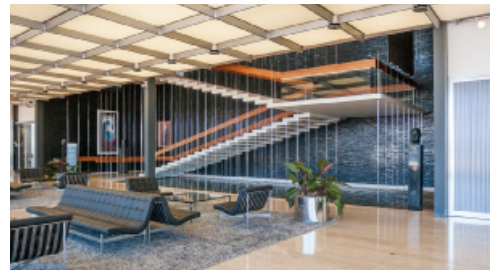
The GM Technical Center campus in Warren, Michigan has been the center of the company's engineering effort since its inauguration in 1956. Choosing Eero Saarinen - an architect in his 30's at the start of the project with no major buildings to his credit - was a daring move challenging the usual assumption that great corporations lean conservative and are risk-averse.

Initially, the commission went to Eero's father Eliel, best known for building Cranbrook in Bloomfield Hills.

But by the time things really got rolling in the 1948, Eliel, who would die in 1950, was already ailing. GM executive Charles Kettering argued for going with a tried-and-true firm like Albert Kahn Associates, architects of the 1920 General Motors Building in the New Center. But GM's design guru, Harley Earl, was a risk taker, and "very much wanted the campus to reflect the future orientation of the company," author Susan Skarsgard said. "So he just waited till Kettering retired (in 1947), and then pushed hard to go with Eero."



Top to Bottom:
1. GM Tech Center Lobby
2. GM Tech Center Receptionist
3. GM Tech Center Lobby Stair
4. GM Technical Center Brick End Walls
5. GM Tech Center Cafeteria





Top to Bottom:

1. GM Technical Center Spiral Stair
2. GM Tech Center Styling Studio
3. GM Tech Center Showroom Dome Interior
4. 1956 Cadillac Ad

Skarsgard's book, *Where Today Meets Tomorrow: Eero Saarinen and the General Motors Technical Center*, reflects the rising reputation of Eero Saarinen, who died in 1961 at 51 and was quickly forgotten by architecture's chattering classes.

GM gave “the architect freedom in developing forward looking architectural design” to produce “coordinated uniformity of architectural treatment” with a priority for “interior flexibility.” Eliel and partner J. Robert Swanson developed an initial design for the project with Eero. Eero brought on board the well-known modern landscape architect Thomas Church from San Francisco. Eliel’s 1945 design centered on a seven-acre lake shaped as a rounded polygon. The low-rise buildings of the early scheme were given a monumental gate with a 100-foot long multi-floor administration building that spanned the principle entry to create a significant welcoming experience.



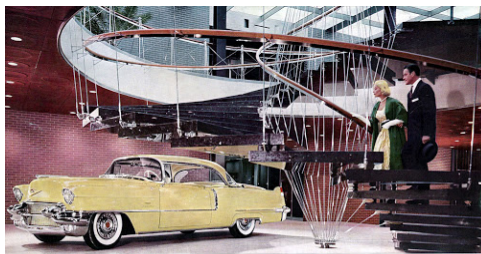
A prototypical highway around the lake connected four groupings of metal and glass buildings. A terrace podium level connected the long front facades, allowing cars to enter the ground-level parking garages. Architectural Record deemed the “obviously whopping investment” would “represent General Motors’ latest thinking in area planning and traffic control.” From the onset, GM management had stated, “If the Technical Center was to be a facility, it was also to be a striking unique symbol.”

The United Auto Workers' "great post-war strike" caused the project to be put on hold in October 1946 so that GM could focus on expanding production to meet consumer demand. When the project was given the green light in December 1948, material delays due to the Korean War and Eliel's death in 1950 caused further delay.



Eero then took over the team and added Detroit's foremost commercial firm Smith Hinchman & Grylls to do construction documents and a top tier landscape architect Edward A. Eichstedt to implement Church's design. Eero then developed a new scheme that abandoned his father's unfeasible terrace podium scheme. The five complexes of buildings around a huge central 22-acre quadrangle pool with a wall of fountains 100 feet wide shot water 50 feet in the air to accentuate the entry drive and one's right of entry.

Eero utilized a variation of the Albert Kahnian factory to organize each building group: an extended lab and office structure fronted shop buildings connected by an architectural bridge. Eero used end caps of brightly glazed brick walls – red, yellow, orange, blue and black, to differentiate the glass and panel exteriors. With no structure over three stories, Saarinen eliminated elevators. Instead, unique and special staircases were designed in each complex. Saarinen used infrastructure elements – water towers, building exhausts and fuel tanks - as sculptural highlights to the architectural massing, along with the styling auditorium which stood alone – a great metal dome fragment at one corner of the rectangular plan. Looping drives linked the fronts and backs of each building complex with parking at the edge of the site.



We hope you have enjoyed your brief tour of the fabulous new General Motors Technical Center... and your virtual inspection of the new 1994 Cadillac. We hope, too, that you will join us every week to our showrooms to inspect and drive the Cadillac model of your choice. We'll be most happy to see you as you arrive—and to give you the full, wonderful story about Cadillac ownership as it now exists. We have some special news about one real delivery that we think you will find difficult to resist. Why not make it today?

EVERETT H. CORSON
92 Hamstable Road
HYANNIS, MASSACHUSETTS

Saarinen worked with GM's engineers to design an inventive coherent structure to deliver the flexibility GM sought. The Saarinen team applied a five-foot module to "not only steel construction but also to laboratory, heating, ventilating and fire protection facilities as well as to laboratory furniture, storage units, moveable wall partitions and so on, all of which are keyed to it." GM loved this "standardization with precision" based on "the know-how of GM's assembly lines applied to industrial construction." This pliable modular system made GM's Technical Center laboratories highly functional for decades.

The "Tech Center" campus was occupied in phases from 1951 – 1956 and comprises 710 acres in Warren, Michigan, and includes 38 buildings, 11 miles of roads, two water towers, two lakes (one of which is 22 acres) and cost \$125 million to complete. The lakes are emergency fire reservoirs. GM had experienced the largest industrial fire in US history in 1953 (\$50M; \$500M in today's dollars) when its four-year old state-of-the-art 1.5 million square foot Livonia, MI transmission plant was completely destroyed by errant sparks from a welder's torch.

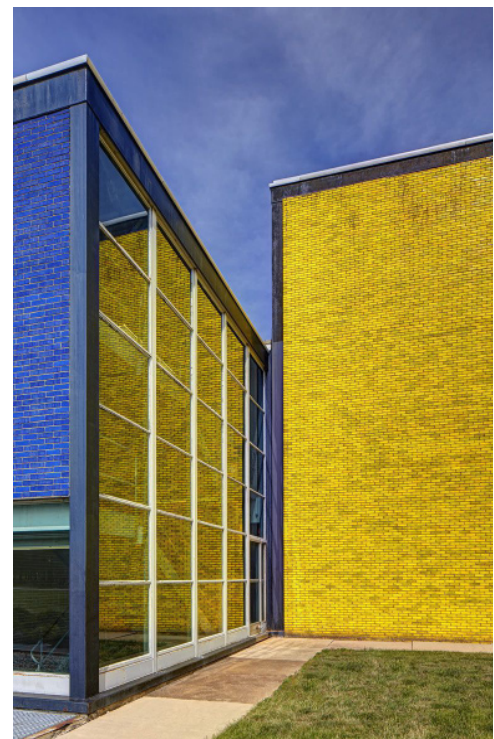
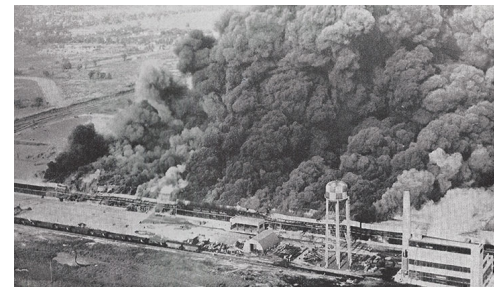
The General Motors Technical Center is nationally significant as one of the most important works of Eero Saarinen. The Technical Center marks Eero's emergence onto the international stage as an important designer independent of his work with his father Eliel, first bringing him to wide national attention and acclaim. The Technical Center project was embraced around the world as the embodiment of the spirit of the post-World War II age in America and of the prosperity and modernity of the nation and its people.

Also, this campus represents Saarinen's work not just as a creator of buildings, but as the planner/designer of total environments. At the Technical Center, Saarinen worked with and orchestrated key collaborators on the campus's buildings and their material details, construction methods, landscape, furniture and furnishings, and artwork, creating a design totality unparalleled in the period that established a key working method for the architect. Finally, the Technical Center is also significant as the first of four influential Saarinen suburban corporate campuses - along with later projects for IBM, Bell Laboratories, and John Deere - that set the design standard for this important post-World War II landscape and architectural type that represented a sea change in American business facilities.

The bold splashes of color throughout were virtually taboo in 1950's architectural modernism, and a stylistic gesture that Saarinen's lieutenant, Kevin Roche, struggled to accept. "He loved the overall design aesthetic," Skarsgard said, "but he thought the use of color was completely wrong – he said he almost had to turn his head away." Later, Roche - who wrote the Forward to *"Where Today Meets Tomorrow"* and who died in March 2019 - came around, seeing in the bright, glazed-brick building end-walls an indispensable, iconic design element. "It's all very simple, these big walls of color all around," Skarsgard



Top to Bottom:
1. GM Technical Center Research & Development Center
2. GM Livonia, MI Transmission Plant Fire
3. GM Tech Center End Wall Transition





Top to Bottom:
1. GM Tech Center Original Lobby
2. GM Tech Center Exhaust Stack Sculpture
3. GM Tech. Center Design Lab
4. GM Tech. Center Interior Offices



said, noting that the striking glazes in various hues were developed by Maija Grotell at the Cranbrook Academy of Art. "The glazed brick," she said, "really defines the campus."

Defining features include the vast rectangular reflecting pool with its fountains and modernist water tower to the breathtaking stairwells that adorn several of the lobbies, particularly the "floating staircases" in both the Design as well as the Research & Development buildings. "Those are the two main design masterpieces," Skarsgard said, "but the stairwells throughout the entire campus, even the ubiquitous back stairways, are just elegant and lovely." Virtually everything on the campus, she noted, was one-of-a kind and customized. "Every detail is prototypical – they didn't go off-the-shelf for anything," Skarsgard said, "whether trim work, door handles, and every bit of hardware and wall covering – it's all completely designed for that space."

Over 5000 leaders from industry, education, the military, science and engineering attending the opening of the Technical Center on May 16, 1956. Closed-circuit television was fed to sixty-two other locations so another 25,000 could share in the festivities. Speakers included GM President Harlow Curtice since C. E. Wilson had become US Secretary of Defense in 1953, Lawrence Hafsted, GM's director of research and former chairman of the Atomic Energy Commission, Charles F. Kettering, GM emeritus director of research, and President Dwight D. Eisenhower via closed-circuit TV from the White House.

Curtice explained, "The campus-like atmosphere was sought deliberately, not to impress visitors but because we believe such surroundings stimulate creative thinking and are conducive to good work." He also stated that "the inquiring mind approach" was characteristic of GM's research and "this great Technical Center will enable General Motors not only to carry on the tradition of the inquiring mind but even to speed the processes whereby many more developments may be brought into being for the good of all."

Hafsted called the Center an example of faith in GM management and the future of the country; "We find ourselves in a race with the USSR for continuing technological supremacy... Our choice is brutally clear. As a society, we can either learn mathematics and science – or Russian." Kettering was more primal; "The Technical Center then after all is a facility. I think of it as a great intellectual golf course where we can go out and practice."

Eisenhower dipped deeply into the overemphasis trough and stated, likening Sloan and Kettering to "frontiersmen... symbolic of the United States, alluding to Lewis and Clark, Zebulon Pike, Ben Franklin, George Washington, Patrick Henry, Thomas Jefferson and Abraham Lincoln. He called the Technical Center "a place for leadership furthering new attacks on the technological frontier."

The opening of the Technical Center's dedication was featured

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prominently and positively on the front pages of newspapers and the evening news. Life magazine allotted six pages of its "unusual beauty" under the title "Architecture for the Future: GM Constructs a 'Versailles of Industry.'"

Fortune magazine noted that unlike other postwar research laboratories that "followed a pattern of ultramodern décor on parklike acres, far from the pressures and distractions of production departments or corporate offices," GM's Technical Center "conforms to the postwar fashion, but in its wedding of a great modern architect with GM engineering, it achieves a new serene integration." And in recognizing Eero, *Fortune* continued, "The achievement, which is Saarinen's, is to have held all this advanced technology under admirable control in designing an integrated series of buildings that are modern but not freakish, functional but not barren, imposing but not overblown, clean and cool in line but with an underlying warmth achieved through a bold orchestration and notable architectural use of color."

Business Week, the *New York Times Magazine*, *Architectural Forum* and others were similarly effusive in comparing GM's facility to those research facilities of the many other leading US technology industries expanding after WWII. Saarinen's GM Technical Center became the gold standard for The Corporate Campus in America.

The Tech Center was the first major independent project of Eero Saarinen after forming his own firm. The collaborative methods of design he practiced were used in his successful applications in other large-scale corporate campus environment for clients including Bell Labs, IBM, and the John Deere & Co. World Headquarters. His design for the Tech Center received architectural accolades beginning in 1956, when it was hailed as "one of the great 20th Century compositions born out of the sense of civic responsibility of a great corporation" by Max Abramovitz, and it was again described as an "Industrial Versailles" by *Architectural Forum*.

Its architectural importance was cited as the primary reason for the center's 2014 National Historic Landmark designation. The American Institute of Architects honored it in 1986 as the most outstanding architectural project of its era.

Saarinen was criticized by some architectural critics, principally historian Vincent Scully, for the fact that each one of Eero's projects was completely different from its predecessor, and that therefore his work amounted to exercises in corporate branding rather than pure architecture. However, history has shown that Saarinen was an original form-giver, looking at each project, its program, site, constraints and opportunities requiring a respectful and complete response. This differs from the early 21st century fascination with starchitects – Gehry, Meier, Libeskind, Calatrava, Foster, Koolhaas, Stern, Pei, Hadid, Mayne, etc. - who approach each project as another opportunity to reprise their particular kit of parts, regardless of its appropriateness. Their



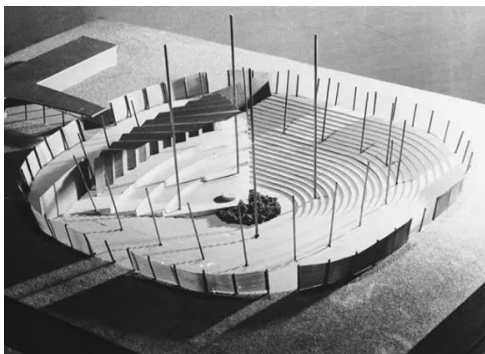
Top to Bottom:

1. GM Tech Center Administrative Office Building
2. GM Tech Center Executive Office
3. GM Tech Center Lobby Stair Presentation Drawing by Saarinen





Top to Bottom:
1. GM Tech Center Cafeteria
2. Aspen Music Center
3. Aspen Music Center Interior
4. Aspen Music Center Model



resulting projects are more about them than the client, the site or the users. Eero's work was about architecture, the client and the users.

Aspen Music Center; Aspen, CO; 1949:

The Aspen Music Festival and School (AMFS) is a classical music festival held annually in Aspen, Colorado. It is noted both for its concert programming and the musical training it offers to mostly young-adult music students. Founded in 1949, the typical eight-week summer season includes more than 400 classical music events - including concerts by five orchestras, solo and chamber music performances, fully staged opera productions, master classes, lectures, and children's programming - and brings in 70,000 audience members.

The original buildings at the Aspen Music Festival and School and the overall inspiration for the campus are the brainchild of Herbert Bayer, Bauhaus architect, designer and artist who was brought to Aspen from Chicago by Elizabeth and Walter Paepcke in the late 1940's to tune up the ramshackle, sleepy ghost town they had found high in the Rockies. Walter, head of the Container Corporation of America and Elizabeth, with her Cranbrook Academy art and design education, were responsible for founding the Aspen Music Festival and School and the Aspen Institute - and bringing Saarinen to Aspen - as well as the now-extinct International Design Conference in Aspen, organizations that are largely responsible for the city's intellectual and cultural eminence today.

Saarinen's fireproof canvas tent was 147 feet long on its four sides and 45 feet tall, seating 2000. An eight-foot deep bowl and four-foot high berm at the perimeter muted sounds from the outside. A pleated plywood wall at the back of the triangular stage helped bounce sound out to the audience and mitigate the sound-absorbing qualities of the canvas tent. The tent's four primary masts extended outside and supported lights, which provided soft illumination inside and gave the tent excellent visibility at a distance. Constructed at a cost of \$15,000, the tent was disassembled and stored in the off-season.

In the 1950's, the original music tent had serious problems separating the artists from the animals. Gophers would seek shelter by diving under the stage as packs of dogs chased them into the tent, halting performances. Eventually, a violinist's son was designated as the Festival's "dog catcher." The tent was replaced in 1963.

Brandeis University; Waltham, MASS; 1949-1952:

After WWII, a group of Jewish academics and businessmen determined to establish a nonsectarian Jewish liberal arts college. They acquired a 90-acre parcel from Middlesex Medical College for their 1948 incoming freshman class of 107 students.

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The site featured rolling hills and rocky terrain with considerable wetlands and a swamp. The site contained over a dozen dilapidated buildings dating back to its early use as a farm. A castle-like structure on a stone outcropping at the eastern edge of the site was also in poor repair.

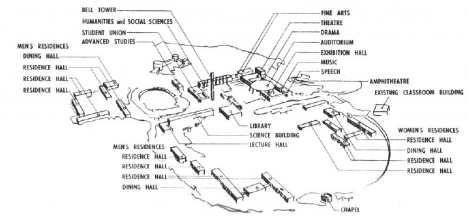
In 1950, Brandeis University President Dr. Adam Sachar and the university's Director of University Planning Dr. David Berkowitz reasoned that a Master Plan was needed and as an internationally prominent proponent of modern architecture, Eero Saarinen was selected. Saarinen, the university's Board of Trustees and academic consultants conducted a feasibility analysis of the existing buildings. Some of the existing structures were refurbished and others demolished. The Castle was renovated as a women's dormitory and Boston architects were engaged to modernize and expand older existing buildings. Saarinen's selection by Sachar brought immediate prestige to the university.

Saarinen first visited the campus in the spring of 1949. In an exchange of letters with Sachar, the young Saarinen outlined his educational philosophy and the architectural character he envisioned for the future campus. Saarinen expressed his strong interest in the commission and his enthusiasm for the architectural possibilities of the project. President Sachar and the Board of Trustees were impressed with Saarinen's conception and officially authorized the project to begin that summer. The project was conceived in two phases: the first to create preliminary drawings of the site and the second to produce a brochure to publicize the plan and bring it to the attention of possible donors.

There is no question that Saarinen expected to be engaged to implement his master plan. Yet this aspect of the project, however, remained unresolved throughout Saarinen's association with Brandeis. Because of the university's interest to move forward quickly, Saarinen selected the noted young architect Matthew Nowicki to collaborate on the project. The two men worked intensively throughout the summer preparing the drawings for the Master Plan brochure and a series of building designs.

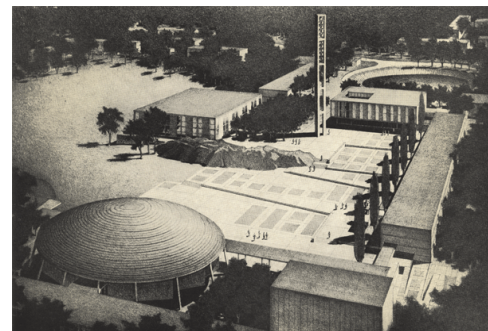
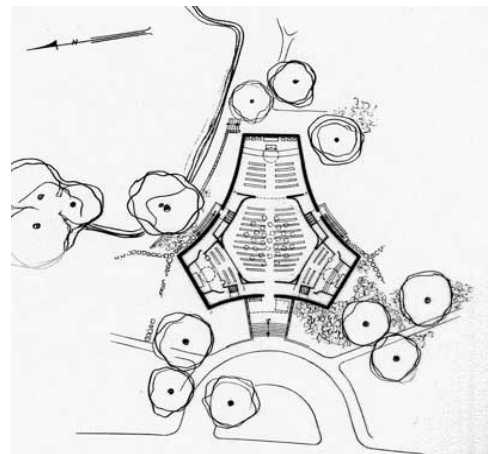
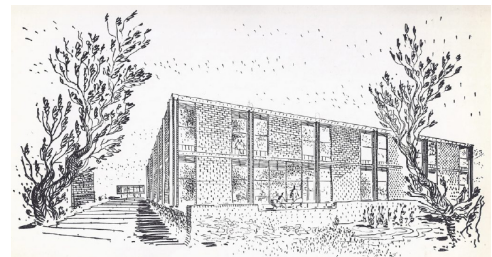
Matthew Nowicki (in Poland known as Maciej Nowicki) was a Polish architect, chief architect of the new Indian city of Chandigarh. Nowicki was born in Chita in Siberia. After the Second World War, he received a commission to work on plans for the reconstruction of Poland's capital city, Warsaw. In December 1945, he was posted to New York City as an official delegate of the Polish state, to advertise the rebuilding of Poland. Nowicki was the architect of the J.S. Dorton Arena in Raleigh built in 1952 after his death. He was a member of the 'Workshop of Peace' team working on the United Nations Headquarters, and was a chair of the Faculty of Architecture at North Carolina State University.

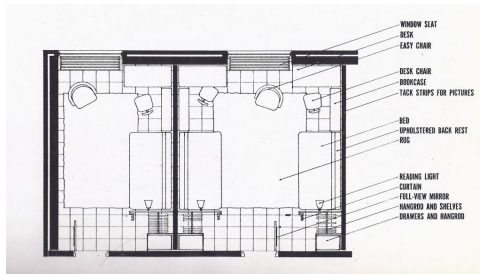
Nowicki associated himself with Albert Mayer of the



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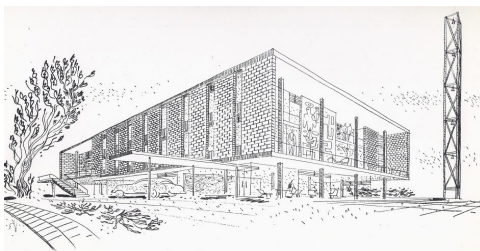
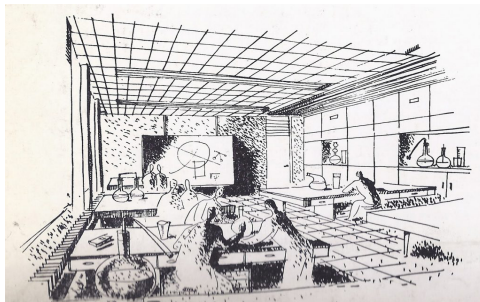
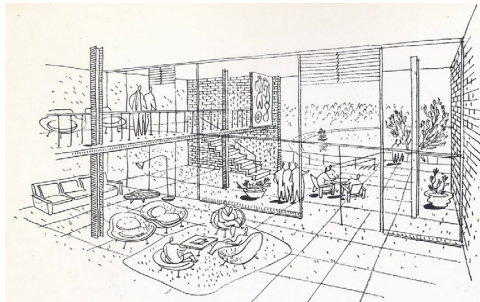
1. Brandeis University Original Saarinen Master Plan Rendering
2. Brandeis University Library Rendering
3. Brandeis University Original Chapel Plan, 1951
4. Brandeis University Science Center Rendering





Top Down:

1. Brandeis University Dorm Room Plan
2. Brandeis University Student Union Interior Rendering
3. Brandeis University Science Center Interior Rendering
4. Brandeis University Student Union & Bell Tower Rendering
5. Brandeis University Massell Quadrangle Rendering



Massachusetts firm of Mayer and Wittlesey in the design of an urban plan for Chandigarh, the new capital for the state of Punjab, in India. Nowicki and Mayer provided an overall geometric order in their city plan, which was inflected at the neighborhood level to respond to topography, prevailing winds and proposed uses. Although the pair was not hired to produce architectural designs, Nowicki spent two months in India absorbing Hindu culture and waiting for the local planners to organize themselves, during which time he produced a number of detailed sketches for structures to be built in the new city. Tragically, on his way back to the United States in 1950, Nowicki was killed in a plane crash near Cairo returning from Chandigarh.

The results of the efforts of Saarinen and Nowicki was the publication in November 1949 of the first edition of *A Foundation for Learning: Planning the Campus of Brandeis University*, which consisted of a description of the educational goals of the new university along with a series of perspective renderings of the campus. The projected Master Plan presented in the brochure consisted of a number of rectangular buildings for the sciences, humanities, and the social sciences. Also included in the central area were a library and a student center. At the edge of the academic quad was the Creative Arts Center, which featured a dramatic circular auditorium.

Dormitories were on the road at the perimeter and organized in three separate rectangular clusters. The master plan also included a single interdenominational chapel and was excepted to require ten years to implement at a cost of \$20 million. During the early 1950's, a number of revisions to the Master Plan were made, including a large rectilinear structure to serve as the University Museum and a circular greenhouse attached to the science center.

The second edition of the brochure illustrating the Saarinen Master Plan contained a more careful study of the terrain. The outcropping of a huge stone ledge near the center of the Academic Quad was clearly depicted. This and other rock formations found throughout the campus created natural sculpture.

Once the planning stage was completed, Saarinen built Ridgewood Quadrangle, as well as Sherman Student Center and Shapiro Dormitory in the Hamilton Quadrangle, later known as Massell Quadrangle. By 1952, architectural projects were being awarded to other firms, and Saarinen's original plan -- except for the surrounding quadrangles -- was abandoned. Had his original plan been carried out, the Brandeis campus would look radically different today.

Saarinen's enthusiasm for the Brandeis project was due not only to his appreciation of its "wonderful site," but to the opportunity of creating a 20th-century environment of unity and order. In contrast to the restrictions imposed by already existing campus buildings, such as those encountered at Drake University, the Brandeis commission offered a more flexible program with fewer existing buildings to be preserved. The Saarinen Plan called for

almost all of the old Middlesex buildings to be demolished. Only the Castle found its way into Saarinen's Brandeis Master Plan.

The judgment to preserve Smith's Castle and renovate it into women's dormitories was practical and aesthetic. The pressing need for more living space was of course a major consideration, but the Castle's distinctive appearance also played a role. The Castle's dramatic location near the site of the Academic Quadrangle and across from the elliptical reservoir created a linkage to the past and a ready-made tradition for the new school.

The towers and turrets of the Castle contrasted with the crisp rectangular forms projected by Saarinen for the Hamilton dormitories, now called the Massell Quadrangle. Following the basic tenets of the International Style, the architect envisioned a grouping of rectangular structures conforming to a basic right angle grid. The result is strikingly similar to the design by Ludwig Mies van der Rohe for the campus of the Illinois Institute of Technology.

The original site of the women's residence halls was on the western edge of the campus. However, subsequent expansion of the creative arts area spread beyond the quadrangle. Although all the buildings of the complex are similar in their box-like brick facades with windows set in metal frames, only the Shapiro Residence Hall and Sherman Student Center were built under the architect's supervision. Saarinen's hand is clearly evident in the selection of orange-toned, rustic brick and the use of color-coordinated mortar. The proportion of the Shapiro Residence Hall in comparison to the other dorms that surround the old Middlesex ice pond is also more sensitive to human scale.

One of the more interesting features of the Sherman Student Center was the architect's design for the facade facing the pond. Here Saarinen utilized one of the basic features of the International Style by creating a "curtain wall" rising the full height of the building. Unfortunately, over the years, certain modifications have been made to the original design. This is sadly true of Sherman, where energy conserving measure have altered the overall appearance of the building, substituting bands of windows in place of the original transparent wall.

Architects working from Saarinen's designs and the guidelines of the Master Plan completed the remaining three buildings a few years later. What had begun with such promise was lost to expedience. Of the four buildings that Saarinen actually designed, three have been drastically altered and a fourth lost to the wrecker's ball. Saarinen's conception of the Brandeis chapel never became more than a rendering, although one can now see it with certain modifications on the campus of the Massachusetts Institute of Technology.

Eero Saarinen's connection to Brandeis came to an end by 1952. Although the architect had conceived of a campus built in his personal style, many factors, including construction costs and



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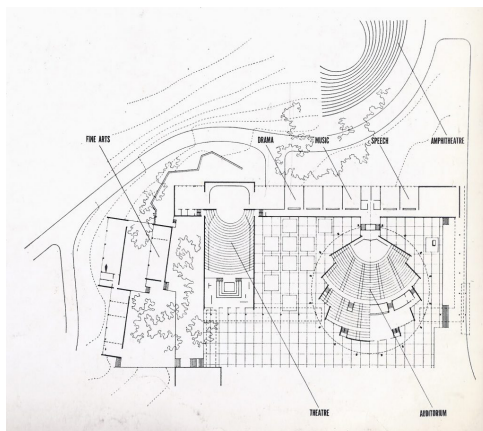
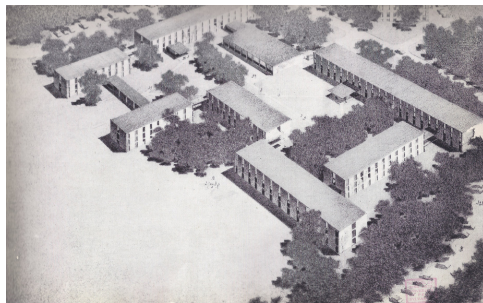
1. Brandeis University Aerial:
 - Purple: John Hall Smith
 - Yellow: Eero Saarinen
 - Blue: Max Abramovitz
 - Red: Hugh Stubbins
 - Green: Ben Thompson/TAC
 - Orange: Shepley Bullfinch
2. Brandeis University Smith's castle
3. Max Abramovitz





Top to Bottom:

1. Brandeis University Massel Quadrangle Rendering
2. Brandeis University Sherman Center
3. Brandeis University Quadrangle Presentation Drawings
4. Brandeis University Creative Arts Center Plan



difficulties in fundraising, made that impossible. Saarinen's expectations for his Master Plan no longer seemed viable as local architects were awarded the commission for the Shapiro Gym.

Sachar's first choice for the campus architect had been Max Abramowitz, a good friend and former student. When Abramowitz turned him down, he had turned to Saarinen. But from the mid-50's and for 30 years thereafter, Abramowitz either designed or directed the design of new buildings on the Brandeis campus. The new Abramowitz 1959 Master Plan utilized Saarinen's system of organization by placing the residence halls at the periphery of the academic facilities. Abramowitz's desire to preserve the natural landscape of the site led to his choice of small units rather than monumental blocks. The small unit approach may have also reflected problems in attracting large donations for individual projects.

Another important visual connection between the Abramovitz and Saarinen plans is seen in the continued use of red brick with limestone or concrete trim. The few exceptions to this formula, in such buildings as the Rose Art Museum or the Three Chapels, were labeled by President Sachar as "prima donnas," because they stood out dramatically on campus.

Perhaps the most basic link between the Saarinen and Abramovitz conception of the Brandeis Master Plan was the strong commitment to the basic tenets of the International Style of architecture. For better or worse, both architects adopted the rectilinear, flat-roofed glass box, which in the years following World War II was regarded as cutting-edge modernism.

Another interesting architectural feature of Brandeis was the number of architects who were commissioned to work on campus. Abramovitz, during his tenure as Sachar's "architectural counsel," made a concerted effort to bring a variety of architects to the University. From the steel and glass structures of the science buildings by Shepley, Bulfinch, Richardson, and Abbot to Benjamin Thompson's award-winning designs for the Academic Complex, dozens of architects have contributed to the Brandeis experience.

Abramovitz wanted to create a distinctive architectural identity for Brandeis and utilized materials that complimented the New England environment: red brick, fieldstone, and glass. Eero Saarinen's involvement with the master plan project and execution for Brandeis was brief with his leave in 1952, by which time four of his building designs had been built.

According to information in Bernstein's, *Building a Campus: An Architectural Celebration of Brandeis University's 50th Anniversary*, "Although the architect [Saarinen] had conceived of a campus built in his personal style, many factors, including construction costs and difficulties in fundraising, made that impossible. Saarinen's expectations for his Master Plan no longer seemed viable as local architects were awarded the commission for the Shapiro Gym."



Above: Loja Saarinen House
Below: Irwin Miller Cottage; Muskoka, Ontario



The 1950's master plan developed by Saarinen & Associates did not achieve full execution but provided a basis of design that forever marked development of the future campus. In the current day Brandeis University map, the centralized core, chapel, and residence halls can all be found in the same areas as proposed in the initial Saarinen master plan that had established a guideline of values to follow in maintaining the goals of creating a model university that expressed ethnic and religious pluralism.

Berstein reflects on both architects adoption of the rectilinear, flat-roofed glass box, which in the years following World War II was regarded as cutting-edge modernism, as well as the architectural feature of Brandeis to include the number of architects who were commissioned to work on campus. "Abramovitz, during his tenure as Sachar's "architectural counsel," made a concerted effort to bring a variety of architects to the University. From the steel and glass structures of the science buildings by Shepley, Bulfinch, Richardson, and Abbot to Benjamin Thompson's award-winning designs for the Academic Complex, dozens of architects have contributed to the Brandeis experience."

Abramovitz's scaleless brand of modernism and the number of different architects charged to design on the Brandeis campus caused the Brandeis campus to earn a listing on the "50 Ugliest College Campuses in America."

Loja Saarinen House; Bloomfield Hills, MI; 1950:

The Loja Saarinen House was designed by Eero Saarinen for his mother after the death of Eliel Saarinen. The house was constructed on the site of Eero's house in Bloomfield Hills. The house, at some point, was substantially altered to hold an enclosed swimming pool.

J. Irwin & Xenia Irwin Miller Cottage, "Llanwst"; Muskoka, Ontario; 1950-1955:

The Miller family had been summering in Muskoka, 140 miles north of Toronto since 1876. In 1950, J. Irwin Miller who was operating Cummins Diesel convinced Eero Saarinen to travel to Windermere on Lake Rosseau in Muskoka to design him a cottage for the family. Saarinen was never interested in residential design but took on the commission for his fellow Yale graduate and friend. The cottage was built near the family's previous summer home and was a modern style design that represented high art in its day.

Miller's wife Xenia played an important role in the design process. Xenia grew up in Columbus, IN and was the daughter of a furniture manufacturer that failed during the Great Depression. After high school, she worked as a purchasing agent at Cummins, becoming a skillful reader of blueprints and an excellent



Top to Bottom:
1. Miller Cottage
2. Miller Cottage
3. Miller Cottage
4. Irwin Union Bank & Trust Aerial



negotiator. She intended to go to college, but her supervisor convinced her that she would make more money with a career in manufacturing. She and Irwin began dating in the 1940's, and the couple married in 1943 in Washington, DC while Irwin was in naval officer training.

The Windermere site was a long peninsula of granite, typical of the region. This forced Saarinen to abandon any thought of a modular design, and instead required the development of a plan where almost no walls meet at a right angle.

Dotted with mature trees and rocky outcrops, the site's distinctive topography directed the cottage's unique arrangement of spaces. Saarinen organized the home's design according to the patterns of nature with living areas taking advantage of expansive lake views and the daily arc of the sun. Continuing the natural palette of the exterior, the Alexander Girard-designed interior spaces blend muted wood panels with bright splashes of red, orange, and yellow. Girard's aesthetic appealed to Xenia Miller and together the two created distinctive and playful rooms that highlighted Saarinen's modern interpretation of the regional vernacular. A seamless rhythm of indoor and outdoor spaces and natural materials, the Miller cottage relates to its surroundings, intimately connecting function to nature.

Saarinen's design fit the vernacular of cottages around Lake Rousseau and the Muskoka region: board and batten siding from trees on the site, stone walks, patios and retaining walls, open air porches, some covered. The Millers asked Eero to save as many trees as possible and avoid any blasting of the granite rock. The large boulder at the site's west dictated the level changes and organized the cottage's functions that flow north and south over the boulder. Saarinen placed the kitchen and an eating porch on the east to enjoy the morning sun. To the south, he positioned the dining room, which also served as a windbreak for the terrace. To the west, the living room and master bedroom enjoy views of the lake and sunsets. Between the two wings he located a large open stone terrace for sitting and outside dining with a pair to 50-foot hemlocks.

In his early scheme, Saarinen had the children in a separate building altogether to the north at the high point of the peninsula. But Xenia expressed concern about being so disconnected from the children. Saarinen reportedly tore the children's element off of the model and placed it on the cottages two wings as a second level bridge, resulting in the horseshoe-like plan of the cottage.

It bears noting that this project was being designed at the same time as the GM Technical Center with its attendant enormous scale. Yet Saarinen carefully terraced the house and its various room heights with the site and its stone bluff level changes, capping them with a single-slope copper roof that gave intimacy in its lower height to the master bedroom

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while delivering a grand two-story living room. Saarinen angled the exterior walls to optimize views of the lake, islands and sky for each room. With no hall on the first floor, circulation to the upper level involves the outdoor patios, protected by the roof.

Saarinen was collaborating with designer Alexander Girard on the color work at the GM Technical Center and engaged Girard to help with the cottage's interiors. With Xenia, they selected a dark brown stain for the wood siding, grey for the plywood panels, white wood window frames and saturated colors of red yellow and orange on the cottage doors.

A fire destroyed the house 'a few years back' and it was rebuilt in accordance with Saarinen's design.

Irwin Union Bank & Trust; Columbus, IN; 1950-1954:

The Irwin Conference Center, formerly known as Irwin Union Bank & Trust, was designed by Eero Saarinen and built in 1954 in Columbus, Indiana. It is currently owned and operated by Cummins, whose world headquarters is located across Jackson Street in the Cummins Corporate Office Building. In recognition of its unique and beautiful design, the resource was designated a National Historic Landmark by the National Park Service in 2001.

The building is a one-story bank structure and adjacent three-story office annex on a very prominent intersection in downtown Columbus, surrounded by two- and three-story Victorian commercial buildings. A portion of the office annex was built along with the banking hall in 1954. The remaining larger portion was designed by Kevin Roche, John Dinkeloo and Associates and was built in 1973.

Irwin Miller became president of the Irwin Union Trust Company after his father's death in 1947. Three years later, he commissioned Eero Saarinen to design a new building for the bank. The building was designed to distance the Irwin Union Bank from traditional banking architecture, which mostly echoed imposing, neoclassical style buildings of brick or stone. Miller wanted the building to symbolize the bank's progressive mission, which included offering some of the first credit cards and earliest drive-through banking. Miller wanted the new building - immediately across the street from the bank's existing headquarters, to avoid the bank's inhospitable barred teller cages and limestone exterior, the traditional images of wealth, power and security.

Miller asked Saarinen to place the bank president's office in the center of the building to force daily interaction with customers, and that the bank's boardroom be available for community meetings. Instead of having tellers behind iron bars and removed from their customers, Saarinen worked to develop a building that would welcome customers rather than intimidate them.



Top Down:

1. Irwin Union Bank Street Corner at Night
2. Irwin Union Bank Aerial at Night
3. Irwin Union Bank Interior
4. Irwin Union Bank Drive-Through





Top Down:

1. Irwin Union Bank Interior
2. Irwin Union Bank Street Corner Presence
3. Irwin Union Bank Strair
4. Irwin Union Bank Corner Presence at Night



After spending a few days in Spain with a friend, Swedish textile designer Astrid Sampe, Eero wrote her, "I fly from Dallas to Columbus, Indiana where before the war we built a church. Perhaps you remember it. The same family, only a younger generation, wants to build a bank. We now have what I think is a very good scheme. I don't think it would be just the way it is unless you and I had been to Cordoba and seen the mosque. It is a wonderful opportunity to do something really good and different because the client is simply out of this world. It is going to be a bank without any pompousness, absolutely no intention to impress. All it is a very low glass enclosed marketplace-like little building in the middle of the town."

The structure has changed ownership twice since 2008 and is now operated by the corporate hospitality division of Cummins as a community center.

The glass building looks simple, but like all Saarinen's projects, every aspect of the space was designed after extensive research of its use. The ceiling was designed at 11'-6" in height so the space would not feel oppressive. A freestanding structure for files occupies the center in the building so that the office floor would be open and uncluttered. The colorful counters where tellers worked were equipped with removable plastic hoods when traffic demanded additional counters. A small elevator and spiral staircase gave tellers secure access to the cash vault below and two steel and glass vestibules connect the glass pavilion to the three-story office annex, where customers could transact business privately.

The grid of large flattened domes on the roof of the bank was a source of amusement for the townspeople, who jokingly called the bank a "brassiere factory". Nevertheless, they loved the building and customers and deposits increased fourfold. The floor is a basketweave of brick to acknowledge Miller's concern that factory workers with oil on his boots not feel uncomfortable walking in to do business.

Saarinen developed a novel teller line that was open above teller height with fiberglass hoods that were removed when a teller was open indicating where service was available, but when in place, create a continuous band that causes a closed position to disappear. The drive-up teller window was an innovation at the time.

Saarinen's bank building only occupies one-third of the site, with the rear portion housing a drive-through window and large parking lot surrounded and intersected with trees. Landscape architect Dan Kiley chose specific types of trees and foliage in order to integrate the bank with its neighboring buildings and help shade the inside of the bank. He used littleleaf linden trees as the basis of the space, with euonymus as ground cover and seasonal spring bulbs, begonias, geraniums, and chrysanthemums as accents.

The goal was to create a green space in the middle of downtown

Columbus and provide the city with some breathing room. Since the bank building is lower in height than the surrounding buildings, its landscape feels more park-like. As the number of automobiles on the streets grew in the early 1950's, spaces like this helped relieve the congestion of busy downtown areas.

Because of the impacts of the bank's activity in the subprime loan market, in September 2009, the Indiana Department of Financial Institutions closed the Irwin Union Bank and Trust Company and named the Federal Deposit Insurance Corporation (FDIC) as receiver. First Financial Bank of Hamilton, Ohio, purchased all deposits and virtually all assets of Irwin Union Bank and participated in a loss-share transaction jointly with the FDIC. The FDIC estimated that the cost to the Deposit Insurance Fund (DIF) for both institutions was \$850 million.

In 2010, Cummins purchased the building from First Financial and remodeled the bank and associated buildings at a cost of \$5.25 million. First Financial continued to occupy the building until its new facility was completed in 2012. The Saarinen-designed structure is now used for a corporate and community conference center and meeting space.

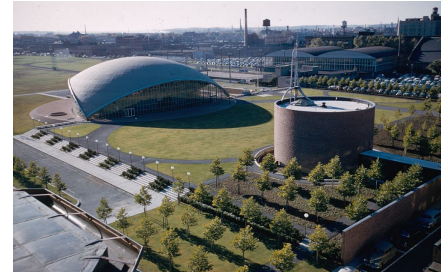
Massachusetts Institute of Technology; Cambridge, MA; 1950-1955:

Kresge Chapel:

The MIT Chapel is a non-denominational chapel designed by Eero Saarinen on the campus of the Massachusetts Institute of Technology in Cambridge, Massachusetts, next to Kresge Auditorium and the Kresge Oval, which Saarinen also designed. Though a small building, the Chapel is often noted as a particularly successful example of mid-century modern architecture in the United States. Saarinen also designed the landscaping surrounding all three locations.

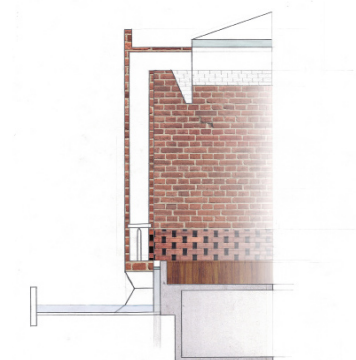
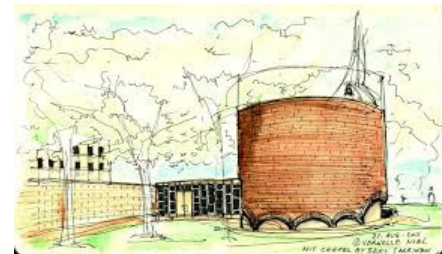
From the outside, the chapel is a simple, windowless brick cylinder set inside a very shallow concrete moat. It is 50 feet in diameter and 30 feet high, and topped by an aluminum spire. The brick envelope is supported by a series of low arches. Saarinen selected bricks that were rough and imperfect to create a textured effect. The whole is set in two groves of English Sycamore trees, with a long wall to the east, all designed by Saarinen. The wall and trees provide a uniform background for the chapel, and isolate the site from the noise and bustle of adjacent buildings.

Within the chapel is an intimate space, stunning and inspiring in its immediate visual impact. Windowless interior walls are undulating brick. Like a cascade of light, a full-height metal sculpture by Harry Bertoia glitters from the circular skylight down to a small, unadorned marble altar that sits atop three steps. Natural indirect light filters upward from shallow slits in the walls catching rippling reflected light from the moat. The dim



Top Down:

1. MIT Kresge Chapel & Auditorium
2. MIT Kresge Chapel Altar Rendering by Saarinen
3. MIT Kresge Chapel Exterior with Moat
4. MIT Kresge Chapel Wall Section





Top Down:
1. MIT Kresge Chapel Interior
2. MIT Kresge Chapel Entry Path
3. MIT Kresge Chapel Holtkamp Organ
4. MIT Kresge Chapel Perimeter Wall & Indirect Light



ambient light is complemented by artificial lighting. The chapel's curving spire and bell tower were designed by sculptor Theodore Roszak.

The chapel has an excellent organ that was custom-designed for the space by Walter Holtkamp of Cleveland's Holtkamp Organ Company. Holtkamp was instrumental in the 1950's in the revival of the classic school of organ-building. Leland M. Roth included Saarinen's MIT Chapel in his *History of American Architecture*, using it to illustrate the contrast between Saarinen's approach and that of Mies van der Rohe, who had designed a chapel for IIT. Roth said "through the sheer manipulation of light and its focus on a blazingly white marble altar block, Saarinen created a place of mystic quiet."

In its invitation to initiate a private ritual in a public space, the altar of the Kresge Chapel hinges on the simple drama of the Bertioia wire sculpture that occupies its center. A stunning curtain of small, bronze-coated metal rectangles, held afloat by 20 pieces of taut wire, the altarpiece is undeniably spiritual.

"Eero thought of Harry when time for the MIT Chapel came," recalled Celia Bertioia, the sculptor's daughter. "He explained the skylight and Harry came up with different designs, but they knew that they wanted to use that one source of light, to create the appearance of rays of light coming from the heavens."

Saarinen later recalled the inspiration behind the focal point of his chapel. "I have always remembered one night on my travels as a student when I sat in a mountain village in Sparta," he wrote. "There was bright moonlight over head and then there was a soft, hushed secondary light around the horizon. That sort of bilateral lighting seemed best to achieve this other-worldly sense. Thus, the central light would come from above the altar—dramatized by the shimmering golden screen by Harry Bertioia—and the secondary light would be light reflected up from the surrounding moat through the arches."

Bertioia was determined to capture the sublime quality of the light that Saarinen sought, and did so by giving the surfaces of the altarpiece a rough texture. "As he was installing the piece he wanted to get it at a certain tension," Celia explained. "He would pluck the wires almost like a violin to make sure they were at the correct tension. It was an unusual design for a sculpture because it has no base, it was simply these wires stretched in space. But Harry was all about space... There's very little material there—it's just a few wires and metal, but a lot of space and light."

Said Eero Saarinen, "I am happy with the interior of the chapel. I think we managed to make it a place where an individual can contemplate things larger than himself."

Kresge Auditorium:

The idea of the dean of the school of architecture at MIT was to create an area on the field that would serve to bring students to

organize parties, weddings, offices of various religions and social gatherings. To this end, Saarinen was commissioned to design a non-denominational church, an auditorium, a social space for students and a place to serve as a link between this space and Massachusetts Avenue in Cambridge. The student union design, which would have run perpendicular to Massachusetts Ave. to create a boundary wall for the plaza, was never realized.

Saarinen's design for the plaza itself, with triangular swatches of paving and grass atop below grade parking, was rejected in favor of a simple lawn. The bold yet simple geometric forms of the two built projects - Kresge Auditorium and the MIT Chapel - face each other across an ample open space. Materially and formally each is crafted to reflect its function.

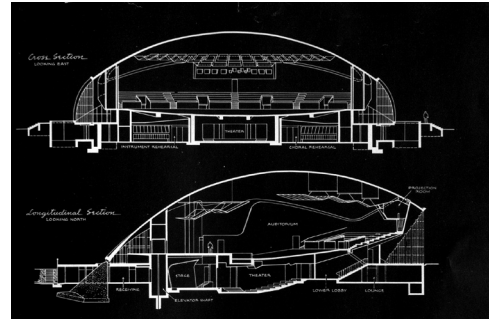
Saarinen's Kresge Auditorium was an experiment in architectural form and construction, appropriate for the Massachusetts Institute of Technology with its focus on technology and innovation. This feat of sculptural engineering serves as a popular meeting house and is part of the cultural, social, and spiritual core of MIT's campus. Kresge Auditorium is one of Saarinen's numerous daring, egalitarian designs that captured the optimistic zeitgeist of Post-war America.

As inscribed above its main stairwell, Kresge Auditorium was dedicated in 1955 to serve as "the meeting house of the Massachusetts Institute of Technology." Saarinen's design of Kresge serves as a well-known example of thin shell concrete structure, drawing visitors from around the world. The roof, supported on only three points, was originally covered with smooth and bright white orastone, then replaced by lead sheeting attached with a mesh of stainless steel wire, before finally being replaced in 1980 with the copper roof seen today.

Ironically, Saarinen had originally wanted a copper roof, but no one at the time knew how to attach it to this type of structure. The interior of Kresge houses a 1,200-seat performance hall, 200-seat theatre, as well as rehearsal rooms and dressing rooms. These spaces serve as the primary performance facilities for MIT Music and Theatre Arts productions as well as work by a number of student organizations.

The design of the Auditorium for the MIT was an architectural experiment about which Eero Saarinen said: "... looking back to these early works, I think that the dome of the Auditorium and the Church can be criticized for being too egocentric. The shapes of the buildings are closed. Contribute nothing to create a unity with the environment. From the beginning, we think these buildings on a large square, but forgot to define and crystallize as achieved exactly, should have done..."

"... The strongest and most economical way to cover an area with concrete is with a dome and a dome with a thin concrete shell seemed appropriate for a college interested in technological progress..." (Eero Saarinen, 1955)



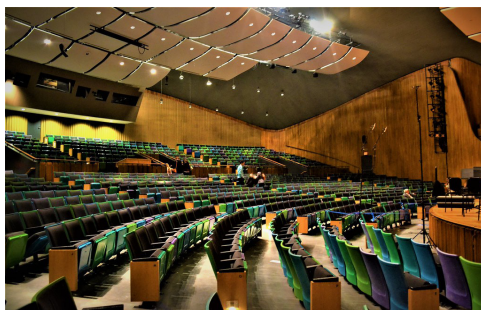
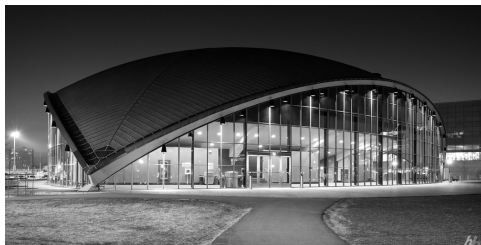
Above, Top to Bottom:

1. Kresge Auditorium Sections
2. Kresge Auditorium Under Construction
3. Kresge Auditorium Under Construction
4. Kresge Auditorium Original White Roof





Top to Bottom:
1. Kresge Bearing Point Roof
2. Kresge Auditorium at Night
3. Kresge Auditorium Interior, Front
4. Kresge Auditorium Interior, Rear



The buildings are named in honor of Sebastian S. Kresge, founder of Kresge Stores and the Kresge Foundation, which provided funding for both buildings, hoping to serve as a nexus for social, cultural and religious life of MIT.

The Auditorium houses a small theater with capacity to 204 seated spectators, the concert hall and rehearsal rooms. Access on the ground floor opens onto an elongated hall, an intermediate zone between the lowest small theater level and the highest auditorium level. Also on the ground floor are a rehearsal room, a living room, locker rooms, a wardrobe and a small shop.

The largest room has a maximum capacity of 1,226 people, but when the stage extends over the section of seats, there are only 1,144 available. It is used for concerts, lectures, conferences, plays and other important events. The acoustics of the main room Saarinen worked with the Bolt, Beranek and Newman architects who resorted to enhance the sound hanging "clouds" to absorb the direct sound on stage, rather than the traditional plaster ceiling. These clouds also contained lights, speakers and ventilation. The walls are lined with natural wood.

The auditorium now has a standing seam coated copper roof springing from the ground at three points with transparent glass walls that fill the arches created by the shape of the roof. The distinctive design detail is marked by its elegant dome, originally white, an eighth of a sphere anchored on points that remain hidden, shaping a thin cover with a triangularized plane. In the three faces that form between the pillars' high arches that rise to meet the concrete shell, creating three glass facades of the building are deployed. The thin cover Kresge Auditorium was the first built thin shell structure constructed on a large scale for a public building.

The truncated dome enclosing a triangular space of 20,700 square feet and reaches a height of 47 feet. With the primary structural ceiling that varies between 7 and 18 inches thick, the resulting span is 107 feet. Rigid reinforced edge along the perimeter beams defining the roof and large, solid transparent facades. A second non-structural layer, with the average thickness of 2.5" of lightweight concrete was used as a substrate for the cover.

The project had to face numerous tests during and after construction. The roof, originally intended to be supported only by three major bearing points, required the addition of vertical structural stiffeners behind the glass, as the deflection of the poured concrete edge beams was higher than expected. Saarinen's original curtainwall details called for neoprene gaskets on steel angles with no slip-joint to accommodate movement.

Both the chapel and the auditorium were not lovingly received by the public at the time, with much criticism highlighting the challenges with the auditorium's construction and its roof leaks. The shape of the roof edge beams caused the water to flow naturally to the three support points. Due to inadequate

mixing of the concrete filled roof deck, the original roof began to leak water, which traveled to the walls. This last fault was quickly fixed by replacing the existing roof with a new copper cover. Due also to an absence of insulation, water filtration and condensation over the years caused corrosion of reinforcing steel structural frame, until a complete structural renovation was necessary in 1979, and again in 2016.

Finding the right material for the lining of the dome of double curvature represented a challenge. At first it was thought that marble tiles over plates coated copper lead would be appropriate, but the high costs caused this alternative to be rejected. Saarinen finally selected a cover created with sheets of limestone mixed with liquid acrylic polymer, providing a shell of "pure white."

By only 1963, the thermal movement had stained the building and the resulting cracks and delamination required roof replacement. Square sheets of lead were then installed. Water penetration through the lining of lead caused severe deterioration due to freeze-thaw cycles. In 1979, the concrete and reinforcing beams near each edge were replaced and the cover boards were filled copper.

After 60 years of regular use, both the Auditorium and Chapel were renovated in 2016 with new building services, upgraded curtain walls with new laminated glass at Kresge Auditorium and uniquely restored art glass - laminated for strength and performance at the chapel - repairs to masonry, concrete, roofing and waterproofing, a renewed hardscape and flooring, and subtle, though important programmatic and interior enhancements.

Sebastian Kresge and his foundation distributed over \$60 million prior to his death in 1966, helping to fund facilities on twenty-eight US college campuses.

School of Music, University of Michigan; Ann Arbor, MI; 1951-1956:

While Saarinen worked on thirteen projects for the University of Michigan, including the seven story brick/ glass Dexter Hall Housing and an adjacent one-story continuing education center and auditorium, only the School of Music was built to his design.

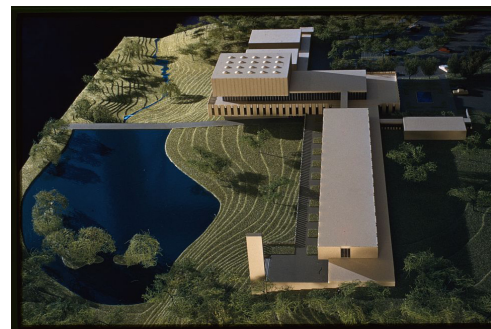
The School of Music was developed with Saarinen and Lynn W. Fry, a member of the UM Supervising Architect's Office. The initial scheme called for an L-shaped structure with an adjacent circular concert hall. The project as constructed is a brick clad concrete building nested into a hill overlooking a pond with a five-level pavilion of offices and a library. Its wings that flank the central mass are classrooms and performing arts spaces.

The long linear building was an attempt to achieve acoustic



Top Down:

1. Kresge Auditorium Lobby
2. Kresge Auditorium Roof Repair
3. Kresge Auditorium Under Snow
4. University of Michigan School of Music Model





Top to Bottom:

1. School of Music, Univ. of Michigan, Model
2. School of Music, Univ. of Michigan
1. Milwaukee County War Memorial
2. Milwaukee War Memorial West Elevation
4. Milwaukee War Memorial Interior Courtyard



isolation of the program elements and practice rooms. The outdoor amphitheater was downsized twice and two performance and rehearsal halls were eliminated. No outdoor concert hall was built.

After he designed the Music School, Saarinen perceived the university's will to complete a coherent scheme for the North Campus was lacking and he resigned as the project's design architect.

Milwaukee County War Memorial; Milwaukee, WI; 1952-1957:

After World War II, Eliel Saarinen was commissioned to create an arts complex on the Lake Michigan shore with a museum, performing arts center, and veterans' memorial. After Eliel died in 1950, son Eero Saarinen took over the project. When fundraising proved insufficient, Saarinen reconfigured the plan without the performance space. Construction began in 1955, supervised by Milwaukee architects Maynard W. Meyer & Associates.

Eero Saarinen's innovative design for the War Memorial Center was influenced by the abstract geometry of modern French architect Le Corbusier. Saarinen incorporated many of Le Corbusier's ideas: lifting the bulk of a building off the ground on reinforced columns; eliminating load-bearing walls to allow a freeform façade and a flexible open floor plan; and using plazas, courtyards, and rooftop terraces to allow an interaction between internal and external spaces. The building, a concrete, steel, and glass cruciform floating on a pedestal, included three major components, as Saarinen described:

"One is the base, which builds the mass up to the city level and contains an art museum; the second, on the city level, is the memorial court with a pool. The court is surrounded by the polyhedron-shaped piers, which support the building and also make frames for the breathtaking views of the lake and sky. The third part is the superstructure, cantilevered outward thirty feet in three directions, which contains the meeting halls and offices of the veterans' organizations."

In 1957, the War Memorial Center was dedicated "To Honor the Dead by Serving the Living." The western face of the building features a memorial mural by Wisconsin artist Edmund Lewandowski, a mosaic of 1.4 million pieces of marble and glass. The original Museum had a dramatic entryway from the central courtyard, with stairs down to three large exhibition galleries. A 1975 addition designed by David Kahler greatly expanded the Museum's gallery space.

The building's design was praised by *Time* magazine as "one of the country's finest examples of modern architecture put to work for civic purposes."

Essays on Architecture:

Eero Saarinen - America's Modern Form-Giver

The jurors for the 1955 *Progressive Architecture Awards* program defined their task to single out projects that represent for the profession an “advance, or points of departure,” rather than “mere competence, or points of arrival.” The jury, which included Walter Gropius, singled out Eero Saarinen & Associates’ War Memorial Center for an Honor Award. Saarinen was widely noted for his sharply different approach to each of his commissions, and in Milwaukee, he opted for right-angled forms executed in muscular, exposed concrete.

His proposal responded to its setting on a bluff overlooking Lake Michigan with rectangular volumes cantilevering out 30 feet in three directions from hefty columns that surround an open, central court. While the courtyard and the cantilevered blocks accommodated the war memorial and meeting rooms, the two-story podium below the court provided new quarters for the Milwaukee Art Museum in spacious galleries that opened to lakeside terraces.

Saarinen’s design was completed in 1957, and the building was enlarged in 1975 when the museum floors were expanded toward the lake. In 2001, the museum completed a larger addition southward along the bluff, designed by Santiago Calatrava, Hon. FAIA, which included modest new gallery spaces, along with a lobby, café, and gift shop. The project went 300% over budget and nearly bankrupted the museum. Calatrava addressed the museum’s desire for its own visible identity, after decades of near invisibility in the War Memorial podium. He raised a conspicuously sculptural volume at the far end of his addition, which is seen by some as a worthy complement to Saarinen’s work, and by others as an ostentatious rival.



Top Down:
1. Milwaukee County War Memorial Courtyard Stair
2. Milwaukee County War Memorial Aerial with Calatrava Addition
3. Firestone Baars Chapel



Firestone Baars Chapel, Stephens College; Columbia, MO; 1952-1957:

Firestone-Baars Chapel had its inception in 1939, when Stephens College began planning for an interfaith chapel for its Columbia, Missouri campus. After years of fundraising, the college originally commissioned Eliel Saarinen to design the new building. At the time, Saarinen had achieved notoriety for his Christ Church Lutheran in Minneapolis, the First Christian Church in Columbus, IN and his campus chapels at MIT, Brandeis and Drake.

For the Stephens College chapel, Eliel envisioned a cylindrical structure surrounded by a reflecting pool. However, Saarinen died in 1951 before plans for the project were complete. In 1953, the college commissioned Saarinen’s son and business partner Eero Saarinen (1910-1961) to complete the chapel. The younger Saarinen disregarded his father’s original design in favor of an elegant and simple cube-shaped building that featured a sharp spire atop a gently-sloped pyramidal roof. This roof design would appear in Saarinen’s North Christian Church in Columbus, Indiana, which was completed in





Top to Bottom:
1. Firestone Chapel Interior
2. Irwin & Xenia Miller
3. Miller Residence Partial Aerial



1964. The Firestone-Baars Chapel's minimalist interior reflects the college's desire to provide a nondenominational space for interfaith worship, quiet reflection and meditation.

At the time Saarinen designed the Firestone-Baars Chapel, he was still a relatively unknown architect. Though he had already designed his most famous project, the Gateway Arch in St. Louis, that structure was still more than a decade from completion. Many of his most important buildings, such as the TWA Terminal at J.F.K Airport in New York and the main terminal building at Dulles International Airport were completed after Saarinen died in 1961 at the age of fifty-one.

Dedicated in 1957, Firestone-Baar Chapel is a unique, nondenominational chapel. The chapel features a square plan and an entrance at each of the compass points. The Stephens College Campus Life-Student Handbook notes, "The chapel symbolizes commitment to individual spiritual development and worship. The chapel is used for meditation, religious services, vespers, weddings, memorials and campus programs."

The chapel's entrances on all four sides signify that a person's advance towards religion may come from any direction.

Irwin Miller House; Columbus, IN; 1953-1957:

Commissioned by American industrialist, philanthropist, and architecture patron J. Irwin Miller and his wife Xenia Simons Miller in 1953, the residence and property is now owned by Newfields. Miller was an exceptional patron of modern architecture in the construction of a number of buildings throughout Columbus, Indiana.

Miller's father founded the Cummins Engine Co. and when his uncle died unexpectedly during WWII, Miller was aboard the USS Langley in the South Pacific and was brought home to run the company because its production was vital to the US war effort.

Irwin realized that to recruit top tier engineers and machinists to Columbus, IN, its schools and public buildings needed to be of exceptional quality. Mr. Miller became interested in modern design as an undergraduate at Yale, where his wealthy family, which was long established in Columbus and had founded Cummins in 1919, sent him. When Miller returned to Columbus during WWII, he was appalled at the design of a proposed new school and intervened to begin his campaign to champion design excellence.

In 1957, his foundation offered to pay the architect fees for those projects as long as he could provide a list of five top tier architects for each client to choose from.

"Columbus, Ind., and J. Irwin Miller are almost holy words in architectural circles," *The New York Times'* architecture critic Paul Goldberger, now with *The New Yorker*, wrote in 1976. "There

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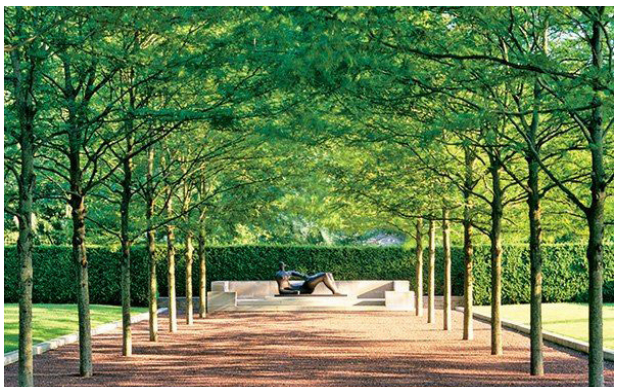
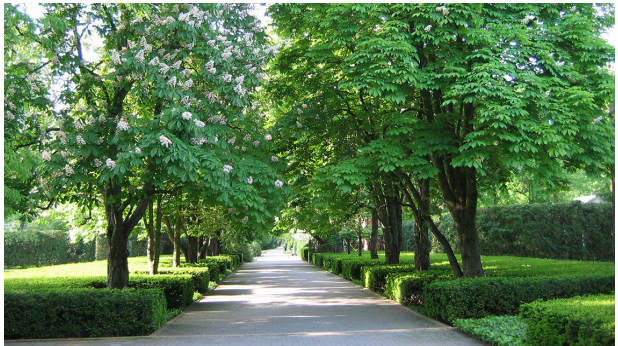
Top to Bottom:

1. Irwin Miller House Front Elevation
2. Irwin Miller House Front Lawn Hedge
3. Irwin Miller House Landscape Precision
4. Irwin Miller House Flower Beds



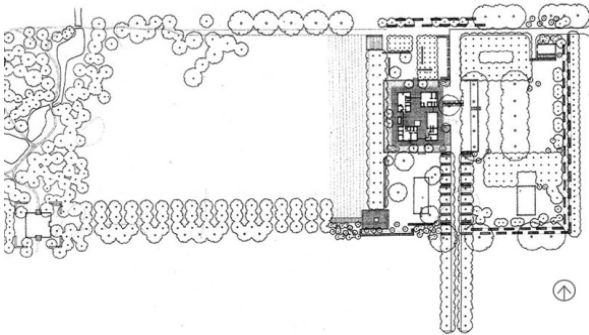
Top to Bottom:

1. Irwin Miller House Terrace Surrounding the Residence
2. Irwin Miller House Landscaped Pathway
3. Irwin Miller House Back Yard
4. Irwin Miller House Allee with Moore Sculpture





Top to Bottom:
 1. Miller House Living Room Fireplace & Display Wall
 2. Irwin Miller House Landscape Plan



is no other place in which a single philanthropist has placed so much faith in architecture as a means to civic improvement."

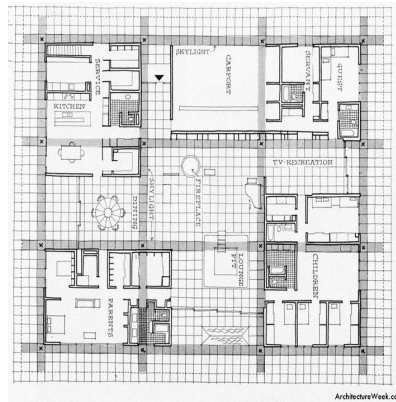
Saarinen's Miller house formally, actively engages with its lavish landscape by Dan Kiley in one of America's great collaborations. Saarinen's collaborator on the interior was Alexander Girard.

Saarinen's Palladian plan utilized a grid of nine columns defined by a continuous series of skylights along the column lines to define the spacial volumes and connect the inside with the outside for every location. The detail of the columns with an open steel plate capitol relates to and connects with father Eliel's articulated and embellished columns at Kingswood.

Eero Saarinen had previously designed a summer house for the Millers in the Muskoka region of Ontario, Canada, for the family. The Millers wanted a year-round home for the family and their four children in which they could entertain heads of state and titans of industry. The 6,838 square feet residence is one of very few single-family homes that Saarinen designed. The Miller House only partly embraces the modernist architectural tradition



Top to Bottom:
 1. Miller House Living Room Conversation Pit
 2. Irwin Miller House Floor Plan



developed by Ludwig Mies van der Rohe with its open and flowing layout, flat roof, and stone and glass walls.

The home was declared a National Historic Landmark in 2000. The Miller family owned the home until 2008, when Xenia Miller, the last resident of the home, died. The Millers charged Saarinen to create a home for their five children that could also support entertainment of business clients.

With the exception of the relationship between the home's living room and dining room, here Saarinen resisted a core tenet of modernism – the open flowing of spaces, so well indulged by Wright and many others.

Within the interior of the home, the four non-public areas branch off from the central space which features a conversation pit. These four branches include rooms for parents, children, guests and servants, and utilitarian areas of kitchen and laundry. The plan avoids a conventional axial organization, instead displacing the hierarchy of the rooms with a more egalitarian and functional arrangement. The geometry of the house's plan is similar to Andrea Palladio's 16th-century Villa Rotunda in its organization of rooms around a central space.

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The grid pattern of skylights, supported by a set of sixteen freestanding cruciform steel columns, demonstrates concern for the interplay of light and shadow. A floating cylindrical fireplace, a 50-foot long storage wall, and the sunken conversation pit are key elements of the modern design of the central space.

The dining room features a pedestal table designed by Saarinen with a reinforced frame that supports a water feature and water feed and drain for a pool in the glass-covered tabletop that contained fish. The tulip chairs feature cushions designed by Girard and made by Xenia Miller and her friends that include the initials of family members. The kitchen contains a dishwasher, indoor grille and microwave – unknown in 1950's.

Architect and interior designer Alexander Girard worked closely with the Millers and Saarinen to furnish the residence. His choices for fabrics, textiles, furniture, and ornaments bring warmth and color to the rectilinearity and geometry of the house.

Girard designed a 50-foot storage wall made up of cabinets, bookshelves, and niches that allow equipment to remain hidden while the Millers' eclectic objects can be displayed, including folk art from travels to Mexico, Asia, and Eastern Europe. He designed patterns for many of the curtains in the house, as well as several rugs. One of the latter is composed of emblems that represent family history and interests. His designs for cushions for the dining room chairs feature the initials of family members.

Girard is credited with suggesting the idea of the conversation pit, which eliminates the look of cluttered seating in the expansive living room, reinforcing the linearity of the architecture. Girard designed two sets of upholstery cushions and pillows to be changed out with the seasons: white with bright accent pillows for winter and spring, and red for summer and fall. Girard designed many of the fabrics for the cushions as well as the dining room seat cushions that were executed by Xenia Miller and her knitting circle.

Landscape:

Saarinen brought in landscape architect Dan Kiley, with whom he had worked on the St. Louis Gateway Arch. Kiley wanted the landscape to be an extension of the home, loosely divided into three sections extending from the corresponding sections of the house, each with its own identity. The Miller House is an example of residential landscape design that puts a modern face on formal European gardens, which rely on symmetry and geometry.

The plot of land, bounded by the Flatrock River on the west and Washington Street on the east, measures 13.5 acres. Kiley left the long meadow that sweeps toward the river largely

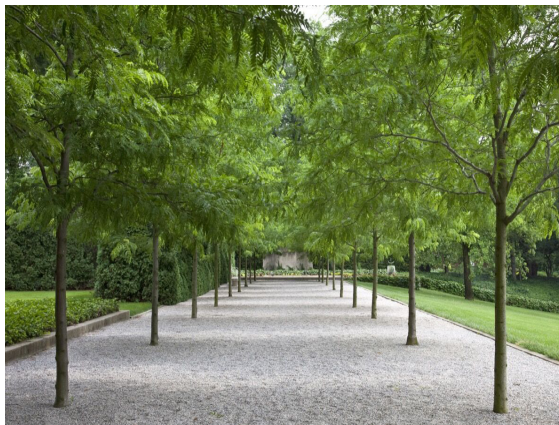


Top to Bottom:
1. Irwin Miller House Dining Room
2. Irwin Miller House Column Detail
3. Irwin Miller House Display/ Storage Wall





Top to Bottom:
1. Irwin Miller House at Dusk
2. Irwin Miller House Kitchen
3. Irwin Miller House South Allée



untouched as a grand lawn, focusing his attention on shaping spaces around the house. Much of the vegetation, like the weeping beeches on the west side of the house, were placed there strategically to protect living areas from sun and wind.

An allée of horse chestnut trees lines the entry drive that reveals the house slowly as one approaches. The Millers did not want their home to be an imposing object in the landscape from the entrance of their property or from their neighbors' homes. Saarinen did his part with a one-story dwelling. Gridded blocks of apple trees are present on the lawn to the east. The easternmost edge of the property at the street is planted with staggered blocks of arborvitae, creating a hedge is a porous but well-defined boundary. The garden areas to the north of the house were originally planted with redbuds, which were later replaced with crabapples. In the southwest corner there is a swimming pool also surrounded by arborvitae hedges.

One of the most notable features of the landscape design is the allée of honey locust trees that runs along the west side of the house which frames the view of the meadow and the river beyond it. Like every major pathway at Cranbrook, the allée received a terminus at each end: Henry Moore's Draped Reclining Woman at the north end, and a bas relief by Jacques Lipchitz at the south. As part of a landscape renovation conducted by Michael Van Valkenburgh Associates, Inc. of Cambridge, MA, the Honey Locust allée was replanted in the Spring of 2008. The iconic Moore sculpture was sold and removed from garden following Xenia Miller's death in 2008.

In 2009, the home and gardens, along with many of the original furnishings, were donated to the Indianapolis Museum of Art by members of the Miller family.

Eero Saarinen and Associates Office Building; Bloomfield Hills, MI; 1953:

The Eero Saarinen and Associates office building in Bloomfield Hills is located near the intersection of West Long Lake Road and Woodward Avenue. The building is set back from the street with paved parking areas in front of and behind the building. A narrow strip of landscaping bordered by a concrete curb is located along the front of the building. A driveway along the west side of the building leads to the rear parking area.

The design of the simple rectangular building takes advantage of the sloping site to expose the basement

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level along the rear elevation. This results in an unremarkable one-story facade in front and two-story rear elevation in the rear. The building's wood frame structure is composed of notched wood beams lag-bolted to wood posts. The windowless end walls are of buff yellow brick while the front and rear elevations consist of vertical bays containing large awning windows over solid wood spandrel panels. Below the spandrel panel on the front elevation, a window at grade level provides natural light to the lower level. A uniform dark gray paint has been applied to the wood walls which originally included white window sash, light gray spandrel panels and natural wood frames. The building's main entrance has been shifted a few bays to the east from its original location and two wood equipment screens have been installed on top of the flat roof.

Eero Saarinen designed and built the office for his architectural practice in 1953 following the death of his father, Eliel Saarinen, with whom he had worked in partnership in his early career. By the early 1950's, Eero had received several important commissions including the General Motors Technical Center and the Saint Louis Gateway Arch, and by 1956 his firm was working on as many as eighteen projects that were in various stages of development.

The design of the office provided a reception area, two small offices, a conference room and large drafting room on the main level with an additional drafting area, model shop, printing room, studio and restrooms on the lower level. Saarinen worked on many of his most important designs in the Bloomfield Hills office, collaborating with his stable of young talented architects, many of whom would go on to have successful careers of their own. The list of those that worked for Saarinen during the 1950's includes Kevin Roche, John Dinkeloo, Cesar Pelli, Robert Venturi, Ralph Rapson, Gunnar Birkerts, Niels Diffrient, Piet van Dijk, Norm Perttula and Balthazar Korab.

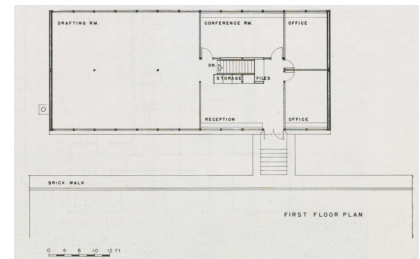
Interviews with several of those individuals reveal the atmosphere within the office was vibrant, intense at times, and collaborative. Saarinen worked long hours and expected his employees to do the same. One aspect that is often mentioned about the office is the ongoing construction of and reconstruction of large architectural models that would take place. Saarinen used the models as tools to help them visualize and refine their designs. It is said that the model building sessions that ran late into the night would often evolve into impromptu parties. In 1959, Saarinen announced to the staff his intention to relocate the office to New Haven, CT in the near future.

After Saarinen's death in 1961 following surgery to remove a brain tumor, the office was sold by his estate and over the next forty years was modified by numerous owners who partitioned the interior and leased the spaces to various small businesses. The building eventually fell into disrepair and faced possible demolition. In 2004, the building was purchased by the Larson Realty Group, a real estate investment group, in partnership



Clockwise

1. Saarinen Office Building, Front; Bloomfield Hills, MI
6. Saarinen Office Building Plan
7. Saarinen Office Rear Elevation
8. St. Louis Arch Stair Mock-Up at Saarinen's Office





Top to Bottom:
1. Kramer Chapel, Concordia Senior College
2. Kramer Chapel Interior



with Michael Willoughby & Associates, a small architectural practice. The new owners completed a comprehensive rehabilitation of the structure the following year, maintaining the character of the exterior and renovating the interior to create premium office and studio spaces for the separate businesses.

Concordia Senior College/ Theological Seminary; Ft. Wayne, IN; 1953-1958:

Saarinen's plans for the Concordia campus follow Scandinavian village design vernacular popular from 1300-1700 A.D., where the chapel was front and center while still sheltering the courtyard from wind and other weather. According to Saarinen, the buildings were grouped in the village design so as to "provide a quiet, unified environment in which the students could find a complete, balanced life, and yet one which was related to the outside world."

Each dorm has 18 rooms and is designed to be a mini-village within a building. Although Kramer Chapel faces west, the interior has an eastward focus toward the Holy Land. At the time of the design, no provisions were made for the handicapped. In recent years handicapped access has been added including elevators, ramps and parking facilities.

The Concordia Senior College campus was the first college campus in America to receive a First Honor Award from the American Institute of Architects.

The diamond shaped bricks, patented as the Concordia Bricks, run horizontally on the main campus buildings representing our relationship to one another in community. Kramer Chapel, however, presents the one exception as its bricks run vertically to symbolize God's relationship with us.

"Our concern was the creation of an architecture which would support and express the idea of this particular college. We wanted to create an environment appropriate to the intellectual and spiritual training of young men who would go on to professional studies in theology. "The strategic question was the relation of the buildings to the world. On the one hand, we all felt that they should not be inward-turning and removed like medieval monasteries; but, on the other hand, we felt the group must—for its purpose—have a tranquil atmosphere of at least partial self-sufficiency."

"In a village of the North European type, the chapel is placed in the center, on the highest spot, an all-important symbol around which the other buildings are grouped."

"In a careful study of this site, we found we could use a little hill next to the valley (which is now the lake) as the heart of the campus. We could put the chapel here to dominate the entire group and to be reflected in the lake below."

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"The chapel was, of course, the building that required the most thought and imagination. This is the building where spiritual values are epitomized and these are the hardest qualities to express in brick and mortar. We realized that light is an effective agent in creating a spiritual atmosphere. We used very low lighting from the side walls as well as lighting from above to get the restful, balanced quality we sought. Additional side windows dramatized the altar as a focal point."

"We wanted to work with the simple chapel shape appropriate to the Lutheran church and to create an interior in which the relationship of human beings to enclosed space would be appropriate and inspiring. The problem was also to find a shape and materials which would allow the spoken word to be heard clearly and one in which the organ could swell to its fullest. We believe the high chapel interior answered these requirements."
—Eero Saarinen (upon completion of the campus)

The campus sits on 191 acres of gently rolling land. A man-made lake covers nine acres. When the lake was created, dirt from the existing marshland was used to build up the upper plaza on which the chapel and educational buildings stand. Aside from its obvious beauty, the lake serves more practical purposes. It serves to drain the campus and has a spillway to the St. Joseph River when the water level is too high. There are pumps to bring in water from the river if the water level drops too low.

All trees, other than the native forest along Clinton Street, were chosen for their ancient appearance. Other trees on the campus include ash, flowering crab, buckeye, maples, gums, weeping willow and locust trees. The landscaping of the campus was completed by Dan Kiley, Saarinen's favorite landscape architect who also designed the Air Force Academy in Colorado Springs.

Kiley's design brings a different phase of campus beauty with each season. In the spring wildflowers, flowering shrubs and trees bring life to the campus in pastel colors. During the summer there are broad expanses of green lawns and meadows. In the autumn the hardwoods provide a beautiful display of rich colors. When the winter snow covers the landscape and partially covers the trees, the contrasting shades complement the white buildings with their dark roofs.

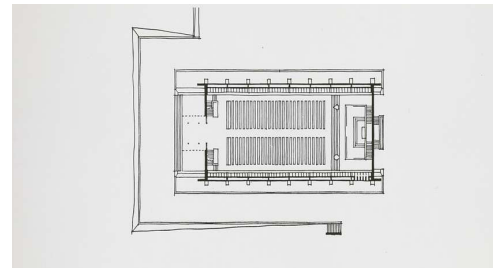
At the center of the Concordia campus, physically and spiritually, Kramer Chapel rises far above all other campus buildings and can be seen from any point on campus as the interior rises to a height of 97 feet. The chapel is noted for its fine acoustics, complementary to spoken, sung and instrumental activities.

At the chancel, the freestanding altar was created from one piece of Vermont marble weighing six tons. One hundred and sixty-seven large triangles outline the Concordia Bricks in the wall behind the cross.

Instead of breaking up the ceiling line at the front of the chancel



Top to Bottom:
1. Concordia Senior College Winter Elevation
2. Kramer Chapel Plan
3. Kramer Chapel Baptistry





Top to Bottom:
1. Kraner Chapel, Baptistery
2. Concordia Senior College



as is usually done in churches, Saarinen achieved the illusion of separation of the chancel from the nave by use of the skylight, which floods only the chancel with light. This is most obvious during the morning chapel services held for students, faculty, staff and visitors. The chapel seats 550.

The baptismal font was added in 1997 when the choir loft was extended to twice its original size. The font consists of one piece of Indiana limestone and weighs 3,000 pounds.

The 56-rank, Schlicker pipe organ was designed by Saarinen and organ designer Herman L. Schlicker and built by the Schlicker Organ Company of Buffalo, New York. Two thousand nine hundred and nine pipes, some of which rise to a height of 50 feet, are displayed on the west wall of the chapel.

The bell tower beside Kramer Chapel measures 103.5 feet from the plaza to the tip of the cross. The bell weighs 1,320 pounds and measures 39 inches wide by 33 inches high. The bell's G sharp note announces daily chapel and is controlled electronically from inside Kramer Chapel. In designing the bell tower, Saarinen took the freestanding tower, already present in medieval Finnish churches, and adapted it in highly stylized form to the setting of the campus.

Aline Milton Bernstein Saarinen:

Aline Bernstein Saarinen was a well-known critic of art and architecture in the United States, an author and a television journalist. Aline Bernstein was born on March 25, 1914, in New York City, the daughter of Irma (Lewyn) and Allen Milton Bernstein, both of German

Jewish descent. Her father was the head of an investment firm and an amateur painter. Her mother also painted, and Aline was encouraged to take an interest in the arts. She graduated in 1931 from the Ethical Culture Fieldston School in Riverdale, the Bronx, New York, and then went to Vassar College where she studied art and developed an interest in journalism. She graduated in 1935 with an A.B. degree. In 1935, Aline married Joseph H. Louchheim, a public welfare administrator. The same year she enrolled at New York University's Institute of Fine Arts to study the History of Architecture, graduating with an A.M. degree in 1941. She had two sons during this period, Donald in 1937, and Harry in 1939.

Aline obtained a job with *Art News* magazine in 1944, becoming managing editor from 1946 to 1948. From 1948 to 1953 she was associate art editor and critic at *The New York Times*, and published articles on art and cultural trends in various magazines. She frequently wrote about modern architecture and the link between modern art and architecture.

Aline divorced Joseph Louchheim in 1951. In January 1953, she went to Detroit to interview the architect Eero Saarinen, who had recently been acclaimed for his General Motors Technical Center. They were attracted to each other at once. Her profile of Saarinen, titled *Now Saarinen the Son*, appeared in the *The New York Times Magazine* on 23 April 1953. She married Eero Saarinen in 1954, moving to Bloomfield Hills, Michigan, where Eero's firm was then headquartered.

After marrying Saarinen, Aline stopped writing on architecture owing to the potential conflict of interest. She continued writing for the *Times* as an associate art critic, now using the byline Aline B. Saarinen. She became "Head of Information Service" at Eero Saarinen & Associates, a job

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that included bringing her husband's work to the attention of magazine editors with whom she had once worked. In December that year they had a son, Eames.

In 1957, Aline was awarded a Guggenheim fellowship with which she wrote the best selling book *The Proud Possessors*, a collection of biographies of American art collectors. When Eero died suddenly in 1961, Aline stayed with the firm while unfinished projects were completed and Aline became her late husband's greatest ambassador, frequently appearing on camera and giving interviews explaining the significance of his architecture. The year following Saarinen's passing, she published *Eero Saarinen on His Work: A Selection of Buildings Dating from 1947 to 1964 with Statements by the Architect*.

In 1962, Aline Saarinen first appeared on television, discussing art. The show was successful, leading to demand for more appearances.

In the fall of 1963, she became art and architecture editor for NBC's Sunday show, and art critic for their Today show. She discussed a broad range of topics with a lively and original style. She also made many specials and documentaries, including *The Art of Collecting*, which aired in January 1964. In October 1964, she became a correspondent for NBC News, the third NBC woman reporter after Pauline Frederick and Nancy Dickerson. Again, she covered a broad range of subjects.

Aline was moderator on the show *For Women Only*, in which a panel answered questions from the audience, including ones on subjects such as birth control and abortion. During the 1960's, Aline also served on the Design Advisory Committee of the Federal Aviation Administration, the U.S. Commission of Fine Arts from 1963 to 1971, and the New York State Council of the Arts.

In 1971, she was made head of NBC's Paris News Bureau, making her the first woman to run a network foreign bureau. She declined Lyndon B. Johnson's offer to become the US Ambassador to Finland. She held the Paris News Bureau position until her death from a brain tumor on 13 July 1972 at the age of 58. In 1970, Saarinen prepared a one-hour NBC program in celebration of the Metropolitan Museum of Art Centennial. In her *New York Times* obituary, she was characterized as "outspoken and informative."

Knoll Pedestal Series Furniture; 1954-1958:

Born to world famous parents, architect and Cranbrook Academy of Art director Eliel Saarinen and textile artist Loja Saarinen, Eero Saarinen was surrounded by design his whole life. It came as no surprise that Eero was helping his father design furniture and fixtures for the Cranbrook campus by



Above: Aline Saarinen, Head of Information Systems at Eero Saarinen & Associates
Below: Knoll Pedestal Series

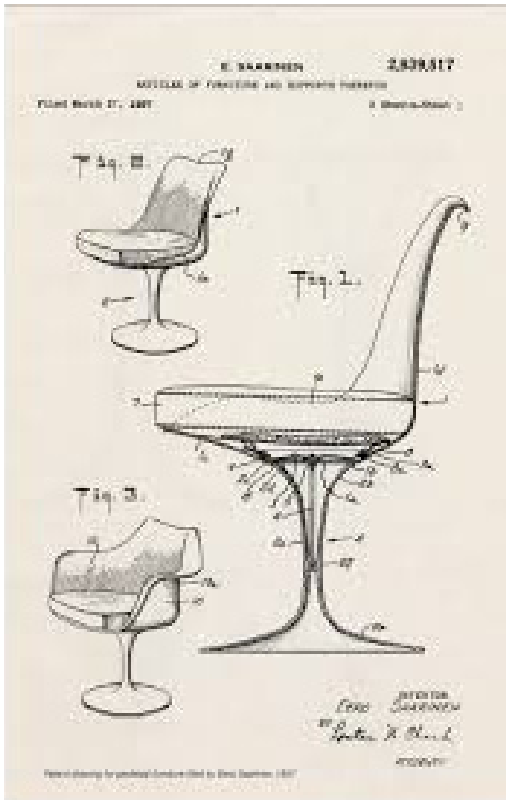




Above: Florence Knoll & Eero Saarinen, 1957

Below:

1. Knoll Pedestal Series Furniture
2. Knoll Pedestal Seating Patent Application Drawing



the time he was in his teens. In 1929, Eero left for Paris where he studied sculpture before enrolling in the Yale architecture program the following year. In 1934, he returned to Michigan to teach at Cranbrook, work on furniture designs, and practice architecture with his father.

At Cranbrook, Saarinen met Charles Eames. The two young men, both committed to the exploration of potential new materials and processes, quickly became great friends, pushing each other creatively while collaborating on several projects. The most notable outcome of their partnership was the groundbreaking collection of molded plywood chairs for the MoMA-sponsored 1940 Organic Design in Home Furnishings competition. Their collection was awarded first prize in all categories, catapulting the young designers to the forefront of the American modern furniture movement.

At Cranbrook, Saarinen also met Florence Knoll (né Schust), who at that time was a promising young protégé of Eliel Saarinen. Florence spent all of her free time with the Saarinen family, including summer vacations to Finland. Florence and Eero developed a brother-and-sister-like relationship that would last the rest of their lives. Florence later recalled that her history with Eero made him her most honest and, often, most harsh critic. When Florence joined Knoll in the 1940's, it was an obvious choice for her to invite Eero to design for the company.

Saarinen had clear objectives when it came to furniture design: "It must be classic, in the sense of responding to an often recurring need." One such need emerged in the mid-1950's, while he was designing dining furniture for Knoll. "I wanted to clear up the slum of legs," he said, speaking of the unsatisfactory undercarriages he observed in the chairs and tables of his day.

Saarinen had addressed the problem before. For the Kingswood School for girls at Michigan's Cranbrook Schools where Eliel was president of Cranbrook Academy of Art and head of its architecture program, he devised a table with four legs clustered into a central base. But the streamlined, mass-producible concept he presented to Knoll scrapped the legs altogether. Instead, the Pedestal Collection's star was a tabletop of wood veneer, marble, or plastic set atop a cast-aluminum swoop.

Soon after its 1957 introduction, the Pedestal table was everywhere, from modern homes across the nation to commercial interiors. A custom version with marble top, terrazzo base, and functioning fountain was designed for Saarinen's iconic Miller house in

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Columbus, Indiana. A fleet with polished bronze tops and black enameled aluminum bases was sent to the Four Seasons restaurant in 1959. Recently, they were sprinkled throughout Saarinen's 1962 TWA Terminal, reborn as part of the TWA Hotel at New York's John F. Kennedy International Airport.

Over the years, Saarinen designed many of the most recognizable Knoll pieces, including the Tulip chairs and tables, the Womb chair, and the 70 Series seating collection. Eero, who was known for being obsessed with revision, took a sculptural approach to furniture design, building hundreds of models and full-scale mock-ups to achieve the perfect curve, find the right line, and derive the most pleasing proportions. His designs, which employed modern materials in graceful, organic shapes, helped establish the reputation for design and the identity of Knoll during its formative years.

Emma Hartman Noyes House, Vassar College, Poughkeepsie, NY; 1954-1958:

When the Vassar Office of Public Relations announced the opening of its new Noyes House dormitory in October 1958 by Eero Saarinen, it termed the building a "strikingly modern" residence. Noyes House was named in memory of Emma Hartman Noyes, a music instructor at Vassar, a close friend of Red Cross founder Clara Barton, and a member of the Class of 1880.

Attempts to improve Vassar's north end of its campus were limited by financial considerations. President Sarah Blanding was eager to enlarge Vassar's physical plant, and Art Department chairman Agnes Claflin who moved in modern art circles, recommended Eero Saarinen, a Finnish-American modernist architect who happened to be the husband of Vassar graduate Aline Bernstein Saarinen, Class of 1935.

Saarinen was from an established architectural family, and he had successfully demonstrated his modern techniques at Drake University (1957), the General Motors Technical Center (1956), the Massachusetts Institute of Technology (1955), and, with the David S. Ingalls Rink (1958) at his architectural alma mater, Yale University. He originally proposed moving the administrative offices out of Main and making it solely a dormitory, but that idea was poorly received, resulting in his proposed and accepted design for Noyes.

Although Noyes's crescent shape and triangular windows make it one of the most distinct buildings on campus, Saarinen also "wanted the building to fit in with the existing campus in terms of the gothic architecture," as Vanessa Beloyianis observed in her senior thesis in 2008 on the design of Noyes. In response to some public doubts, the industrial design pioneer Henry Dreyfuss commented, "The building is beautifully situated and will enhance and unify the architecture of the campus." The first building completed under Vassar's \$25 million Development



Above & Below: Hartman Noyes House, Vassar College





Above: Hartman Noyes House, Vassar College
Below: *Time* magazine cover, July 2, 1956

Plan, Noyes House cost \$1.4 million to build - \$13.38M in 2020 funds. The College borrowed what the Noyes family did not donate, making it the first Vassar building not entirely financed as a gift. Noyes was under a federally approved mortgage until the mid-1970's.

Before beginning his design for Vassar in 1952, Saarinen observed, "On existing campuses, there is the challenge of building proud buildings of our own time that are in harmony with the existing architecture and the outdoor space." Saarinen met this challenge by employing modern architectural elements to evoke the forms and qualities of its surroundings. His V-shaped vertical window bands and gable-formed caps made his circular form somewhat affordable and made a clear reference to Vassar's neo-Gothic main building and the adjacent gabled Cushing House.

Unlike many of his modernist contemporaries, Saarinen was always considerate of the character, symbolism, and tradition associated with his designs, and he defined the idea of context broadly. It is for this reason that he became an especially popular campus architect and caught the attention of the chairman of the Vassar College Art Department, Agnes Rindge Claflin, who recommended him as a "very eminent, younger generation" architect to the then Vassar President, Sarah Gibson Blanding.

In 1955, Saarinen began his work on a design for a new dormitory at Vassar, choosing a site at the north end of campus known as "The Circle." This round clearing dated back to the founding of the college and formerly functioned as an athletic field. Saarinen's original model, which he presented to the college in May 1956, includes two identical four-story structures and a central single-story structure situated around the northern half of "The Circle," as well as landscaping around the southern half.

Only one of the four-story structures in the original model was constructed, as the cost for the single wing was actually double the estimate for the entire project. The existing Emma Hartman Noyes House on the Vassar campus is quite similar in terms of basic form and detail to his original design.

***Time* Magazine; July 2, 1956:**

Saarinen made the cover of *Time* in 1956 at both an early age, 45, and before much of his work had been completed. Certainly the 1953 article in the *New York Times* by art critic Aline Bernstein Louchheim who Eero would later marry, put Saarinen on the radar screen of the New York and East Coast art and architecture community if they were unaware of his existence.

The *Time* article entitled, "Art: The Maturing Modern" read; "Well-building hath three conditions: Commodity, Firmness and Delight."
—Vitruvius



Ever since man settled down under roof, he has been at the mercy of his buildings. What he sees, how he lives, looks, thinks—even how he dies—are overwhelmingly affected by the structures he designs and builds. Through the generations, good builders have tried to measure up to the formula of Roman Architect Vitruvius Pollio, contemporary of Julius Caesar, but they have often thought more of the structure than of its inhabitants, and have at times produced more monstrosity than delight, more discomfort than commodity. But in mid-20th century the art of well-building has reached a high state, and is moving toward greater achievements.

The greatest progress has come in a land not otherwise noted for its leadership in the world of art: the U.S. From Beacon Hill to Nob Hill, modern architecture has squalled and tottered through its awkward, unruly, early years, but it has begun—if only begun—to mature. In Paris, architectural students eagerly follow the new work of younger U.S. architects with all the fervor that Left Bank jazz addicts reserve for Dizzy Gillespie and Satchmo Armstrong. Said a young French architect: "When we have a chance to see what your architects are doing, we have a picture of what the future can become. We have something to believe in."

Monopoly on Masters.

In a major sense, U.S. pre-eminence in modern architecture is an expression of the country's fabulous industrial expansion. It is also a tribute to the triumphant breakthroughs by U.S. industrialists and engineers whose work (ranging from the pioneering Brooklyn Bridge to the machine precision of General Motors' new Technical Center outside Detroit) has made U.S. resources, machine craftsmanship and technical brilliance the envy of the world. Because there have been and are great opportunities in the

U.S., the country now has a virtual monopoly on the best creative architectural talent of this century (see box).

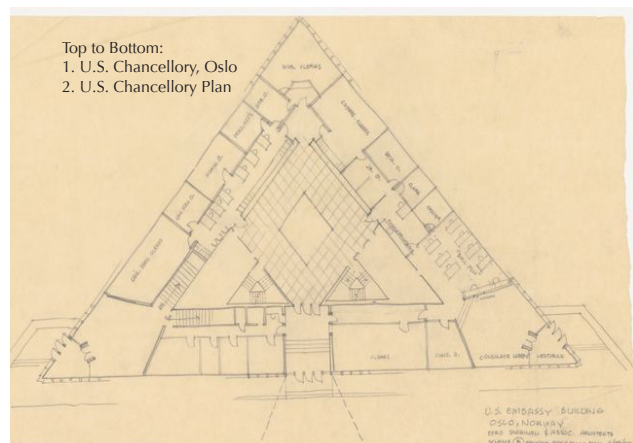
Surest sign of the healthy state of U.S. architecture is the large number of promising younger talents. And of the whole U.S. cast of modern architects, none has a better proportioned combination of imagination, versatility and good sense than Eero Saarinen, 45, son of late great Finnish-born Architect Eliel Saarinen.

Outwardly, Eero Saarinen looked like a country family doctor, dresses with the casualness of a young college prof, prefers to live clear of the cities, in the rolling countryside of Bloomfield Hills, Mich. (pop. 2,100), 18 miles from downtown Detroit. His headquarters there was a simply constructed, often cluttered office shed he designed for himself, just two minutes' drive from his home over winding country roads. Even with an office staff of 43, Saarinen's was a small operation by comparison with the major U.S. architectural organizations, e.g., Skidmore, Owings & Merrill's 700 employees. Says Saarinen, who likes to see his plans through from drafting table to finished building: "I feel strongly that architecture has to be a personal service."

TIME's 1956 cover story proclaimed, "...of the whole U.S. cast of modern architects, none has a better proportioned combination of imagination, versatility and good sense than Eero Saarinen."

U. S. Chancellery Building; Oslo, Norway; 1955-1959:

In 1947, the United States Government purchased a lot for its new Embassy at Drammensveien 2. Through a subsequent agreement with the Norwegian Government, however, it was decided to place the building on the triangular lot bounded by Drammensveien, Løkkeveien and Hansteen gate.



The shape of the lot dictated Saarinen's design, which is a triangular four-story building and a basement and is 192' x 153' x 153'. The structure was designed as a bearing wall structure. This type of construction differs from the contemporary trend of office buildings in which the façade is a more decorative covering or skin of metal, glass or stone. Furthermore, the flat surface has been broken by the in-an-out play of the fenestration effects of the building. There are 577 separate windows.

The material for the exterior walls is a form of crushed concrete and labradorite, which has been cast, cut, ground and polished. Though resembling natural labradorite, the artificial stone – which is a Norwegian product – is superior in strength.

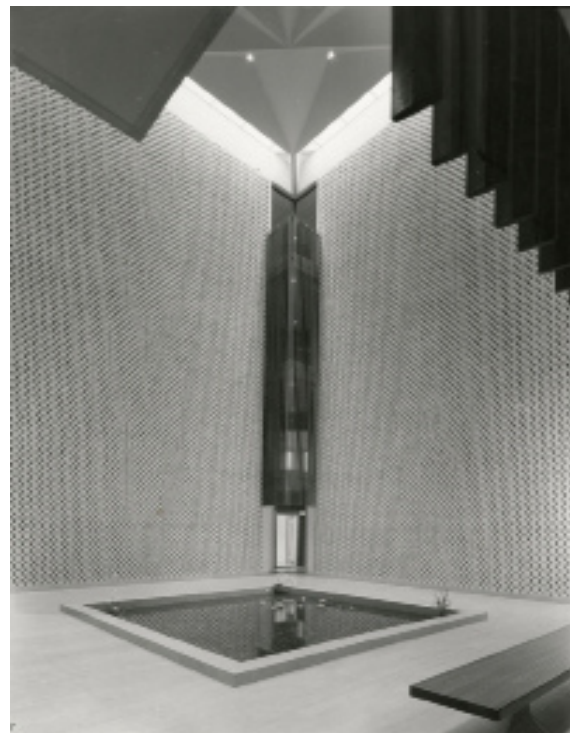
Over the main (center) entrance on Drammensveien is a 40' x 30' canopy built of steel and concrete. It extends across the sidewalk and projects over the curbing, and provided a cover for persons stepping out of automobiles at this location. The flagpole erected on a stand in the center of the canopy is 42' tall.

An unusual feature of the Embassy building is the enclosed, center courtyard, which is four stories tall. It is four-sided but fits neatly into the triangular form of the outside walls. A suspended ceiling constructed in three-dimensional, triangular designs covers the courtyard. The lighting from the ceiling is a combination of direct daylight and artificial light. Two of the court walls are constructed in a brick-grill pattern, covered by white adobe paint. Striking vertical teak wood ribs extending from the second to the fourth floors forms the other two walls. In the center of the court is a 5-by-5-meter pool. Both the floor of the court and the main entrance lobby are made of Italian travertine, while the wall facings in the main entrance and around the halls are made of stucco marble.

The official ground breaking ceremony took place on February 10, 1957; the building was "under tak" for the



Above, Below & Left: Oslo U.S. Chancellory Atrium



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"kranselag" celebration held on April 25, 1958; and the official opening ceremonies were held on June 15, 1959.

The Norwegian Government paid for the construction of the Embassy from funds which accrued to the credit of the United States as a result of the Lend Lease settlement including the military relief program and the adjustment of wartime claims following World War II. A final settlement between the two governments took place with the delivery to the United States Government of title to the property at Drammensveien 18, together with the completed Embassy, in exchange for delivery to the Norwegian Government of the title to the property at Drammensveien 2. The construction costs were estimated to run approximately 9.5 million kroner - roughly \$1.3 million at the time.

Almost all of the furniture in the building when it opened was made in Norway, from designs of Knoll Associates and constructed by the Norwegian firm of Tanum.

The eastern entrance toward Hansteens gate gave access to the United States Information Service Library and auditorium. Visitors applying for visas or seeking other consular services used the consular or western entrance at the corner of Drammensveien and Løkkeveien. Today all visitors come through the main entrance in Henrik Ibsens gate. Extending along the entire second floor of the Drammensveien (now Henrik Ibsens gate) side of the building was the USIS Library, which was open to the public. The seating capacity for Library patrons was 66.

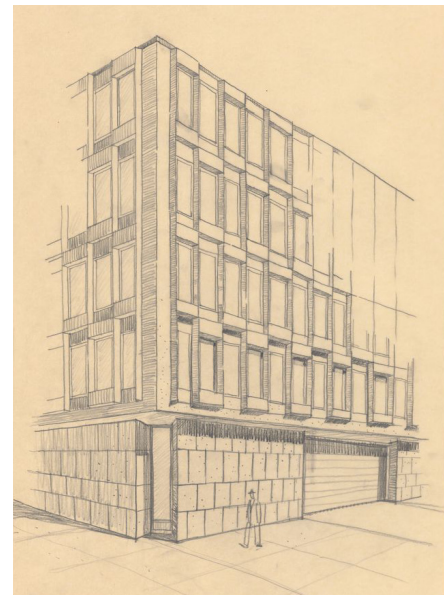
In the basement there is a hexagonal auditorium to accommodate audiences of about 100 persons, designed for lectures and film showings arranged for the Norwegian public by USIS. From a projection booth in the back, four film projectors showed motion pictures on the electrically-controlled roll-down screen. A sound system installed in two of the front walls was used for the popular USIS record concerts.

U. S. Chancellery Building; London, England; 1955-1960:

The United States has been associated with Grosvenor Square in London's Mayfair since the late eighteenth century when John Adams, the first United States Minister to the Court of St. James's, lived from 1785 to 1788 in the house which still stands in Grosvenor Square on the corner of Brook and Duke Streets. John Adams later became President of the United States, as did four other Ministers who served here: James Monroe, John Quincy Adams, Martin Van Buren, and James Buchanan. From the ranks of Ministers and Ambassadors who have served in London have also come four Vice Presidents and ten Secretaries of State.

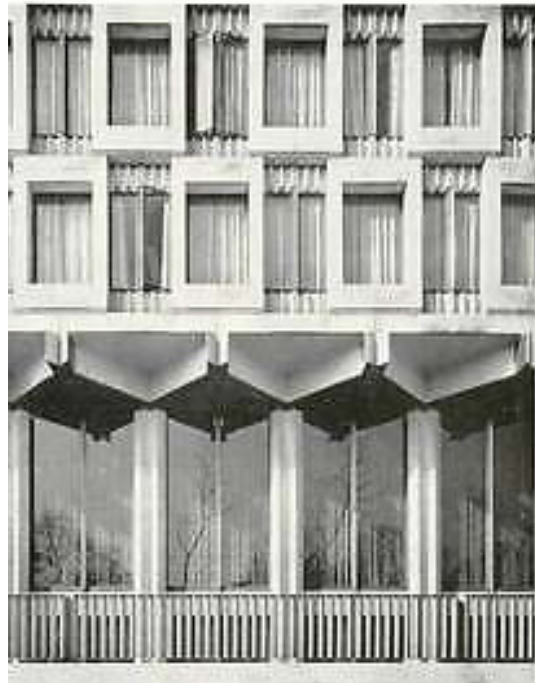


Top to Bottom:
1. U.S. Chancellery London Auditorium
2. U.S. Chancellery London Interior
3. U.S. Chancellery London Corner Sketch by Saarinen





Above: U.S. Chancellery London Model
Right: U.S. Chancellery London Exterior Wall Detail
Below Left: U.S. Chancellery London Exterior
Below Right: U.S. Chancellery London Interior Column/ Ceiling Detail
Bottom Left: U.S. Chancellery London Exterior Wall Transition Above First Floor



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The US Chancery was first located in Great Cumberland Place and later in Piccadilly, Portland Place and Grosvenor Gardens. In 1938, it was moved to 1 Grosvenor Square, the building which now houses the Canadian High Commission. During the Second World War when the Chancery was on one side and General Eisenhower's headquarters on another, Grosvenor Square became popularly known as "Little America."

In 1947, The Duke of Westminster donated land in the center of the Grosvenor Square as a memorial to President Franklin D. Roosevelt, and over 160,000 British citizens contributed the funds for a commemorative statue. The Saarinen Chancery, occupying the whole west side of the square, was completed in 1960.

Eight architects participated in an invited competition for the new London chancellery: Anderson Bechwith & Hable, Ernest J. Krump, Jose Luis Sert (with Huson Jackson & Joseph Zalewski, Edward Durell Stone, Hugh Stubbins, Werster Bernard & Emmons, Yamasaki Leinweber & Associates and Eero Saarinen.

The U.S. Department of State competition for the design of a new Chancellery for London was won by the Eero Saarinen from a brief that called for a building to house all the major sections of the Embassy under one roof in a style to blend with existing architecture of Grosvenor Square. Saarinen's design best responded to the new neo-Georgian buildings that were to be erected in accordance with the master plan commissioned by the Grosvenor Estate.

The resulting structure provided over 600 rooms on nine floors, providing 225,000 square feet of working space for about 750 employees, less than half of whom are Americans. Only six stories, including a "penthouse" set back from the facade, are above ground level to conform in height with the surrounding buildings in Grosvenor Square. The remaining three floors are below ground. The glazed entry level was raised five feet above grade on a Portland stone-clad battered podium. The building's facade is an interlocking grid of operable and fixed windows.

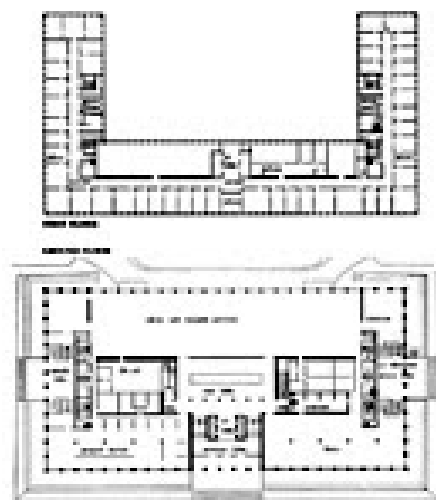
Saarinen's embassy was London's first purpose-built embassy. All the others had previously been located in historic buildings or grand old mansions. For many decades, it was the largest U.S. embassy in Europe.

The Portland stone used by Saarinen failed to darken after anti-pollution measures were introduced in London and a proposed bronze eagle was replaced by a gaudier one made of aluminum. Peter Smithson and Reyner Banham were among those lining up to criticize the building both for what they perceived as its faults and what it represented.

The exterior facade's material is pre-cast reinforced concrete. The facade is checkered with an open grillwork pattern



Top to Bottom:
1. U.S. Chancellery London Aerial
2. U.S. Chancellery London First Floor
3. U.S. Chancellery London Plans





Top to Bottom:

1. Eero Saarinen Presenting the U.S. Chancellory London Model
2. U.S. Chancellory London Entry
3. U.S. Chancellory London Facade with Eagle



supported on rows of poured reinforced concrete columns. The exterior is faced with Portland stone and decorated with gold anodized aluminum. The gilded aluminum eagle, with its 35-foot wing spread, surmounting the Chancellory was created by American sculptor Theodore Roszak and is inspired by a pre-Independence carved wooden eagle in a New England museum. The main entrance in Grosvenor Square continues the motif of open grillwork in gold anodized aluminum with the Great Seal of the United States set into it. The fascia is of Greek Pentillikon marble, and the floor of travertine marble from Italy.

Saarinen's distinctively modern U.S. Embassy in London opened in 1960 at a high point in US-Anglo relations. Since 1938, it has stood in Grosvenor Square, which was the site of General Dwight D Eisenhower's headquarters in World War II. The U.S. embassy journeyed from promising symbol of a cooperative future in the Kennedy-Macmillan era to an often unloved, heavily armed citadel of iron and concrete barriers after 9/11.

In 2004, *The New York Times* derided the security measures that resulted in the embassy's "hulking menacingly in genteel Mayfair." Yet, in its early hopeful days, the embassy ran a renowned library open to the public. Its elegant furniture and fixtures were designed by Charles and Ray Eames, its terrazzo floors gleamed, and light poured in from its cleverly designed exterior.

The distinguished architectural critic Paul Goldberger commented: "In those post-war days, we were trying to do our very best architecture with our embassies, and this was a totally right building that fit beautifully into the urban fabric of that part of London. I'm sure there were discussions with London planners influencing Saarinen because, on his own, he was generally much less contextually responsive than you see in that building. Saarinen was a wonderful architect, but left to his own devices, he was likely to produce something closer to the isolated sculptural splendor of JFK's TWA building, a building you admire in spite of its lack of urbanistic qualities, not because of them. This is a building you admire for its urbanistic qualities."

Goldberger calls it "a beautiful fourth wall to Grosvenor Square," a communal space that even after 9/11 remained welcoming to the public, although its fourth wall barricaded itself against intruders.

The building that closed in controversy actually opened in controversy as well. In a 1960 *New York Times Magazine* piece, Richard B Morris, chair of Columbia University's Department of History, castigated Saarinen's choice of an eagle as a central, unifying symbol. Morris called the eagle "lazy, cowardly, rapacious, and hardly a fit national emblem." As if that wasn't enough, he added that the eagle is a "gangster bird, a hijacker" and a "gilded bird of prey will cast a sinister shadow" of America.

No wimp, Saarinen responded by letter that Morris was just

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“an angry historian,” that the eagle is a noble creature, and that sculptor Theodore Roszak is one of America’s foremost artists. The eagle, in a light gold color, is made of hand-wrought anodized aluminum, with a 36-foot wingspread. Saarinen also noted that the embassy is constructed of Portland stone, traditional to London’s office buildings, and that it “has been used so it will weather to the dramatic black-and-white contrasts characteristic of London.”

It also bears noting that Saarinen’s eagle is perfectly proportioned to the building unlike the handsome but insignificant eagle by Sidney Waugh over the entry to the Marriner S. Eccles Federal Reserve Bank by Paul Cret in Washington, D.C.

Following the embassy’s relocation to South London, there are plans to convert Saarinen’s building into a luxury 137-room hotel.

Laird Bell Law Quadrangle; University of Chicago; Chicago, IL; 1955-1960:

The modernist look of the Law School was designed by Eero Saarinen to complement and contrast with the nineteenth-century Gothic buildings that populate much of the rest of campus. The Law School was originally located inside one of these Gothic buildings, Stuart Hall, until it became clear in the 1950’s that more space was needed.

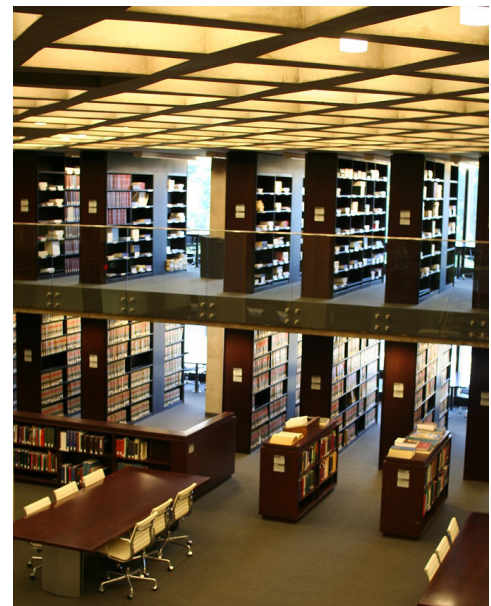
The new building at 1111 E. 60th Street is like Saarinen’s other works in that it is an intentional mix of old and new. The original buildings in Saarinen’s design include the administration wing, the D’Angelo Law Library and Green Lounge, and Rooms I through IV in the classroom wing. Supreme Court Chief Justice Earl Warren laid the cornerstone in 1958, and Vice President Richard Nixon dedicated the buildings at their completion in October 1959.

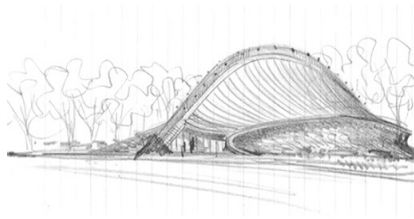
In the 1990’s, the building expanded with the Arthur Kane Center for Clinical Legal Education and the addition of classroom and seminar room space underneath the original row of classrooms. Other renovations and relocations took place over the years, including extensive work on the library and replacement of the original spray fountain in front of the Law School with a zero-depth reflecting pool.

This Eero Saarinen-designed complex has been lauded as a crowning achievement of modern architecture. The building’s long, low classroom and administrative wings are in keeping with the Modernist interest in horizontality and interlocking space and Saarinen used the same Indiana limestone as in their Gothic brethren. The sawtooth exterior curtain wall floats over its ground floor, recalling the projections of the campus neo-Gothic neighbors as Saarinen did in a similar manner at the Vassar dormitory.

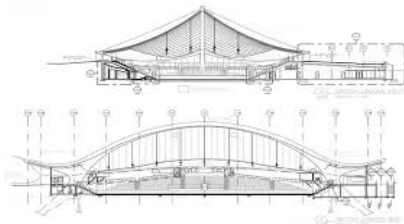


Top to Bottom:
1. Marriner S. Eccles Federal Reserve Bank; Paul Cret & Sidney Waugh, 1937
2. Chicago Laird Bell Law Library
3. Chicago Laird Bell Law Library Rendering
4. Chicago Laird Bell Law Library Interior





Top to Bottom:
1. Ingalls Ice Rink
2. Ingalls Ice Rink Rendering
3. Ingalls Ice Rink Sections
4. Ingalls Ice Rink Interior
5. IBM Training Facility Aerial Rochester, MN



The nearby fountain and plantings, by landscape architect Dan Kiley, softened the lines without upsetting the Mondrianesque order. A 2008 renovation and rehabilitation project restored the structures to their former glory while also repurposing them for contemporary needs. The D'Angelo Law Library tower and the reflecting pool received successful makeovers and were awarded the 2008 Richard H. Driehaus Foundation Preservation Award for Rehabilitation.

David S. Ingalls Ice Rink, Yale University; New Haven, CT; 1956 -1958:

This hockey rink contains a span 200 feet long by 85 feet wide and does so with a natural sense of flow and polish. Though the rink is seemingly heavy and brutal it is actually a tensile structure. The main structure comes from a 290-foot long central arched backbone of reinforced concrete.

From this central support the timber roof is “hung” on a cable net structure that gives it the signature double curve. Further cables running from the central arch to the outer edges of the building help stabilize the structure against wind loads.

The true beauty within the design found in its simplicity. Though it may look somewhat complex even in its symmetry, the main rink is simply a rectangular form with filleted edges. This adds emphasis and both literally and figuratively raises its roof to new heights.

The unfinished concrete of the main structure plays off of the color and texture of the oak roof, sweeping low between. The materials are punctuated by the glass curtain wall that is the main entrance.

The experience on the interior both reflects and refracts the image of the exterior. The underside of the oak roof adds a sense of scale and warmth. The directionality of the wooden slats trace the stresses of the drapery punctuated by the penetration of their concrete supports.

The sloping ramps of the interior trace the outside roofline and lead the viewer to inhabit the shape and feel of the structure. The vast expanse of the center of the dome rises 75 feet above the ice below. A somewhat cavernous sense is felt at the inhabitable levels and opens towards the center. As the roof slopes up as the stepped seating drops down. For decades, students and faculty have referred to the rink as “The Whale.”

IBM Training and Manufacturing Facility; Rochester, MN; 1956-1958:

After World War II, industrial design and architecture became increasingly intertwined, especially when large manufacturers, like International Business Machines (IBM), consulted with

teams of designers to advance the company's product lines and to shape the company's buildings. In the post-war period, companies like IBM came to regard these facilities, whether they were dedicated to research, production, or administration, as part of their branded image, and just as representative of the company as the products it made. And like those products, the buildings were required to incorporate the latest materials and technologies to prove that the company was on the cutting edge of innovation.

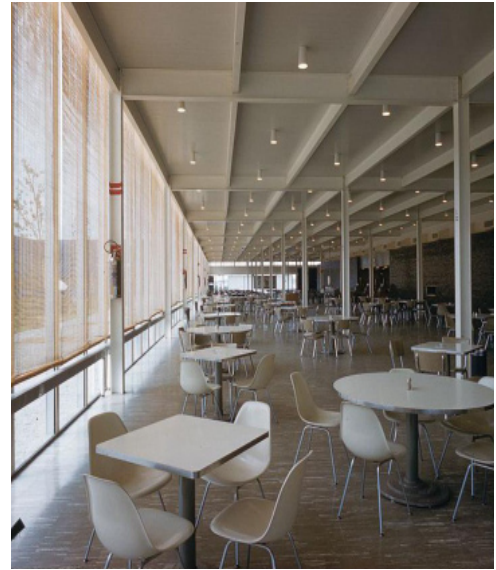
In 1956, IBM president Thomas Watson Jr. hired Eliot F. Noyes as "Consultant Director of Design" and charged him with entirely reinventing IBM's corporate image. An industrial designer and architect, Noyes was a 1938 graduate of Harvard University whose influential mentor, Walter Gropius, had exposed him to the philosophy of the German Werkbund, which viewed good design as good business.

In Watson, Noyes found an employer with the same commitment to design. To raise IBM's design profile, Noyes assembled a team of significant modernists, including Charles Eames, Paul Rand, Edgar Kaufmann Jr., Marcel Breuer, Mies van der Rohe, Paul Rudolph, and Eero Saarinen, who worked independently and in collaboration with IBM's in-house designers and engineers to bring Noyes's aesthetic and technological vision of modernism into American life.

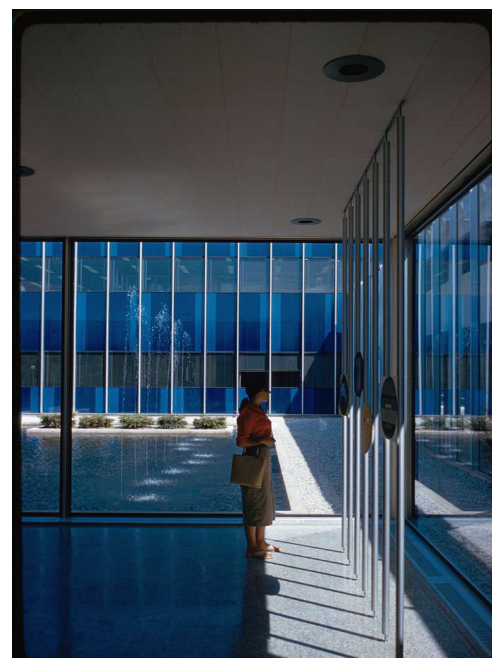
Soon after Noyes joined IBM, the company turned its attention to developing new manufacturing, engineering, and educational facilities on a 397-acre site outside of Rochester, Minnesota. This site was chosen to manufacture IBM electric and electronic accounting machines and to develop new products for punch-card tabulating machines and the IBM 305 RAMAC disk drive. Eero Saarinen was selected to design the corporate campus, which he proposed as a series of building blocks surrounding courtyards, some interior and some exterior, on a module that allowed for future expansion on the site. This was a design strategy developed by Noyes that had been recently used on corporate campuses for Time Inc. and IBM's New York locations at Yorktown Heights and Poughkeepsie.

In Rochester, the buildings included one- and two-story volumes that sat in the middle of the vast site. Unlike other suburban corporate campuses that felt development pressures from the surrounding communities, IBM had an understanding with the City of Rochester to hold development back from the site perimeter, particularly between the building and the highway, to preserve the appearance of the campus in the landscape. The one-story volume located at the core of the facility houses the cafeteria and employee lounges. The other four, one-story volumes (250 x 250 feet) contain the manufacturing facilities. The four, 80 x 250-foot, two-story volumes contain the offices for the complex.

The nearly 1,000,000-square-foot building, then IBM's largest facility, is based on a four-foot module that was developed for



Top to Bottom: IBM Training Facility; Rochester, MN





Top to Bottom:
1. TWA JFK Flight Center Exterior
2. TWA JFK Flight Center Roof
3. TWA JFK Roof Separations
4. TWA JFK Flight Center Overcrowded, 1965



the curtain wall system. Saarinen and partner John Dinkeloo created this curtain wall using extruded aluminum mullions that held the two-toned blue porcelain enamel on aluminum panels, the largest panel being 4 x 8 feet. These panels were designed to be 5/16-inch thick, with a sheet of enameled aluminum on either side of a cement-asbestos core, the only element providing insulation on the entire building. These panels were then attached to the aluminum mullions with neoprene gaskets, the use of which Saarinen had pioneered at the General Motors Technical Center in Michigan.

Horizontal division between the panels and the glazing were minimized, again, only using a neoprene gasket to seal the joint. The cost of the curtain wall system, according to the June 1957 issue of *Progressive Architecture* magazine, was only \$4 per square foot of wall surface—this not only included the cost of the panels, but also the glass and the neoprene gasketing, all installed and completely finished on both exterior and interior faces. The striking blue color of this campus, some say, is the reason why IBM is informally referred to as “Big Blue,” but it also established an enduring brand image, maybe by happenstance, for IBM. According to Thomas Misa, even though the origin of the color nickname remains a mystery, it is hard not to believe it references Saarinen’s assertively blue design, which he suggested was inspired by the Minnesota sky.

TWA Flight Center; New York, NY; 1955-1962:

Saarinen’s Flight Center for TWA at what was Idlewild Airport before it was renamed as JFK must be considered in context. WWII got civil aviation to move beyond mail delivery and to instead focus on passenger transit. Initially, due to technologically rudimentary planes, passenger safety was lacking (Rhoades, 2013).

Howard Hughes acquired TWA in 1939 and after WWII, led the airline’s expansion to Europe, the Middle East and Asia. TWA would then need a transatlantic hub at Idlewild/ JFK. Transatlantic flights created a new albeit competitive market, with US airlines losing money in the late 1940’s. In fact, TWA lost money until 1961.

As the airline industry entered the jet age, Hughes was late with his acquisition of jet planes, which caused him to lose control of TWA. As civil aviation emerged after WWII to achieve mass-market status with jet planes, efficient passenger management and efficient operations were needed. TWA was a fan of the Lockheed Constellation which had an eye-catching appearance. The delay in acquiring ‘good’ jets meant that TWA “lost the unique visually selling point it previously had (Ringli, 2018).”

As planes grew larger, bottlenecks inconvenienced passengers. Terminals were unable to cope with mass-market throngs. TWA was first to mechanize flight reservations, check-in and

baggage handling. TWA also was the pioneer to first introduce domestic tourist class in 1949 and international domestic flight class in 1952. TWA also introduced a 'Go now, Pay later' installment payment system. Pricing with the airlines became closely competitive to train travel. The industry's progress with increased travel speed, more comfortable and safer operations, smoother turbine operation and better flight safety combined to increase the public's confidence in air travel.

In 1946, 538,000 Americans flew. By 1950, one million took to the skies. By 1954, two million flew. By 1956, for the first time, more Americans crossed the Atlantic by air than by ship. From 1942 – 1972, American passenger traffic grew from 7 million to 32 million, and 50% of Americans had flight experience. From 1951 – 1966, the passenger airline industry was the fastest growing economic sector in the US.

The industry focused on aircraft cabin special, procedural and technical operational improvements. TWA hired Raymond Loewy to work on its Constellation, Henry Dreyfuss to redesign the Super Constellation and Harley Earl to design the Convair CV 880. Boeing hired Walter Dorwin Teague to design the Boeing 707. United had Raymond Loewy design the Douglas DC-6 and Continental had Charles Butler design the Vickers Viscount. All were focused on maximum space utilization, smooth work flows and the reduction of crew and passenger fatigue.

TWA's human resources initiative honed and standardized its service regulations into mandatory staff manuals. The effort to monitor and control employee activities also led to the definition of certain body dimensions for certain occupational groups. TWA's newspaper ads sought flight attendants with precisely defined personal qualities and body characteristics: age 21-26; 5'-2" – 5'-6" and 100# - 130#.

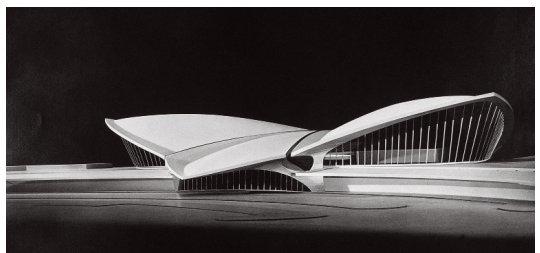
TWA and Aline Saarinen used the JFK Flight Center to improve their damaged reputation from their failed purchase of jets. In the mid-1950's, TWA hired industrial designers to modernize and unify their corporate design. TWA hired Raymond Loewy to develop a comprehensive design program to distinguish TWA from its competition. And it is in this context at Idlewild/JFK where all airlines were visually competing with one another that the TWA Flight Center has economic value for the airline thanks to its striking and recognizable shape.

It must honestly be acknowledged that Saarinen's Flight Center had a comparatively short life: The facility opened on May 28, 1962. By 1970, with the introduction of larger jumbo jets and their jumbo capacity, the terminal was inefficient. The facility was decommissioned in 2001, damning the facility to fail to achieve Saarinen's ambition for "an enduring vitality" for all of his projects (*Cleveland Engineer*, 1953).

In 1952, *Architectural Forum* identified a 'corporate showpiece' movement in architecture, citing SOM's Lever House as its



Top to Bottom:
1. TWA JFK Hotel, 2019
2. TWA JFK Lounge, 2019
3. TWA JFK Flight Arrival/ Departure Board
4. TWA JFK Presentation Model





Above: TWA JFK Ticket Counter
Below: Eero Saarinen with Design Model in Bloomfield Hills, MI Office



primary example. Thereafter, company buildings in the 1950's became essential elements in corporate marketing and branding.

After Lever House, the first high-rise manufactured entirely of aluminum for the Pittsburgh corporate headquarters of Alcoa in 1953 by Harrison and Abramowitz and the stainless steel façade of Inland Steel in Chicago by SOM in 1957 continued the pattern. The shades of blue appear to march to infinity by Saarinen for IBM in Rochester in 1958, the COR-Ten façade of the John Deere HQ in Moline completed in 1964 and Saarinen's approach to each project as a challenge with unique needs justifying a growing portfolio that defied easy categorization and labeling compelled noted English author Reynor Banham to label Saarinen "the first patron saint of the 'style-for-the-job' faction" of architects.

While it could be asserted that the GM Technical Center in 1956, the Bell Labs (1957-1962) and the IBM facilities in Rochester in 1958 and Yorktown Heights in 1961 were all similar straightforward curtainwall solutions, Eero's Chapel and Kresge Auditorium projects at MIT in 1955, Christ Lutheran Church in Minneapolis in 1949, his Irwin Bank and Trust project in Columbus, IN in 1954 and Milwaukee County War Memorial in 1957 alone all showed the widely variant compositional skills of a consummate form-giver.

Cesar Pelli described the design process for the JFK terminal as "unsteady" with "a lot of changes." Kevin Roche observed, "Eero really had his hands on everything, all the decisions." Roche also fairly noted, "There was no precedent. Because the jet hadn't arrived yet... And they constituted an entirely different passenger-handling problem."

Roche: "TWA was a violation of every structural principle, because you have these ridges – like on a Nordic helmet... the four shells cut apart. So they don't have the opportunity to counterbalance."

Saarinen told a story that he was having breakfast with his wife one morning and after finishing a half of a grapefruit, turned it over and pushed down in the center with his finger. This supposedly was the genesis of the idea for the vaults of the TWA main terminal. Saarinen also told Cesar Pelli the story that at the same time they had started design of the TWA Flight Center, when he went to Australia to participate in jurying the submissions for the Sydney Opera House competition, he arrived a day late. The jury had already rejected Jorn Utzon's submission. Saarinen convinced the jury to not only reconsider, but select it as the winner. When he returned, he added a "crease to the domes" of the terminal, which he saw in Utzon's design. Roche confirms this and that the timing of the roof design change was immediately after Saarinen returned from Australia.

Saarinen's design for the TWA New York Flight Center is more than its unprecedented exterior appearance. The corporate

representatives of culture, image and customer- vs. product-focused management began to impose new demands on their design partners to establish corporate identity at many levels. Flexible standardized special modules that can be easily adapted to changing work processes and strategies were desired, and buildings needed to present a coherent internal order of the organization of its parts.

For TWA, efficient passenger handling was high on its list. Eero Saarinen was commissioned in 1955 to design the TWA Flight Center at a time when TWA's fleet was comprised largely of its preferred aircraft, the handsome Lockheed Constellation propeller plane. Forecasting heavy patronage for the terminal, Saarinen designed it to speed up processes. It also served to define and convey TWA's brand identity with its bird-shaped, emblematic structure and a harmoniously coordinated interior featuring references to TWA's corporate identity.

While New York International Airport at Idlewild had been operating since 1939, the need and site for a Trans World Airlines (TWA) terminal was laid out in a 1955 plan, which called for each major airline to build its own terminal, while smaller airlines would be served from an International Arrivals Building. TWA began flying internationally in 1946 from New York's LaGuardia Airport with flights to Paris, London, Rome, Athens, Cairo, Lisbon and Madrid. In 1950, as both a domestic and international carrier, the former Transcontinental and Western Airlines changed its name to Trans World Airways. By 1955, TWA, being among New York's major airlines, undertook to build its own terminal at what was then commonly called Idlewild Airport.

The design of the TWA Flight Control Center for Idlewild was instigated by Eero's desire for "the architecture to express the drama and specialness and excitement of travel...and to create a place of movement and transition (Aline Saarinen, 1962)." The large models created by the office for the terminal are legendary and well documented.

The original design featured a prominent wing-shaped thin shell roof over the main terminal, unusual tube-shaped red-carpeted departure-arrival corridors and tall windows enabling expansive views of departing and arriving jets.

Although portions of the original complex have been demolished, the Saarinen-designed central structure has been renovated, which was partially encircled by a replacement terminal building, which was completed in 2008. Together, the old and new buildings made up JetBlue Airways' JFK operations and were known collectively since 2008 as Terminal 5 or simply T5. The Port Authority of New York and New Jersey that operates JFK Airport, had once intended the TWA Flight Center as a ceremonial entrance to the replacement terminal. In 2016, the Port Authority converted the original main terminal into the TWA Hotel, which opened in 2019.



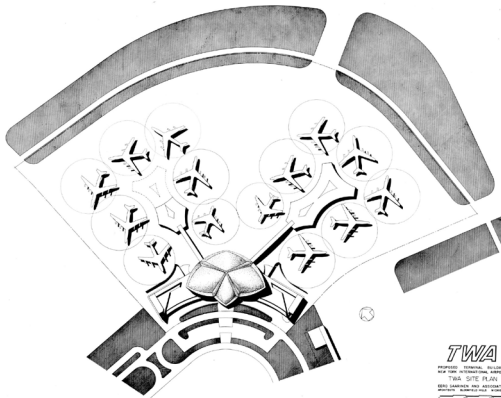
Top to Bottom:

1. TWA JFK Flight Center with New Jet
2. TWA JFK Tunnel/ Bridge Connector
3. TWA JFK Common Area
4. TWA JFK Flight Center Under Construction





Top to Bottom:
1. TWA JFK Lounge after Hotel Renovation
2. TWA JFK Aerial View
3. TWA JFK Flight Center Site Plan
4. TWA JFK Flight Center Original Saarinen Concept Sketch



The thin concrete shell was built to span a space with a minimum of material. Unhappy with his initial designs which had been approved, Saarinen asked TWA for more time and took an additional year to resolve the design. A review of the firm's time records indicated that Saarinen's office logged more hours on the JFK terminal than any other project.

Most other major U.S. airlines completed their Idlewild terminals sooner: after the opening of the International Arrivals Building in 1957, United Airlines and Eastern Air Lines opened their own terminals in 1959, followed by American Airlines and Pan American World Airways in 1960, Northwest Airlines and TWA in 1962. The National Airlines Sundrome was last in 1969.

The terminal is a pioneering example of thin-shell construction, consisting of a reinforced concrete shell supported at the corners. To engineer the roof, Saarinen collaborated with Charles S. Whitney and Boyd G. Anderson of the firm Ammann & Whitney. Saarinen had worked with the same team in 1953 to 1955 in executing the MIT Kresge Auditorium and would work with them on the main terminal at Dulles International Airport.

The terminal is dominated by a vaulted central structure 51 feet high and 322 feet by 222 feet that houses an entrance area, waiting rooms and restaurants. Four reinforced concrete shells form the structure with varying thicknesses from seven inches at the center to eleven inches at the base. The shells are supported by edge beams which themselves are supported by massive Y-shaped steel-reinforced piers. Canted glass skylights trace across the arched edges with a horizontal plate binding the shells together to stabilize the structure.

From the Saarinen office, Kevin Roche, Cesar Pelli, Piet van Dijk, Norman Pettula, and Edward Saad were key collaborators. Warren Platner was largely responsible for the interiors. Aline Saarinen worked with TWA to coordinate marketing activities centered on the terminal starting with the building's first public presentation on November 12, 1957 through its opening in 1962. When Saarinen died unexpectedly of a brain tumor in 1961, Kevin Roche and John Dinkeloo led the realization of New York's TWA Terminal.

The completed terminal was dedicated May 28, 1962. The same year, Saarinen won the AIA Gold Medal posthumously. The airport's name was changed to John F. Kennedy International Airport in December 1963.

The terminal was one of the first with enclosed passenger jetways, closed circuit television, a central public address system, baggage carousels, electromechanical split-flap display schedule board and baggage scales, and the satellite clustering of gates away from the main terminal. Food and beverage services included the Constellation Club, Lisbon Lounge, and Paris Café.

However, as with many terminals designed before the advent of

jumbo jets, increased passenger traffic and security issues, the unique design proved difficult to update as air travel evolved; terminal gates Saarinen had located close to the street for passenger convenience and efficiency made centralized ticketing and security checkpoints difficult.

Following TWA's continued financial deterioration during the 1990's and the eventual sale of its assets to American Airlines, the terminal ended operations in October 2001. The Port Authority of New York and New Jersey first proposed converting the main terminal into a restaurant or conference center, while encircling the existing building with one or possibly two new terminals. The concept received opposition from the Municipal Art Society of New York, as well as the architects Philip Johnson and Robert A.M. Stern. The opposition suggested the building, which brought passengers into immediate view of the sky and aircraft beyond, would be "strangled" if wrapped by another terminal, and that wrapping the Saarinen head house with another terminal would not preserve the spirit of the building but would mummify it "like flies in amber."

Both the interior and the exterior were declared a New York City Landmark in 1994. In 2005, the terminal was listed on the National Register of Historic Places. Architect Robert A. M. Stern has called the TWA Flight Center the "Grand Central of the jet age". The pragmatic new encircling terminal has been called "hyper-efficient" and a "monument to human throughput".

Due to this father's international renown, Saarinen aspired to a permanent place in the history of architecture. Wife Aline was a *New York Times* journalist with excellent contacts, which she exercised effectively so that she was able to increase Eero's stature considerably in less than a decade. Eero was featured in *Time*, *Playboy*, *Holiday* and other prominent publications. She transformed Saarinen's public perception from that of a furniture designer to a master world-class form-giving architect.

"We wanted passengers passing through the building to experience a fully-designed environment in which each part arises from another and everything belongs to the same formal world."

Eero Saarinen

The terminal was an aesthetic and commercial success for decades until the early 2000's, when TWA was sold to American Airlines and the terminal's retro layout was deemed insufficient for jumbo jets and 21st century security guidelines. The duties of the TWA Flight Center were transferred to the modern day Terminal 5, located just to the east of the terminal building.

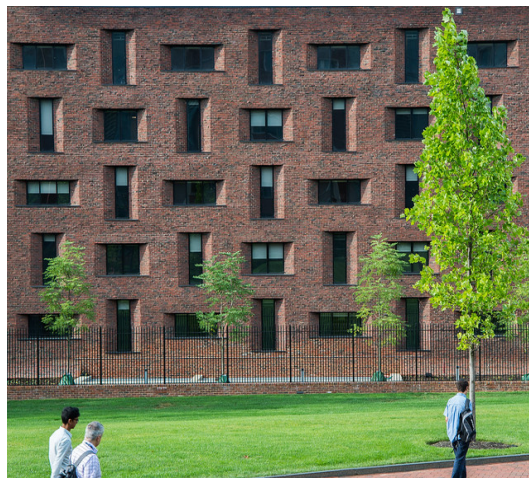
Thanks to its placement on the National Register of Historic Places, the midcentury flight center was preserved, sitting unoccupied in the center of one of America's busiest airports. It remained in limbo for years - intact, but entirely empty other than the occasional open house.



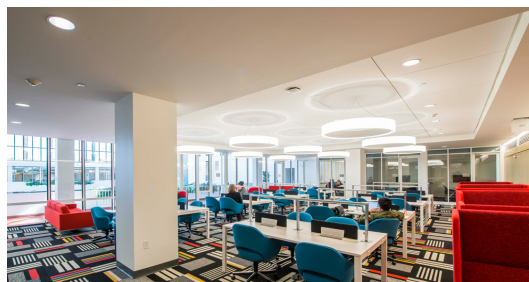
Top to Bottom:

1. TWA 1960's Branding Design with Saarinen's Terminal
2. TWA JFK Flight Center Under Construction
3. TWA JFK Flight Center Exterior





Above: Hill College House Exterior
Below: Hill College House Renovated Lounges



Empty and abandoned for almost 20 years, the TWA Flight Center is once again the cornerstone of New York's JFK Airport. In 2019, the original terminal opened as a grand lobby to a new airport hotel, consisting of 505 new guest rooms while maintaining many of the airport's original icons, including the Lisbon Lounge and the Paris Café. The flight center's repurposing is an indication that it is never too late or too costly to preserve history.

Hill College House; Philadelphia, PA; 1957-1960:

Ann deForest, 2017:

"I heard a funny story years ago about the design of Hill College House, the first dormitory at the University of Pennsylvania built exclusively to house female students. The legend goes that when architect Eero Saarinen first met with Penn planners in the late 1950's to discuss the new dorm's requirements, the words, "safety, security, protection" were repeated by the university's administrators ad nauseam. As the Finnish-born Modernist was headed to 30th Street Station on his way out of town, he was overheard shaking his head and muttering, "They don't want a dormitory. They want a goddamn fortress." Whether or not the story is true, a fortress is what he gave them. After 15 months and \$80 million worth of renovations, Saarinen's clever display of defensive campus architecture reopened in 2020 to welcome Penn's incoming Class of 2021.

From the outside, Hill College House, isolated on what was the eastern edge of campus when the dormitory opened in 1960, displays all the trappings of a medieval castle - translated into a modern idiom. Spiked, metal battlements ring the roofline. Narrow vertical windows, alternating with wider horizontals, suggest loopholes excellent for shooting arrows at intrepid burglars or invading frat parties. A virtual moat circles the foundation, crossed by a narrow bridge that leads to the building's only public entrance. In the original landscaping, thorny honey locusts filled the moat, a thicket that would dissuade even the most valiant Prince Charming.

That the iconography of fortification is presented with charm and wit attests to Saarinen's flair as an architect. The nubby texture of the hand-forged bricks, the musical rhythms of the alternating window shapes, and the graceful curves of the spiked iron cornice temper the forbidding exterior. While the hard-edged Hill College House is decidedly more earthbound than Saarinen's swooping St. Louis' Gateway Arch or the TWA Flight Center at JFK, the dormitory displays a playful, subtle intelligence in its details.

Saarinen carried through the fortress theme on the inside as well. The narrow bridge and single entryway leads to an astonishingly wide, white, soaring space, as airy and light-filled as the outside is impenetrable and dark. The central atrium rises from the basement cafeteria up five levels. At the

very top, clerestory windows let in sunlight and glimpses of the sky. Enclosed balconies with louvered shutters overhang the courtyard, and a marble fountain gurgles below. That central space encourages communal interaction, while offering a series of smaller common areas, study nooks, and lounges for more intimate gatherings. Like a castle keep or convent cloister, these communal and contemplative spaces create their own self-contained world, well protected from “menacing” outside influences.

The notion that women students needed medieval measures when it came to their safety became outmoded almost as soon as Hill College House was built. Parietals and curfews quickly became quaint customs, swept aside by protests and the Pill. The dormitory went coed in 1971, exactly a decade after it opened. By then, concrete and glass highrise dorms dominated the west end of campus, making Hill College House, distant from both the Quad and the new residential center, seem a forlorn outpost in student life. Despite the airy central spaces, the cell-like dorm rooms were notoriously dark, damp, and infested with vermin. Lacking air conditioning, the dormitory might as well have been built in the Middle Ages. Hill College House, despite its architectural pedigree, became one of Penn's most maligned residences.

Mills + Schnoering Architects, having previously restored St. Louis Gateway Arch, the Princeton historical renovation firm hired to restore and upgrade the forbidding, Hill House Modernist landmark, faced a formidable challenge. They needed to rehabilitate and upgrade the long-neglected building to meet contemporary students' expectations. At the same time, the new systems and amenities—from air conditioning to gender neutral bathrooms (the first ones on Penn's campus) to an upgraded kitchen and expanded, diversified dining facilities—had to honor Saarinen's original vision.

The 15-month, \$80 million renovation project undertaken by lead architect Michael Mills, having previously restored Saarinen's St. Louis Gateway Arch, had Mills and his team attempting to channel the Finnish-born designer and craftsman.

“Our guiding question was always ‘What would Eero do?’” said project manager Alison Baxter. Immersing themselves in the Saarinen archives at Yale and Cranbrook Academy in Michigan, where Saarinen taught and practiced the whole of his brief career, the design team reconfigured spaces honoring the architect's vision and replicated carpet and upholstery patterns as well.

Saarinen was meticulous in his geometries, even stipulating the layout of chairs and tables in common rooms to correspond with shapes on the exterior. He also guided residents through the building with bold color-coding. Michael Mills and his team amplified the color scheme and signaled their own design interventions through explicitly new geometries and materials.



Top to Bottom:
1. Hill College House Original Atrium
2. Hill College House Atrium Today
3. Hill College House Floor Lounge
4. Hill College House Exterior





Above: Hill College House Bridge Entry
Below: Hill College House Dorm Rooms



Circles, for instance, never appeared in Saarinen's strictly rectilinear layout. Now, the ceilings of lounges and study nooks are adorned with Saturn-ringed LED lamps, a 21st century touch that complements, rather than contradicts, the original design. As a result, the Hill College House renovation reads as a sparkling conversation between past and present, a lively interchange that showcases the intelligence and clarity of the original design muffled and muddled over five decades.

David Hollenberg, University Architect at Penn, said the renovations not only respect the original design, but that they are "A complete refresh... that invigorates Saarinen's design and the community life it so richly fosters."

Aside from the technical sleight of hand required to hide a massive, new HVAC system, the architects' biggest challenge was to reposition a self-effacing loner of a building, designed at a time when Penn's urban location was a liability, as an engaged citizen of the surrounding city. The restored Hill College House follows last year's opening of New College House, which redefined and recharged the once flat, blank grassland called Hill Field into a verdant thoroughfare connecting Penn's campus with Center City. As a companion to New College House, Hill House stands alert, if slightly aloof. The moat, now filled with less forbidding plant materials, still creates a sense of detachment.

Together, though, the two make intriguing gateposts to the university's eastern entrance. Symbolically, they embody two aspects of a college education: the active and the contemplative. New College House inclines toward the city, framing vistas of skyscrapers and street traffic in its glassy, transparent rooms. Hill College House, in contrast, offers sanctuary. Inside, only light and sky (and the very tip of the new FMC tower) can be seen through high, clerestory windows. There is no evidence or intrusion from city or campus outside. Some of the dorm rooms do look out onto busy Walnut Street, but small windows and a screen of trees limit their urban view.

In his all too brief career, Eero Saarinen's death from a brain tumor in 1961 denied him the privilege of seeing Hill College House or many of his most defining works completed. But Saarinen left the world a rich legacy of iconic forms, inspiring spaces, and sensual materials. Although Saarinen is celebrated now as a Modernist master, that label doesn't capture his singularity as an architect.

Hill College House defies ready categorization. The rough-textured, chiaroscuro-shaded bricks on the exterior walls look back to Modernism's foundation in the Arts and Crafts movement. Cranbrook, where Saarinen taught, is still today an influential art and design school devoted to developing a contemporary idiom for traditional crafts, from weaving to furniture making to architecture. At the same time, in embracing architectural allusion—those crenellations and other castle references—Saarinen anticipated the antic quotations of Post-

Modernism by more than a decade.

Saarinen is also one of those exceptional architects whose buildings appeal simultaneously to emotion and reason. With Hill College House, the architect speaks with precise and ordered geometries, the clear illustration of the building's flow and function through form and color, and an exquisite attention to details that repeat and vary with mathematical elegance. But he also orchestrates breathtaking shifts between closed and open spaces. Surprising vistas, a sudden splash of color, and the musical cascade of falling water from the central fountain all energize, uplift, and inspire. Saarinen's work has certainly affected me. A flight out of his transcendent TWA Flight Center at JFK more than 40 years ago inspired me to write about architecture.

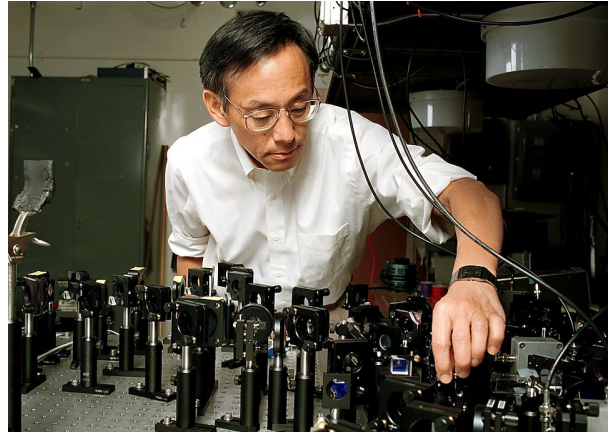
The 500 freshmen who moved into Hill College House last week will likely find the new, air conditioned rooms, flat screen TVs, pool tables, kitchen-equipped lounges, and other 21st century amenities more thrilling than subtle, design interplays of line and color. The students will ultimately judge the building for its comforts and ease. But even if they absorb Saarinen's design, and Mills + Schnoering's adept interventions, subliminally, they are in for a treat. The Class of 2021 will be eating, studying, and playing in an environment that stimulates both the left and right sides of the brain. Living in Hill College House, for those who pay attention, will continue to be an education in itself."

IBM Thomas J. Watson Research Center; Yorktown Heights, NY; 1956-1961:

The Thomas J. Watson Research Center is the headquarters for IBM Research. The center comprises two sites, with its main laboratory in Yorktown Heights, New York, 38 miles north of New York City and with offices in Cambridge, Massachusetts. The center, headquarters of IBM's Research division, is named for both Thomas J. Watson, Sr. and Thomas Watson, Jr., who led IBM as president and CEO, respectively, from 1915 when it was known as the Computing-Tabulating-Recording Company to 1971.

The facility's research is intended to improve hardware (physical sciences and semiconductors research), services (business modeling, consulting, and operations research), software (programming languages, security, speech recognition, data management, and collaboration tools), and systems (operating systems and server design), as well as to extend the mathematics and science that support the information technology industry.

In the mid-fifties, a fascination for shapes of the first



Above: Steven Chu

computers and their product patterns, the IBM punch cards, evolved. People who could read and understand these signals counted themselves members of a new era. From that time forward, the lives of people were embossed into the modular system of the punch cards - like in the matrices of the modularly structured sheathing of the facilities they were made in.

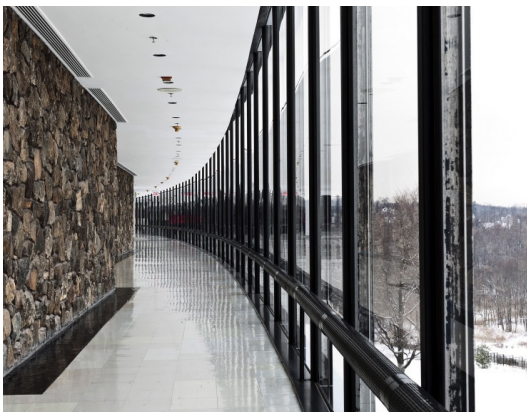
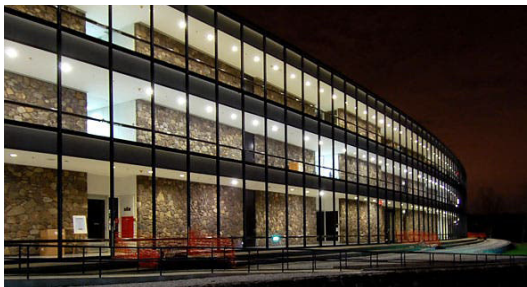
In 1956, Eero Saarinen was commissioned to design the new IBM Manufacturing and Training Facility in Rochester, Minnesota. This factory, which also included administration, was to stand at the forefront of a new series of IBM production buildings displaying the company's corporate image. The extensive low-rise complex received a curtain wall made of extremely thin tinted neoprene glazing with different shades of color based on a 4 ft grid. The wafer-thin glass skin makes the building appear abstract and dematerialized and is a telling expression of the precision of the IBM machines manufactured inside.

The blue shades of the façade color scheme also hint at the IBM nickname "Big Blue". Like Olivetti, IBM was in the process of creating a new corporate logo at the time Saarinen was engaged. The individual wings containing the production halls are connected to a central shared area accommodating the cafeteria, lounge and visitor areas. Instead of designing a conventional lavish entrance lobby, Saarinen concentrated his attention on creating a good working environment. Differences in the appearance of production and administration facilities were abolished as far as possible in order to tear down traditional hierarchies and differences between workers and employees. To express these egalitarian values, both areas are indiscriminately sheathed with the same façade design. IBM went on building additional factories across the US modeled on the Saarinen's design of the Minnesota facilities.



Top to Bottom:

1. IBM Watson Research Center Aerial
2. IBM Watson Research Center at Night
3. IBM Watson Research Center Entry
4. IBM Watson Research Center Perimeter Corridor



The IBM plant in Rochester was a precursor for Saarinen's next commission, the Thomas J. Watson Research Center in Yorktown Heights, New York that was completed in 1961. The center was to provide facilities for the development of a new "intelligent" computer generation.

During World War II, a new type of large research laboratory for the private industry had emerged based on a diffuse affiliation of military and university research. Academic research thereby grew increasingly dependent on private foundations, which in turn were governed by large companies. In addition, the government coordinated military projects during the war, thus taking a leading role in this field of research. This development continued during the cold war and led to the formation of the National Science Foundation (NSF) in 1950. In the following years, this affiliation became known as the "military-industrial-academic complex". The new research facilities needed for this purpose were separated from production and obtained their own corporate image.

When Saarinen was commissioned to design the IBM Yorktown Heights center, IBM had entertained close links with Harvard University for years. At the same time, it handled public contracts in the military sector. This close connection between military and university research also existed in another project by Saarinen that he carried out in two phases for Bell Telephone Laboratories in Holmdel, New Jersey between 1957 and 1966.

Both projects have to be considered together since their planning was carried out almost at the same time. Furthermore, both projects had to provide maximum flexibility because the outcome of the respective research projects they were to house could not be foreseen. While the IBM facilities in Yorktown Heights contained six departments for multi-disciplinary computer sciences, the Bell complex in Holmdel comprised research and product development. It maintained close links with universities and was designed particularly for research in the fields of circuits, data transmission, quality control, and network design.

Saarinen's first proposal for the IBM project envisaged a campus consisting of low-rise, interconnected buildings with double-loaded corridors, grouped around a large courtyard and nestling in the hilly terrain. In contrast, the design proposal for Bell was based from the beginning on an introverted compact massing of the building volume. Saarinen's starting point for both projects was a remarkably progressive research complex completed in 1941 - the Bell Telephone Laboratories in Murray Hill, New Jersey.

Yet in developing his scheme, Saarinen turned conventional daylit areas with workplaces on the building perimeter into centrally located deep work zones that were air-conditioned and artificially lit. This tendency had become apparent in office and laboratory buildings throughout the USA, but Saarinen pursued this idea more radically. Whereas in his preliminary design

Essays on Architecture:

Eero Saarinen - America's Modern Form-Giver

sketches at least offices were positioned along the façades, ultimately all offices and laboratories were allocated in central zones accessed by peripheral corridors.

The completed scheme drastically broke with the ideals of European Modernism, which had postulated a strong doctrine in the twenties with its call for light and air for apartments and workplaces. From now on, the public and circulation areas around the perimeter set the stage for sweeping views of the landscape or into inner courtyards; relationships between interior and exterior space could only be experienced in a controlled manner during periodical breaks and were to take place along the building's curtain walls.

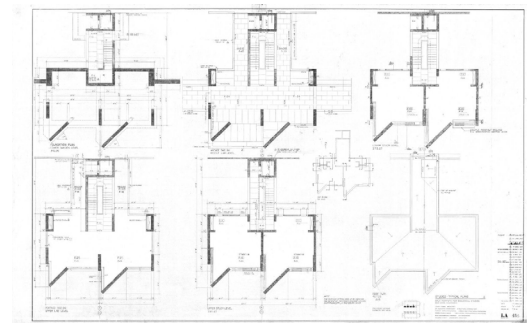
It is interesting to compare Saarinen's project with Kahn's Salk Institute in La Jolla, built approximately at the same time (1959-1965): Kahn's offices and labs were day-lit and naturally ventilated "thinking cells" with adjoining loggias. They were located in front of the inner laboratory zones.

The Thomas J. Watson Research Center for IBM was one of the first large research complexes to be linked to new highways, thereby changing the bucolic landscape of the Hudson Valley south of New York City. Initially, Saarinen had envisaged natural lighting for the laboratories via courtyards and for the offices via exterior façades respectively. Yet eventually he opted for a compact three-storey building volume based in plan on a 4 ft x 6 ft grid. Each floor plan comprises funnel-shaped cores and corridors along the façades.

The open plan spaces are column-free. 24 ft deep rows of laboratories are arranged back to back along narrow service corridors perpendicular to the façades. Alternately, 12 ft deep office rows are also arranged back to back along central rows of fitted cabinets. Both zones are accessed via transverse corridors. The sweeping lightweight façades of the building are juxtaposed by massive natural stonewalls facing the peripheral corridors on their inner side. The rocks were gathered locally. Individual rocks have been marked with the coordinates of their original position within the landscape.

The corridors afford generous views of the surroundings. The staggering of the natural stonewalls supports the contrast between the orthogonal workspaces and the sweeping shape of the glazed exterior membrane - at that time, this was an extraordinary composition, which was further validated 40 years later when Sir Norman Foster adapted it for his McLaren Technology Centre in Woking, Surrey, England, in a striking way.

While the concave façade of the IBM building consists of natural stone and glazed panels, the convex main façade received a full height curtain wall made of dark tinted glass. It is based on a 4 ft grid and bears no relation to the 6 ft interior grid. All interior partitions are modular steel-and-glass elements. The interior grid manifests itself in prefabricated wall and cabinet elements consisting of modular panels in two different widths in dark and



Top to Bottom:
1. Salk Institute Exterior, Louis Kahn, La Jolla, CA
2. Salk Institute Partial Plan
3. IBM Watson Research Center Open Office
4. IBM Watson Research Center Cafeteria





1. IBM Watson Research Center Lobby Stair
2. IBM Watson Research Center Aerial
3. IBM Watson Research Center 'Interior' Rear Courtyard



light colors. This differentiated interior scheme is reminiscent of the façades of the IBM factory in Rochester; it facilitates orientation in the highly repetitive circulation system.

Walter Gropius and his TAC practice were also commissioned in 1962 by IBM to design a large research centre for the development of computer systems for the Federal Government. Gropius' proposal for the IBM Federal Systems Division Facility in Gaithersburg, Maryland, was a clear layout comprising linked rectangular rows of laboratories. In an alternative scheme he proposed square building volumes with inner courtyards. Unfortunately, the interesting schemes were never realized.

Saarinen's final design for the Bell Laboratories is based on a monolithic, introverted block structure with very deep inner zones and a row of small courtyards. The basement houses the IT control rooms, an auditorium and a canteen. The Bell Laboratories are characterized by the strict order of the square 6 ft ceiling grid, the transparent glazed interior partitions, and the grid of the continuous curtain walls. Although the building volume is embedded in a generous baroque elliptical layout of roads and green spaces, in reality the complex appears just as neutral as the grid of the interior partitions with their only variation being different shades of grey.

The neutral appearance is reinforced by the apparently endless and repetitive veneer of the light reflective glazing supported by a delicate 3 ft grid of metal profiles. In the two-dimensional graphic system, the floor levels are no longer visible. With a length of more than 1200 feet, it was the longest "mirror" that had ever been built. This achievement was also revolutionary in terms of building technology. Saarinen had brought together the transparency of the interior spaces with a reflective exterior skin. Solar heat gains were reduced and with it energy consumption for the air-conditioning of the exterior corridors by approximately 70 %. At that time, the *Architectural Forum* called this an "inside-out" air-conditioning.

Paradoxically, the huge reflective façade does not reflect much. The flat landscape and the huge parking lots do not produce images that could be mirrored. Yet this effect was fully intended: Saarinen and his client wanted to express IBM's corporate image with an impersonalized, incomprehensible façade - a mirroring computer screen that in its way was to become a symbol for the "military-industrial complex" of the time.

The visions, wealth of ideas, and architectural potency of the portrayed American research buildings of the post-war era between 1945 and 1965 are the key to a better understanding of an important period of architectural history of the 20th century.

Bell Telephone Corporate Laboratories; Holmdel, NJ; 1957-1962:

The Bell Labs Holmdel Complex, in Holmdel Township, New

Jersey, functioned for forty-four years as a research and development facility, initially for the Bell System and later Bell Labs. The centerpiece of the campus is Eero Saarinen's laboratory structure that served as the home to over 6,000 engineers and researchers. This modern building, dubbed "The Biggest Mirror Ever" by *Architectural Forum*, due to its mirrored glass box exterior, was the site of at least one Nobel Prize discovery, the laser cooling work of Steven Chu.

The building has undergone renovations into a multi-purpose living and working space, dubbed Bell Works by its redevelopers. Since 2013, it has been operated by Somerset Development, who redeveloped the building into a mixed-use office for high-tech startup companies. The complex was listed on the National Register of Historic Places in 2017. Before the present building, the site was used by Bell Telephone Laboratories for research where Karl Guthe Jansky invented radio astronomy.

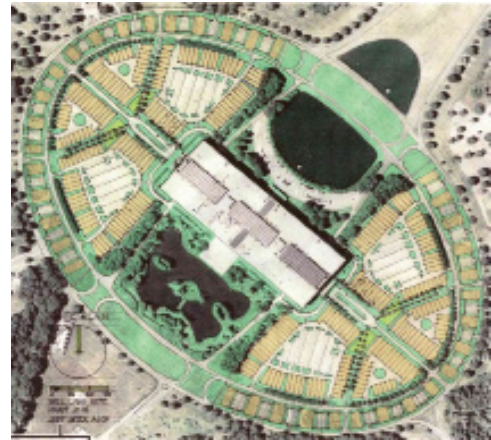
In 1957, the American Telephone and Telegraph Company (AT&T) began to plan a research laboratory in Holmdel Township in Central New Jersey. Constructed between 1959 and 1962, this complex was one of Saarinen's final projects before his death in 1961. Used as a research and development complex, it served the needs of the Bell Laboratories division of AT&T, later part of Lucent, and Alcatel-Lucent. Basic research, applied hardware development, and software development occurred in the building.

Eero Saarinen's Bell Labs Holmdel Complex has been a majestic glass box that appears mirage-like in the New Jersey countryside, was one of the architect's last projects before he died in 1961. Constructed between 1959 and 1962 it represents a far-sighted model for the way many modern offices and educational facilities have been constructed, with their specific emphasis on stimulating collaboration and fostering encounters between different departments.

In its first few decades, it hosted the work of over 6,000 engineers and scientists, with a particular focus on telecommunications research. Such a large number of researchers engaged in the business of furthering communication technology greatly benefitted from Saarinen's meticulously function- and site-specific approach that has been a hallmark of the modern architecture's design methodology.

Indeed, as with all of Saarinen's projects an enormous amount of research was conducted prior to designing the scientist's workspaces. According to Pelkonen and Albrecht, authors of "Eero Saarinen – Shaping the Future," Eero's principal criterion was that there be maximum flexibility everywhere: adaptable laboratories, centrally located common facilities such as the cafeteria, and minimal foot traffic past offices and laboratories.

Saarinen's research also led to a remarkably economical use of space in the building. Specifically, it was found that much space was wasted when laboratories are separated by hallways, due to the significant amount of room occupied by utility ducts. In response, the architects decided to have offices facing back to back with closets and storage placed between the offices. This enabled utility cores to be shared between two labs and had the added bonus of allowing offices and



Above: Bell Works Site Plan * Aerial Photo
Below:

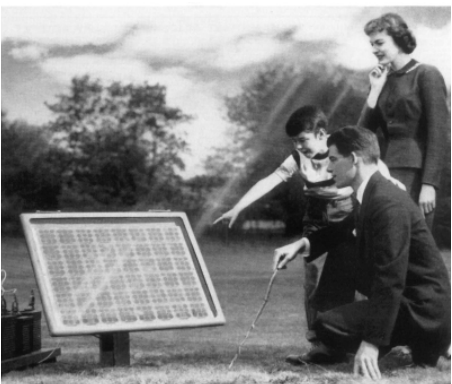
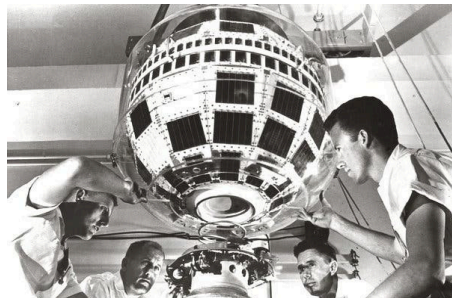
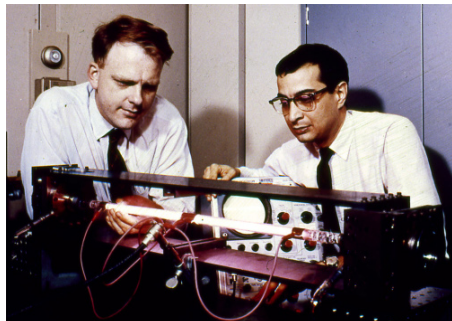
1. Bell Labs Floor Plans
2. Bell Labs Entry Elevation





Top to Bottom:

1. Jack Morton & J. R. Wilson at Bell Labs invent the Transistor, 1948
2. Ali Jarvan and William Bennett invent the laser at Bell Labs, 1960
3. Bell Labs' Telstar Satellite, 1962
4. Bell Labs Invents Solar Cell, 1954



laboratories to be combined or subdivided.

As well as the concentration on the building's function, Saarinen's building also captured the modernist spirit in its communication with the surrounding countryside. The site for the building was situated on a 460-acre plot on the Jersey Shore, an hour outside New York City. In contrast to the IBM building that Saarinen was building at the same time, this landscape was distinctly flat and open, less like a forest and more like a farm.

Despite its massive scale – and perhaps because of it, Saarinen and project architect Anthony Lumsden believed that for research to be productive, extended periods of high concentration and focus required effective relief which could best be provided by connecting with nature.

To avoid the development sticking out like a sore thumb, Saarinen gave the building an enormous mirrored glass façade. While this did not render the building entirely invisible, the unique light conditions it created around the building were an admirable attempt to mitigate the scale of the building and have the building blend and interact with its surroundings rather than antagonize them.

The building's distinctive features, including its mirror-like appearance, led to recognition as the Laboratory of the Year by R&D in 1967. The building was expanded in 1966 and 1982 to its final size of two million square feet of office and laboratory space, while retaining the original curtain wall design and the unique layout of the site, which included a large elliptical master plan and country-road like approach. Over its active life-span, the facility and its layout were studied in universities as models of modernist architecture. Internally, the building is divided into four pavilions of labs and offices, each separated from the others by a cross-shaped atrium. The internal pavilions are linked via sky-bridges and perimeter walkways. The facility's water tower was designed by Saarinen to look like the then-new transistor.

That ATT had the confidence and saw a future so full of possibilities and revenue to invest so heavily in such a large facility is curious at a time when the US government was exerting efforts to limit the company's monopoly. It is likely that the simplicity and efficiency of Saarinen's design was an effort by the company to balance the risk of such a substantial R&D initiative, for the economy of the huge box and its monolithic glass skin – the least expensive of all exterior materials at the time – put a facility in place at a competitive cost.

Planning and design of Saarinen's Bell Labs began in 1957, one year after Bell Labs and the Federal government entered into a consent decree to contain ATT's monopoly.

Each time the government took action against AT&T for anti-competitive behavior, Ma Bell had to give up a piece of its future. The "consent decree" signed in 1956 set very specific limits on AT&T when it came to conducting business outside its basic function. AT&T could remain the telephone monopoly, offering its phones and phone service to the public, but at a price. That same year, Bell Labs' scientists won the Nobel Prize for inventing the transistor. Transistors are the building blocks of integrated circuits and microchips. The information age would

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not exist without the innovation of the transistor.

The 1956 consent decree forced AT&T to put the transistor patent in the public domain. That meant AT&T couldn't make any money off of other companies using transistor technology for its products - not that AT&T was trying to do so in the first place. The 1956 consent decree completed a process that began in 1949, when the government filed its lawsuit to break up AT&T. Bell Labs invented the transistor in 1947 as an improvement on the vacuum tubes AT&T was using to improve the quality of its long-distance service.

The transistor had many more applications than boosting a phone signal, but the last thing AT&T could do was keep such a revolutionary technology all to itself. Otherwise it would risk even more ire from "trust busting" lawmakers. As a gesture of good faith, AT&T said it would share its transistor technology to any company willing to pay \$25,000. The companies that became licensees made their names in transistor and semiconductor technology: General Electric, Texas Instruments, IBM and Sony, to name a few.

At the time, AT&T insisted that its monopoly served the public interest. The innovations pioneered by Bell Labs, and AT&T's lack of interest in exploiting them, appear to confirm this notion. To list the number of important innovations, inventions and technologies that came out of Bell Labs over the 107 years AT&T was "Ma Bell," is more than the scope of this writing. Even the highlights are impressive:

- Facsimile (fax) technology
- The first television-type transmissions
- The radio telescope
- The discovery of "background radiation"
- The laser
- Fiber optics
- The solar cell
- The first satellite communications system (Telstar)
- The Unix operating system

AT&T remained a colossus from 1913 to 1982. In 1982, the company had its last run-in with the government. Despite the Kingsbury Commitment and the 1956 consent decree, lawmakers in Washington continued to hammer away at Ma Bell. At that point, AT&T was spending \$360 million in legal fees to defend its monopoly status. It was fending off anti-trust suits from dozens of states, the federal government and the private sector. When Chairman Charles Brown learned that the federal judge on the case thought AT&T was going to lose no matter what, he decided that a negotiated surrender was better than an unconditional one. In 1982, he announced that AT&T was going to break up into separate companies by 1984, which was the end of the road for Ma Bell. It is in this context that the fate of Saarinen's Holmdel, NJ lab facility has twisted.

The building was upgraded in 1985 but use of the complex declined as the years wore on. The technology market collapsed in 2000, and the building sat vacant since 2006, when Alcatel-Lucent sold the facility to Preferred Real Estate Investments, who then announced its intention to demolish the facility to repurpose the site. Preferred CEO Michael O'Neill observed, "So many of these lavish old commercial buildings have a great

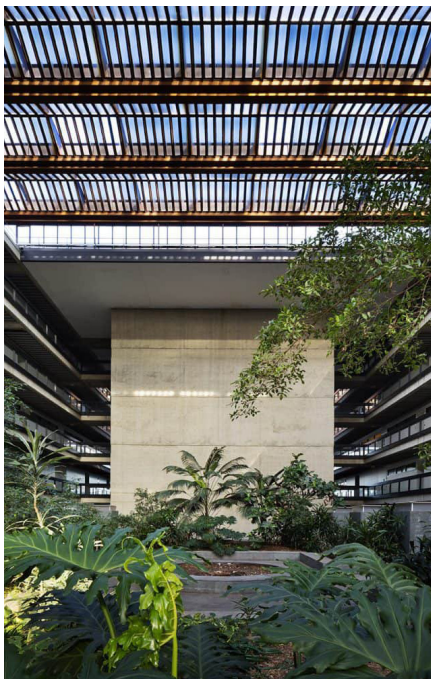
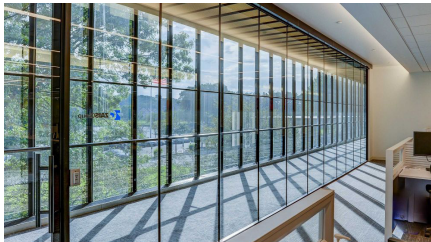
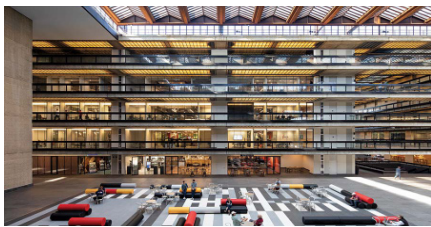


Top to Bottom:
1. Bell Labs Water Tower
2. Bell Labs Exterior
3. Bell Labs Library
4. Bell Labs Renovated Atrium





Top Down:
1. Bell Works Market
2. Bell Works 'Town Square' with Clear Glass Changes to Opaque Glass Lab Walls
3. Bell Labs Perimeter Glass Corridor
4. Bell Labs Atrium



history to them, and then one day their useful life is over."

Despite initial plans to maintain the original buildings and keep the complex as a corporate office park, economic developments later resulted in Preferred attempting to re-zone the site as residential property. As a result, the complex was added to The Cultural Landscape Foundation's list of 10 Most Endangered Historic Sites in New Jersey in May 2007. Additionally action led to the creation of a citizen's group, Preserving Holmdel, by former Bell employees, to lobby for keeping the complex as it was when in use as a laboratory. Working with the community, ideas for changes such as a university center or recreational complex, in portions of the former facility were given consideration.

The Preferred transaction did not close and on May 17, 2012, Holmdel Township declared the site as an "Area in Need of Redevelopment," adopting a Redevelopment Plan for the property that included various adaptive reuses of the main building and the construction of up to 40 single family homes and 185 age-restricted townhouses outside the main ring road surrounding the building.

In September 2013, it was announced that the property was purchased by Somerset Development Corp for \$27 million for a redevelopment project planned to include a health and wellness center, skilled nursing facility and assisted living center, a hotel, restaurants and shopping, spa, office spaces and a 20,000-square-foot public library. The \$27M purchase price translated into \$2100 per acre for the 480-acre campus and a paltry \$13 per square foot for the 2 million square foot facility, reflecting the significant risk in acquiring, maintaining and redeveloping such a large special use landmark facility.

Recreational space and luxury homes were planned for the surrounding land. Toll Brothers was slated to be the residential developer the project. Several office tenants have moved into the Bell Works building, and there is a cafe now open in the main lobby. In November 2016, Nokia completed its acquisition of Alcatel-Lucent.

Architect Alexander Gorlin designed the 2018-2019 renovation that includes opening up the laboratory spaces to the atrium light by replacing Saarinen's metal panels with glass. He also redesigned the two mammoth 1,000 x 100 ft atria floors. Skylights were replaced with transparent photovoltaic panels, and a hotel is planned for the roof.

The Bargain That Revived Bell Labs

Eero Saarinen's landmark facility in New Jersey is being redeveloped as a New Urbanist hub, but with one significant twist.

By Karrie Jacobs

The fact that the Bell Labs building in suburban Holmdel, N.J. still exists is a miracle. The 2 million-square-foot hard-edged hunk of black mirrored glass was designed in the late 1950's by Eero Saarinen for the research arm of what was then the only telephone company in the U.S. For decades, the building was a hothouse where groundbreaking work was done on telecommunication satellites, cellular phones, and fiber optics.

The Touch-Tone phone was invented here. Scientists won Nobel prizes

almost routinely, including one for the discovery of cosmic microwave background radiation, an essential element of the Big Bang theory. Then, in 2007, long after the Bell monopoly was broken up and the labs were reformed as a smaller entity called Alcatel-Lucent, the building was abandoned and slated for demolition. But it was saved by a campaign waged by hundreds of outraged scientists, who couldn't fathom that their grand laboratory might be replaced by just another subdivision.

Today, to visit the complex—recently renamed Bell Works by its owner, Somerset Development—is to glimpse the pre-history of our current technological moment. The set of four mirrored-glass boxes linked by a gargantuan cross-shaped atrium was designed by Saarinen beginning in 1957, a follow-up to his acclaimed General Motors Technical Center outside Detroit and his IBM Thomas J. Watson Research Center north of New York City. The first section, one pair of black boxes, was completed in 1964, several years after the architect's death, and the second pair was finished in 1966. In the 1980s, the four buildings were extended with matching additions by Kevin Roche, FAIA, and John Dinkeloo, who had worked on the original under Saarinen.

Like most suburban office complexes of its day, Bell Labs is swimming in land (472 acres) and features two manmade lakes (front and back), endless lawns, cherry trees, and parking lots all rigorously landscaped by Sasaki Walker Associates (now SWA): nature specifically designed to be viewed through glass. It's a configuration typical of the 1950's and '60's, when corporations fled cities. Now, the same corporations are turning their backs on the suburbs, leaving behind massive buildings that don't easily lend themselves to new uses. But this one—perhaps because it was built not as the centerpiece of bureaucracy, but as a factory for the production of scientific ideas—is tantalizingly contemporary inside. There is something about the big atrium, lined with tiers of laboratories, that suggests possibility.

"When I walked in, I saw a pedestrian street, slicing right down the middle," recalls Ralph Zucker, the president of Somerset, who considers himself one of the New Urbanists, a champion of dense, pedestrian-friendly residential communities. He spent five years, from 2008 to 2013, angling to buy the property, and is now, finally, in the process of renovating it and leasing it out one office at a time to a variety of tenants, especially tech companies. "It was obvious to me that this building had incredible bones for creating an urban core, even though it's in suburbia. What struck me was the utter simplicity of Saarinen's design, the brilliant clarity of the linear space."

Injecting urbanity into disused bits of suburbia—that's what Zucker does. He argues that New Urbanism

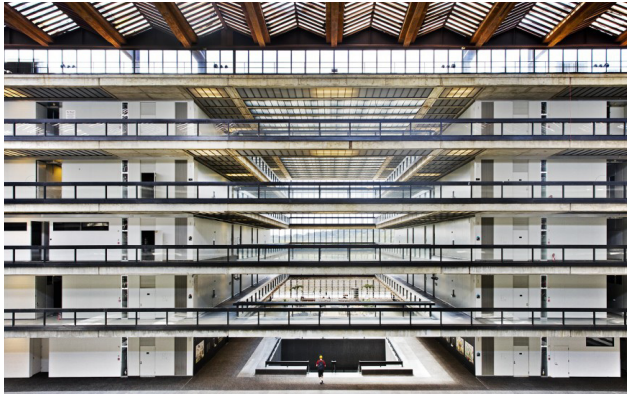
should go beyond "trying to create places for people on the Florida Panhandle" or other greenfield sites he thinks of as "clean places." In one suburban New Jersey development, Wesmont Station, he turned the site of an old aircraft-engine plant into a cluster of apartments with a rail link to New York City. And in Aberdeen, N.J., he's currently creating a mixed-use development on the site of an abandoned glass factory. But the Bell Labs project is more an outgrowth of something he and some partners attempted about 15 years ago in New York City, when they hired New Urbanist guru Andrés Duany, FAIA, to come up with new uses for Industry City, a massive complex of manufacturing buildings on the Brooklyn waterfront. They staged a charrette, proposing a mix of uses for the complex including office space, hotel rooms, and cafés. That particular version of Industry City went nowhere (the space is now being leased out by a different developer), but the concept re-emerged as a template for Bell Labs.

When Zucker was first contemplating buying the Saarinen building, he asked an architect whom he'd met at the Industry City charrette, Alexander Gorlin, FAIA, to come take a look: "We walked around, and it was completely abandoned," Gorlin remembers. "It was like coming into the Baths of Caracalla." Around the same time, Zucker asked for help from another member of Duany's circle, Jeff Speck. A prominent advocate for pedestrian-friendly development, Speck drew up a fast-and-dirty site plan that created a residential community with almost 300 rowhouses clustered at either end of Saarinen's glass box, where SWA had placed the parking lots, and where the houses would arguably be less conspicuous.

"The central building will remain intact but reconfigured, not just to hold apartments, offices, hotel, and civic uses, but also to function as the public heart of the community, its internal atrium reconceived as Main Street," Speck wrote. He also penciled in "villas" along the property's ring road that would contain hundreds of apartments. It was a lovely scheme: dense, urbane, walkable, even a little utopian. But the idea proved too much for suburban Holmdel, a highly affluent town (average household income over \$200,000) that, like many such communities, lives in fear of overcrowding in the school system. Zucker's initial presentation to the townspeople fell flat. According to Zucker, area residents told him, "This is not Brooklyn. This is not the Meatpacking District."

Of course, the town's rejection of the initial plan saved Zucker from building during the worst housing downturn in living memory. With the assistance of New Jersey's state government, which is never shy about promoting job growth, Zucker spent five years persuading Holmdel to change its "archaic" zoning, restrictions that would have permitted only a single tenant in the building. In 2009, he staged an open house at Bell Labs where local

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Top Down:

1. Bell Labs Atrium Intersection Elevation
2. Toll Brothers' Kevin Kernahan in front of his residential development at the Bell Labs Site
3. Bell Labs Atrium Corridors



Top Down:

1. Bell Labs Office Interior, 1957
2. Bell Labs Transistor Team
3. Bells Labs Intersection of Atriums



residents could walk through a mock-up of the “town center” he envisioned. Eventually, Holmdel’s need to collect tax revenue from the site (once the financial engine of the town) and concessions from Zucker on the number and type of residences on the property led to an agreement.

In 2013, the town agreed to a mixed-use concept, putting Zucker and his partners in a position to finally close the deal and buy the property from Alcatel-Lucent for \$27 million. Unfortunately, Zucker had to make what one observer has termed a Faustian bargain. To help finance the project, he sold off 103 acres to the luxury home builder Toll Brothers, which, as stipulated in the covenants that Zucker signed when he purchased the property, can construct 225 homes, most of them “age-restricted” to those 55 and older, households unlikely to contain school-age children.

Toll Brothers is now in the process of dropping an archetypal subdivision on Saarinen’s front lawn, and Hideo Sasaki’s formalist landscape will be marred by a series of 1-acre home sites clustered around cul-de-sacs. The Toll Brothers homes—4,000-square-foot multi-gabled McMansions—and their sprawly arrangement are antithetical to the principles of New Urbanism and diminish Zucker’s dream to make the modernist glass box the centerpiece of a new kind of city. “Every development of this size has some compromises in it,” Zucker argues. “It just makes the Saarinen but one more pod in a collection of dumb suburban pods,” grumbles Speck.

But this overstates the case. Even McMansions can’t change the fact that the Saarinen building is an uncanny, industrial-scaled deployment of square footage. When I recently explored the atrium with Gorlin, strolling beneath a long, leaky glass roof 80 feet above our heads, the architect pointed out his minor interventions: He cleared out the leftover planters and overflow offices and installed Italian ceramic floors that, near the elevator cores, turn into geometric compositions evoking Josef Albers, he told me, “so it wouldn’t be an undifferentiated mass of tile.”

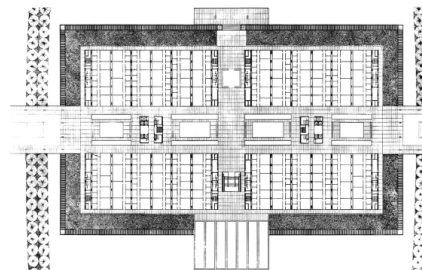
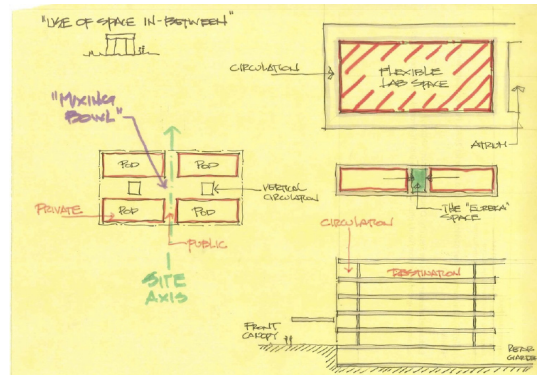
Gorlin has a theory about the universality of the space: “The 100-foot width of the atrium is equal to many great avenues and public spaces historically, including Lincoln Road, one of the great pedestrian streets that Morris Lapidus adapted to the pedestrian mall, and the Crystal Palace in London, and St. Peter’s Basilica ...” According to Gorlin, whether it’s measured in feet or meters, the width is always the same. “It’s some kind of human dimension of grandeur and intimacy,” he says.

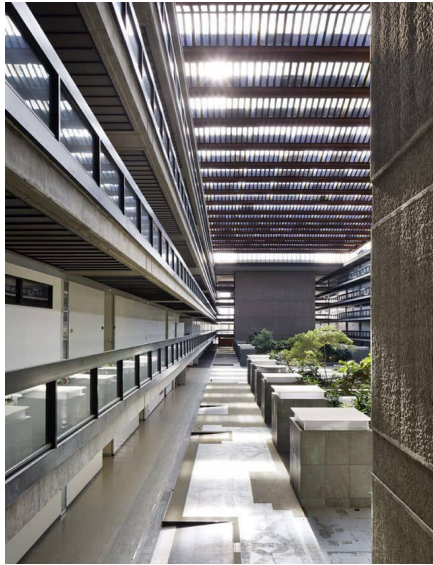
Walking the endless open corridors that overlook the atrium with ashtrays installed in the railings at 20-foot intervals expresses the rigid simplicity of the interior layout as a bit like an urban grid, something that is highly structured yet encourages an incredible range of activities within. In other words, the urbanity that Zucker is hoping to deliver (in a town that has rejected the concept) is embedded in Saarinen’s architecture.



Top Down:

1. Bell Labs Aerial
2. Bell Labs Saarinen Conceptual Blocking Diagram
3. Bell Labs Floor Plan
4. Bell Labs Atrium





Top to Bottom:
1. Bell Labs Atrium
2. Saarinen with Ezra Stiles Model
3. Saarinen Presenting Ezra Stiles Modell
4. Ezra Stiles Site Plan



Bell Labs was, in fact, designed for maximum flexibility. The labs and offices that are hidden behind sheets of metal, painted white, on each tier, could be reconfigured as the nature of the work demanded. The application for the building's designation as a National Historic Place, granted last year, discusses this aspect in detail: "Alterations to interior workspaces were routinely made ... to accommodate changing project teams and their needs. Indeed, the building was designed to foster such changes." Gorlin has used the building's protean quality when making a case to the National Park Service (overseer of Historic Places) to swap out the opaque white metal lab walls for glass, a change that's essential to turning the old labs into leasable offices.

Zucker's vision of the place is both highly speculative and very clear. It's a hub for Millennials, innovators who perhaps can't afford to set up shop in New York City, a Silicon Valley in microcosm, thrumming with life. He's hoping to convert a large section of the building into a hotel, which will make the epic 15,000-square-foot, glass-enclosed cafeteria on the lower level and the adjacent theater valuable for conferences and other functions. But right now, they're a little ghostly. Much of the building is still unoccupied. The couple of stretches of corridor with newly occupied offices are inhabited by people who look, encouragingly, like the target market: beards; headphones; screens, big and small.

One tenant, Nvidia Corp., a graphics processing company, is designing software for self-driving cars. Another, Acacia Communications, helps businesses migrate to the cloud. These companies could not exist if Bell Labs had not spent much of the 20th century laying the groundwork. The concept is perfect.

Still, there are limits to how genuinely urban this place can be. For one thing, it's hard to get to Bell Works without a car; the nearest train station is about 5 miles away. For another thing, Holmdel's low tolerance for perceived Brooklynization and the all-too-common bias against density is the reason New Urbanism is always an easier sell in those "clean locations." Bedroom suburbs have a built-in resistance to urbanity; residents may work in New York or Philadelphia, but they don't want to live there. Nonetheless, bit by bit, much of Zucker's vision is becoming reality. And if this extraordinary example of Saarinen's boldness—which also happens to be place of inarguable historic significance—can be preserved and rejuvenated, maybe it doesn't also have to solve the problem of sprawl. After all, Silicon Valley is very much a suburb, too."

Ezra Stiles & Morse College; New Haven, CT; 1958-1962

Ezra Stiles College is a residential college at Yale University, built in 1961 by Eero Saarinen, Yale class of 1934. It is often simply called "Stiles," despite an early-1990s crusade by then-master Traugott Lawler to preserve the use of the full name in everyday speech. It is named for Ezra Stiles, seventh president of Yale. Architecturally, it is known for its lack of right angles between walls in the living areas. It sits next to Morse College.

In his report on the 1955-56 academic year, Yale President A. Whitney Griswold announced his intention to add at least one residential college to Yale's two-decade-old system. "We have the colleges so full that community life, discipline, education, even sanitation are suffering," he

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said. After several years of speculation about the possibility of four or five new colleges, the university confirmed the construction of two new colleges in spring 1959, choosing Eero Saarinen as the project architect and the Old York Square behind the Graduate School as the site.

The Old Dominion Foundation, established by Paul Mellon '29, provided funding for the construction of Stiles and Morse, calling for the building of two "radically different" Yale colleges in order to reduce over-crowding. The cornerstone of the college was laid on Alumni Day 1961. Students took up residence in September 1962, and the college was dedicated on December 7.

Saarinen had come to view college campuses as a small town community and he studied historical European towns as models for campus planning. The model for the Morse and Ezra Stiles Colleges has been traced to Eero's interest in the Italian city of Siena with its Piazza del Campo. The public face of the complex is a curved façade facing an open space – a green space rather than a paved plaza – that focuses attention on the Paine Whitney tower, just as the Siena Piazza does on the Palazzo Pubblico.

The college is built of rubble masonry with buildings and a tower in the style of pre-Gothic Tuscan towers such as still exist in the medieval Italian hill town of San Gimignano, and is regarded by some as one of the "ugly ducklings" of Yale. Saarinen and his principal design assistant constructed large-scale models of his design and explored numerous alternatives for the building's exterior material, determined to find a modern solution that fit the rusticated stone exterior of Yale's neo-Gothic buildings.

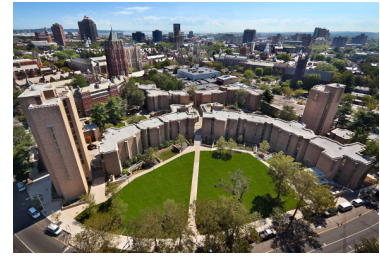
The college consists of many single rooms and suites, and in a modern attempt to capture the spirit of Gothic architecture, Saarinen eliminated all right angles from the living areas. Stiles' adjacent "twin" residential college Morse is architecturally similar, was built at the same time, and has an adjoining dining room with a common kitchen. Architecturally, Morse and Stiles differ from older colleges by having more private space per student and the lowest ratio of natural light aperture to wall surface.

Stiles and Morse have been known as the only "architecturally significant" residential colleges at Yale until Robert A. M. Stern's massive 2017 Franklin and Murray Colleges.

Because none of the interior walls make right angles, many of Stiles' dorm rooms are furnished with built-in desks and bookshelves. The college was once heated by a system that warmed the stone floors, but maintenance troubles led Yale to abandon it and install radiators. Contrary to popular belief, the college's concrete walls were never meant to be covered with ivy.

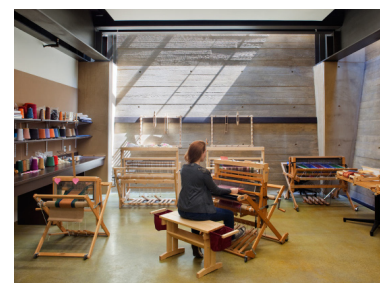
Deere & Co. Administrative Center; Moline, IL; 1957-1963:

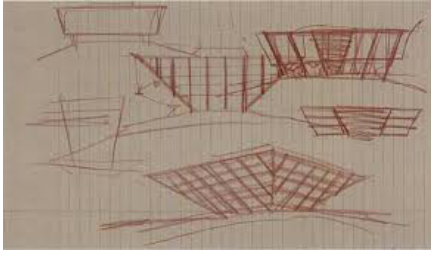
In the mid-1950's, Deere & Company President William Hewitt was being pressured to move the company's headquarters from



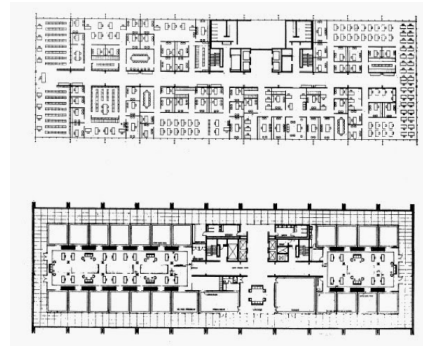
Top to Bottom:

1. Ezra Stiles & Morse College
2. Ezra Stiles & Morse College Wall Texture
3. Ezra Stiles & Morse College
4. Ezra Stiles & Morse College
5. Ezra Stiles & Morse Fabric Studio





Top to Bottom:
1. John Deere & Co. HQ Original Saarinen Design Concept
2. William Hewitt & Eero Saarinen with Model
3. Deere & Co. HQ Site Plan
4. Deere & Co. HQ Floor Plans



Moline, Illinois, to New York or San Francisco. Hewitt resisted the idea but agreed that if the firm were to remain in Moline, it needed a distinctive new building for its head office.

Initially Hewitt obtained “a big box of architects’ prospectuses” from his friend, the top Ford executive Robert McNamara, a classmate at Berkeley and Harvard Business School, who had recently directed the completion of a new administration building.

But Henry Dreyfuss, the longstanding product design consultant who had modernized the look of the Deere & Company products, most notably the streamlined tractor of 1938, guided Hewitt to two recent projects Dreyfuss considered “superb models to emulate”: the Massachusetts Institute of Technology Auditorium and the General Motors Technical Center, both designed by Eero Saarinen.

As Hewitt recounted in his 1964 inaugural speech: “Henry said if we were interested in an architect whose work will last and still be excellent 25 or 50 years from now, we should seriously consider Eero Saarinen.”

Hewitt visited both projects, meeting Saarinen at the GM Technical Center. As Hewitt described it, “Then and there I decided Eero Saarinen was the man for the job.” Hewitt and Saarinen convened in Moline in August 1956 to visit and discuss possible sites. Eventually, searching beyond the city limits, they found a potential site south of East Moline: bluffs above the Rock River valley extending down through a ravine to level agricultural fields.

Comprising four farms totaling 720 acres, the site contained some existing trees and views of the valley that promised the kind of elegance Hewitt was looking for. To verify the site’s potential, Hewitt and Saarinen boarded a utility repair lift to better see what the view might look like from the new building’s upper floors.

The Deere & Company corporate board did not match Hewitt’s enthusiasm for a new building, resisting abandonment of the company’s traditional residence and wary of appearing pretentious to their farmer customers. But with “his personal credibility on the line,” Hewitt sold the idea of the building, the site, and the architect to his cautious board.

In August 1957, Hewitt wrote to Saarinen “to set down a few fundamental ideas that may be helpful to you in creating a new headquarters for Deere & Company.” Hewitt emphasized his lack of preconceptions about what the design of the building should be, which he saw as Saarinen’s responsibility, and then stated:

“The men who built this company and caused it to grow and flourish were men of strength — rugged honest, close to the soil. Since the company’s early days, quality of product and integrity in relationships with farmers, dealers, suppliers, and the public in general have been Deere’s guiding factors.”

“In thinking of our traditions and our future, and in thinking of the people who will work in or visit our new headquarters, I believe it should be thoroughly modern in concept, but at the same time, be down to earth and rugged.”

Saarinen's first inspiration was to raise a "rugged" concrete building: a pyramid inverted, on the highest bluff overlooking the valley floor. Deere's executives reminded Saarinen that Deere & Company built steel tractors.

According to Saarinen's associates Paul Kennon and Norm Perttula, Saarinen returned to his office and began work on a steel-frame building lower down in the valley "that was absolutely sympathetic to the trees." To Saarinen, "the broad ravines seemed the finest, most pleasant, and most human site" for the building.

Three weeks after the aborted inverted pyramid, Saarinen requested that Hewitt visit his office in Bloomfield Hills, Michigan. As Hewitt remembered it in 1977, Saarinen showed him a model of the new scheme "complete with land contours, trees, shrubs and a pond."

Hewitt's involvement with the project and his collaboration with Saarinen has been described by many as significant and extreme. He also engaged his staff and formed a Building Committee who interacted with Saarinen. Committee members Joseph Dain and George Neiley chose a 3' x 6' module for the building, and the committee built wood mock-ups of each of their office sizes: 9' x 12', 12' x 12', and 12' x 18'. The Committee changed the 12' x 18' to 12' x 15' to accommodate more offices. Saarinen also designed the desks and furniture for the building.

Saarinen built a 1.5" scale model of each floor, complete with furniture, and colors. Deere spent \$100k to construct a two story mock up one structural bay wide to test the louver design, Cor-ten steel weathering and glare-resistant glass selection. Saarinen even selected the china, flatware and packaging of sugar on the cafeteria tables.

The main steel-frame administration building straddled the valley floor facing the flat farm fields and the Rock River valley. A fourth-floor bridge connected it to the product display building extending up the valley's side; a corresponding extension on the opposite side of the valley accommodated future building expansion. Hewitt, satisfied that it met the company's program, gave the go-ahead to develop the design.

Saarinen then detailed the complex of three steel buildings. The main office building, which is seven stories high, rises from the floor of a wooded ravine and faces two ponds. A glass-enclosed bridge connects the main building to a product-display building and a 350-seat auditorium.

Saarinen satisfied Hewitt's instruction that the buildings look down-to-earth by using Cor-ten steel for the exterior structure of the building. Cor-ten, a material that resists corrosion by forming a protective coating of iron oxide, develops an earthy color as it ages, much like newly plowed soil. Developed for railroad track



Top to Bottom:
1. Deere & Co. HQ Aerial
2. Deere & Co. HQ Entry Drive
3. Deere & Co. HQ Exterior-Front
4. Deere & Co. HQ Mock-Up





Top to Bottom:
1. Deere & Co. HQ Lobby with Product Display
2. Deere & Co. HQ Stair & Bridge
3. Deere & Co. HQ Open Plan



construction and other uses, this marked the first use of Cor-ten in an architectural application. Saarinen's explained his selection of Cor-ten:

"Deere & Company is a secure, well-established, successful farm machinery company, proud of its Midwestern farm-belt location. Farm machinery is not slick, shiny metal but forged iron and steel in big, forceful, functional shapes. The proper character for the headquarters' architecture should likewise not be slick, precise glittering glass and spindly metal building, but a building which is bold and direct, using metal in a strong, basic way.

Having decided to use steel, we wanted to make a steel building that really was a steel building (most so-called steel buildings seem to me to be more glass buildings than steel buildings, really not one thing or the other). We sought an appropriate material — economical, maintenance free, bold in character, dark in color."

After presenting the preliminary design in June 1958, Saarinen engaged Hideo Sasaki to be the project's landscape architect, a rare detour from his enduring relationship with Dan Kiley. Once involved, Sasaki confirmed Saarinen's imaginative leap that the building should straddle the valley.

As Louise Monzingo observed in her 2011 book on suburban corporate landscapes, "He met with Saarinen and the project team on site and worked on the exact placement of the building. As part of the site planning process, Sasaki raised balloons to outline the building configuration and placement. This enabled the design team to fully integrate the building and site.

The dramatic entry drive beginning at Coal Town Road, paved and later renamed John Deere Expressway, presented the entire landscape. Sasaki's project manager, Stuart Dawson, worked and reworked the interior road system through an iterative process of repeated grading and modeling. This evolutionary process resulted in a roadway that is an active element in the experience of the landscape, orchestrating the views to maximum effect.

The looping driveway lassoed the building complex, moving from the ravine bottom at the road intersection, rising along the ravine embankments and revealing stunning views across the ponds to the building facades, banking upward into the woodland landscape, eventually arriving at the principal parking lots disclosed at the last possible moment, and then dropping back down again to encircle the building complex at the rear to provide service access.

Besides the manicured upper pond, Sasaki conceived of the rest of the landscape as a native woodland: oaks and maples, complemented with understory shrubs and contrasted with meadows of unmowed grasses. Only 30 acres immediately surrounding the building and upper pond were to be mown and obviously tended; the remaining 690 acres were to be left as they grew.

Essays on Architecture:

Eero Saarinen - America's Modern Form-Giver

Although the existing trees on site inspired Saarinen's concept of the building (after his death, Hewitt dedicated a large oak Saarinen particularly admired as a memorial), the site was sparsely wooded to begin with, and in the first years, over a thousand trees were lost to Dutch elm disease.

The landscape concept required tree planting to an extent unprecedented in Dawson's experience, with thousands of trees planted in the first years and assiduous replacement as necessary in the years thereafter.

The landscape design would function peculiarly and particularly to smooth the way for Saarinen's daring building, which went beyond the new modernist aesthetic of the era to an even more provocative expression of functionalism and mass-produced, industrial materiality. Saarinen used the cage of Cor-Ten steel not only as an exterior manifestation of structural members but to form exterior louvers over the banks of glass wrapping the building's seven floors.

As Saarinen explained: "Having selected the site because of the beauty of nature, we were especially anxious to take full advantage of the views from the offices. To avoid curtains or Venetian blinds, which would obscure the views, we worked out a system of sun-shading with metal louvers and specified reflective glass to prevent glare."

Saarinen also considered that the glass-paneled bridge connections between the main building and the wings "should give the users a wonderful sense of actually being up in the trees." Saarinen's choices for the exterior manipulation of the Cor-Ten certainly expressed the building's horizontal straddle of the ravine, binding it into the surrounding landscape.

After the building's completion, the rust's organic, earthy patina would elicit fortuitous recollections of both the surrounding tree trunks and the color of plowed fields, but at the outset, the unproven concept was easily perceived as bizarre.

Hewitt later recalled his engineers' reactions: "[They] were a little alarmed, thinking 'We've been warning farmers against rust for 120 years, and now Hewitt wants to build a big rusty building — and make us work in it.'" Displaying a rare loyalty, Hewitt did not waver in his support of Saarinen. As Dawson assesses it, "There was not another industrialist who would have agreed to a rusty building."

Long before it became fashionable or environmentally responsible, Saarinen designed a deep steel sunshade system to protect the full-height glass exterior.

Anthropologists Mildred and Edward Hall researched behavior patterns at the Deere HQ for four years after completion. They observed that the building is "a direct reflection of William A. Hewitt, Chairman and Chief Executive," and that "one of Saarinen's main attractions (to Hewitt) was his desire to capture



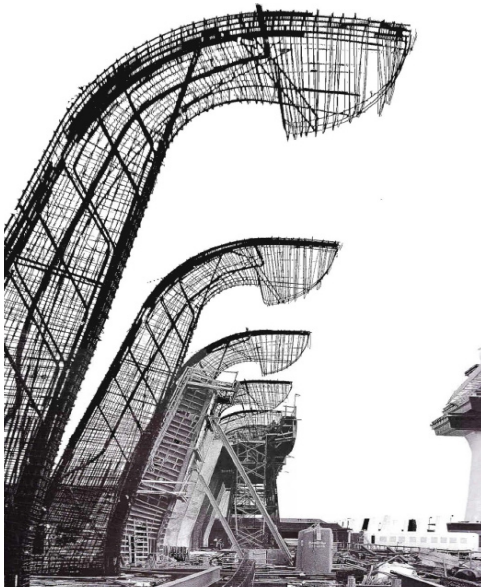
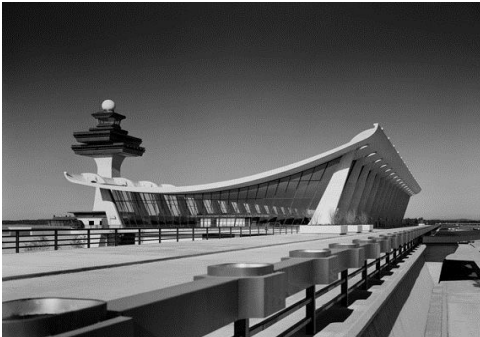
Top Down:

1. Deere & Co. HQ Atrium
2. Deere & Co. HQ Executive Office
3. Deere & Co. HQ Facade From Bridge





Top Down:
1. Deere & Co. HQ Secretarial Pool
2. TWA Dulles Terminal Exterior
3. TWA Dulles Terminal Under Construction



the spirit of the company and the personality of the Chairman. (1974)" Knowles and Leslie observed, "Saarinen's laboratories likewise captured the spirit of research, as understood by top management, but missed its essence."

After Saarinen's death one week after construction of the Deere HQ began, design manager Kevin Roche completed the project. The new building for 900 employees opened its doors for business on April 20, 1964.

Dulles International Airport; Chantilly, VA; 1958-1963:

Although Washington National Airport - now Ronald Reagan Washington National Airport, had been open only since 1941, the need for a second airport to serve the National Capital Area became apparent shortly after the end of World War II. To meet the growing demand for airport capacity, Congress passed the Washington Airport Act of 1950 and amended it in 1958 to provide for ". . . the construction, protection, operation, and maintenance of a public airport in or in the vicinity of the District of Columbia." Anyone who has ever flown into or out of the Reagan Airport knows that there is no land available to expand that facility to increase capacity.

After a thorough study of many possible locations around the region, a 10,000 acre site, 26 miles west of Washington, D.C., was selected by President Dwight Eisenhower in 1958. The site, located in Fairfax and Loudoun Counties in Virginia, was surrounded by open farmland and was far enough from other airports to provide adequate airspace for arriving and departing flights.

The immense size of the new site allowed for an airport, the first in the country to be designed for commercial jets, to be buffered from its neighbors. Only 3,000 acres of the 10,000 acres were graded for the new airport and boundaries were established at least 8,000 feet from the end of all runways. This planning, in conjunction with the actions of local governments to properly zone the land around the site, helped the new airport to be a good neighbor in the Virginia countryside.

In May 1958, the engineering firm of Ammann and Whitney of New York was selected by what today is known as the Federal Aviation Administration as the prime contractor for the airport planning, design, and construction supervision. Also engaged were Eero Saarinen and Associates as architect for the design of the Terminal Building, control tower, and service buildings; Burns and McDonnell of Kansas City, for the design of the mechanical, electrical, and utility installations; and Ellery Husted of Washington, D.C., as the master planning consultant.

Eero Saarinen wanted to create something more than just another airport -- he wanted to find "the soul of the airport." He designed the Terminal Building and the control tower in that spirit and called it "the best thing I have ever done." The

Terminal Building was selected for a First Honor Award by the American Institute of Architects in 1966.

The construction of the airport started on September 2, 1958, only seven and a half months after the site selection. When it opened four years later in 1962, Dulles International Airport had a strikingly beautiful Terminal Building, which became a landmark to travelers worldwide. The terminal was a compact, two-level structure; 600 feet long and 200 feet wide. While it was built without extensions onto the airfield for aircraft loading, it was designed to be expanded up to 320 feet at either end, which was actually completed 34 years later in 1996. The Terminal was "topped off" with a distinctive 193-foot high, glass-enclosed, control tower cab, which provided the air traffic controllers with an unobstructed view for many miles in all directions.

Saarinen was chosen for his ability to provide graceful beauty, similar to the nature of flight, proven by his flight center for TWA at JFK Airport in New York. When faced with the challenge of designing the terminal's entrance, he had to create an articulated entrance to stand out against the modern and repetitive structure. He also had the typical challenge of providing graceful access to the building, encountered by automobile, entered and further accessed by foot. Cleveland architect Normal Perttula was Saarinen's project manager for Dulles, with Kevin Roche as Saarinen's design assistant.

Both Perttula and Roche reported that Saarinen dove deeply into the experience of air travel, measuring time intervals for every element in the sequence between arrival and takeoff, and recording these statistics in a small journal he always carried. Eero conceptualized an experience that eliminated the noisy crowded departure gate one had to navigate to get to their assigned departure gate. He measured everything. In a survey of ten airports, Saarinen found the average travel distance for a passenger from arrival to gate was 940 feet.

The Dulles terminal has two floors; the first for departing passengers, ticketing and concessions, and the other for arriving passengers, baggage claim, and ground transportation. One of the key moments of innovation in this terminal was Saarinen's employment of new transport vehicles known as mobile lounges, which resembled a sort of giant luxury bus and carried up to ninety people from the terminal to their plane.

In 1962, this feature made the new airport unique from the public's perspective as the specially-designed Mobile Lounges were used to transport passengers between the Terminal Building and their aircraft, parked on a jet ramp a half mile away from the Terminal. The Mobile Lounges were built by the Chrysler Corporation in association with the Budd Company.

The Mobile Lounge was constructed as a 54-foot long, 16-foot wide, 17.5-foot high vehicle, capable of carrying 102 passengers, 71 of them seated, directly from the Terminal to the aircraft. The Lounges protected the passengers from weather, jet noise and blast, and eliminated long walking distances. Because of the Mobile Lounges, after first entering the Terminal, passengers had only a minor distance to walk before they were seated on the Lounge for the short trip directly to the aircraft.



Top to Bottom:
1. Dulles International Airport aerial
2. Dulles International Airport Section
3. Dulles Model
4. Dulles International Airport Approach by Car
5. Dulles International Airport Column Construction





Top to Bottom:
1. Dulles Airport Interior
2. Dulles Airport Ticketing Counter
3. Dulles Airport Mobile Lounge
4. Dulles Airport Skylounge Interior
5. Vivian Beaumont Interior at Lincoln Center



From the ramp, departing passengers go through ticketing to the runway side where they would find gates to take them to the mobile lounge. The mobile lounge led to a revolutionary approach to airport movement, allowing the design of Dulles to do away with the multitude of gates and lengthy passenger travel distances that cluttered most terminals before it.

Vivian Beaumont Repertory Theatre/ Lincoln Center Library & Museum; 1958-1965:

The Vivian Beaumont Theater is a Broadway theater located in the Lincoln Center for the Performing Arts complex at 150 West 65th Street on the Upper West Side of Manhattan. It is New York City's only Broadway-class theater that is not located in the Theater District near Times Square. The building was one of the last structures designed by Eero Saarinen. It is the home of Lincoln Center Theater.

The theater is named after Vivian Beaumont Allen, a former actress and heiress to the May Department Stores fortune, who donated \$3 million in 1958 for a building to house a permanent dramatic repertory company at Lincoln Center. Allen died in 1962, and after several delays and estimated construction costs of \$9.6 million, the Vivian Beaumont opened on October 21, 1965.

The structure was designed by Eero Saarinen, with Jo Mielziner responsible for the design of the stage and interior. The travertine-clad roof houses stacks of the New York Public Library for the Performing Arts, designed by Gordon Bunshaft. The Vivian Beaumont differs from traditional Broadway theaters because of its use of stadium seating and its thrust stage configuration. Located on the Vivian Beaumont's planted green roof, the Claire Tow Theater seats 112 people in a fixed configuration. Designed by Hugh Hardy and built at a cost of \$42 million, the two-story, 23,000-square-foot glass box has the same width as the glass base of the Beaumont.

North Christian Church in Columbus, IN; 1960 – 1964:

In 1955, 43 members of the First Christian Church that had been designed by Eliel Saarinen sought a more liberal church and decided to found a new church affiliated with the Disciples of Christ. After some time of worshiping in each other's homes, in 1956 they purchased 5.5 acres of land with the help of Irwin Miller. Although Miller wanted to hire Eero Saarinen to design the new church, he believed it was important that the congregation choose the architect themselves: "I was on the building committee. We interviewed about six well-known architects. They all came in with their slides [and talked about their work]. Eero just brought a notebook. He looked at us and said, "What do you want? What do you want it to be? Don't tell me what you want it to look like, but what you want it to be like". They decided to hire him as soon as he left."

The North Christian Church is Eero Saarinen's last project designed prior to his unexpected death in 1961. Coming up with a design he felt worthy of presentation to the client came slowly to Saarinen. After two years, the client expressed frustration with Saarinen's extended design process. In April, 1961, Saarinen responded: "We have finally to solve this church so that it can become a great building...so that as an architect when I face St. Peter I am able to say that out of the buildings I did during my lifetime, one of the best was this little church, because it has in it a real spirit that speaks forth to all Christians as a witness to their faith."

In July 1961 Saarinen wrote to a friend, "We have finally solved the Columbus church." Saarinen's fifth and final design for the church was completed by Saarinen's design principal Kevin Roche in 1964 at a reported cost of \$800,000, or \$7 million in 2020 money.

The building is hexagonal in shape, elongated on its east-west axis, with a central metal spire that is 192 feet high. The building nests in a dry moat within an earthen berm, with the main level requiring congregants to mount monumental steps to enter. Saarinen: "I think you should have to work for it and it should be a special thing." Consequently, the entry experience was carefully crafted as metaphor and symbol for one's spiritual journey. Once congregants climb the steps on axis with the spire, they then descend a few steps to the entry doors with the massive slate roof hovering above – almost forcing you to bow your head, preparing you to enter the narthex. Saarinen conceived the narthex as a "decompression chamber" as a buffer of the spiritual considerations of the sanctuary from the outside world.

The sanctuary beyond is above you with a narrow opening and steep steps to enter, drawing one's eye up to the oculus above – the eye of God, floating in the center of the tent-like ceiling. The entry experience was not designed with today's accessibility standards in mind, which would have precluded the meaning of the right of entry Saarinen conceived and designed.

Six steel arch beams are supported on steel arch legs mounted on the concrete foundation at the perimeter. The six steel beams are clad in lead-coated copper which support the pyramidal slate roof, converging at an apex above the oculus to support the tall tapered spire which terminates at a five-foot gold-leaf cross.

Rows of pews surround the altar in a hexagon, reflecting the idea that worship should be a central aspect of the life of the congregation. The lower level contains classrooms, the baptistery, an auditorium, a kitchen, and an activities area.

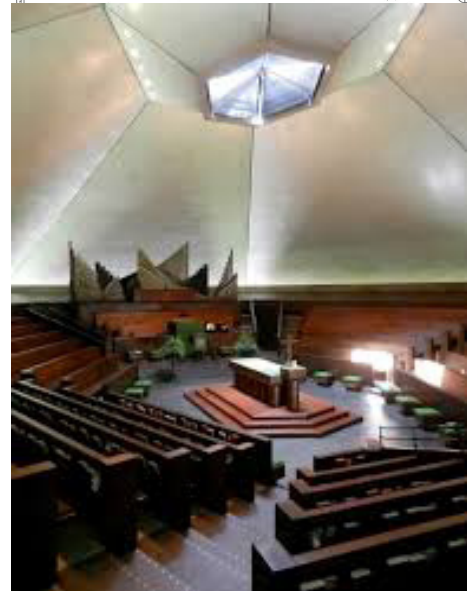
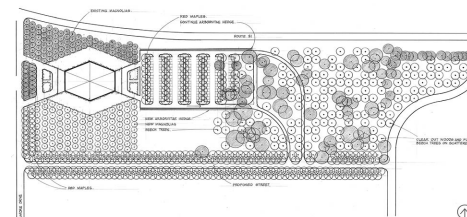
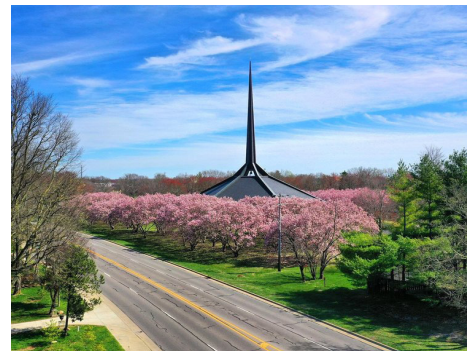
Saarinen believed that modern churches had lost the monumentality of traditional cathedrals because expansions with Sunday schools, gymnasiums, and kitchens took away from the significance of the church's sanctuary itself. He wanted to design a building that returned to the model of a traditional church, while still using Modern architecture that served the needs of the congregation.

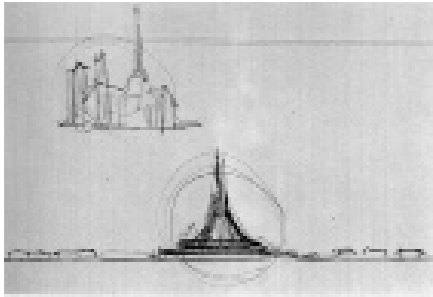
Saarinen saw the project as an opportunity to develop a new prototype for worship space, and he deliberately broke with Eliel's European hall-



Above: North Christian Church Aerial
Below:

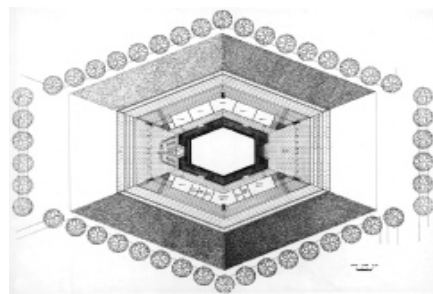
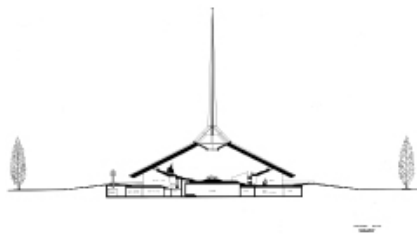
1. North Christian Church in Spring
2. North Christian Church Site Plan
3. North Christian Church Sanctuary





Top Down:

1. North Christian Church Concept Sketch
2. Angkor Wat; Borobudur, Cambodia
3. North Christian Church Section
4. North Christian Church Lower Level Plan
5. North Christian Church Exterior Moat



church paradigm chosen for the First Christian Church. Eero's theatre-in-the-round which placed the preacher at the same level of the congregation with the congregation themselves as the backdrop for the service provided a new expression for a church whose roots reflected the confluence of Christian piety and American democratic ideals.

His compromise was to move the school, meeting rooms, auditorium, and kitchen to a hidden lower level, so that the only visible part of the church above ground was the sanctuary. Space for the basement was carved out of the earth in a hexagonal shape, reflecting the sanctuary above it. This emphasized the importance of the church itself and isolated the sanctuary as the most important element of the building.

Saarinen was inspired by the steep steps at Angkor Wat and Borobudur, where the visitor must interact with the architecture and work to reach the sanctuary. He thought that building an entire church on one level made religion "too easy", and took away from the spiritual experience of going to church. Therefore, he chose to elevate the sanctuary of the church to people had to climb up a set of stairs to reach it. This way the church also stood out from its residential neighborhood.

Saarinen's concern with the act of entering a church compelled him to craft an experience where the environment changes to reflect the change of attitude one should have when entering a sacred space. The grey slate floors, dark mahogany pews, and eerie indirect natural lighting instill a sense of awe in the visitor. The primary light source into the sanctuary is the oculus at the base of the spire, directly above the Communion table. This focus of light draws attention to the center of the room, where Communion takes place.

Below: North Christian Church Sanctuary



The sanctuary was designed as a space where people can gather in unity and harmony in an enclosed spiritual world. The Communion table, consisting of twelve pedestals symbolic of the twelve disciples, is placed on the tiered dais. The highest pedestal at the end of the table represents Christ, and holds a silver chalice and loaf of bread for the service. It is the central focus of the sanctuary because it is an important part of the Disciples of Christ liturgy. The congregation sits around it facing each other as a community. The pulpit, choir loft, and a Holtkamp organ is situated opposite the main entrance into the sanctuary. The organ is the last of its kind designed by Cleveland's Walter Holtkamp Sr.

The cave-like ambiance of the sanctuary is created in part by the indirect light filtered up at the bottom of the sloping ceiling from the lower level where clerestories in the classrooms and offices allow daylight to filter across and up from the dry moat windows around the entire perimeter.

The layout of the sanctuary further elevates the role of worship with an unusual, centrally located altar. Seating for the congregation emanates upward and outward from it in ripple-like rings, directing the parishioners' attention toward the center and demanding their active participation in the service. The dramatic entry sequence that requires visitors to "climb into" the sanctuary by ascending upward with the landscape before going back down works to the same effect, turning the altar into an object of destination and arrival. The simplicity of the single gesture of the church – a sweeping move from the ground into the sky – is a further commentary on the simple, singular focus of the ideal church.

From the earthy materials to the dramatic formal geometries, the architecture strives to create a religious atmosphere that is intimate, unique, and transcendent. Stark experiential changes in the journey from the exterior to the building's interior reflect a deliberate transition intended to magnify the meaning of the worshipper's spiritual journey.

Only one month after submitting the final version of his design, Saarinen passed away suddenly and unexpectedly at the age of 51, cutting tragically short the career of one of the twentieth century's most accomplished and still-promising architects.

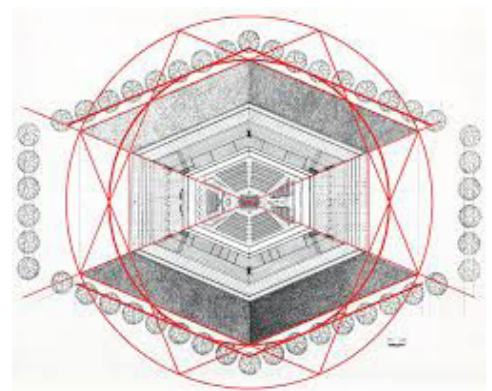
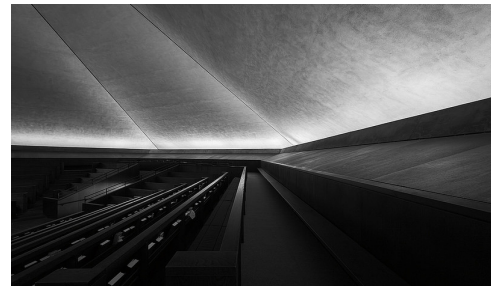
This church, of which he was so proud, was the last building he would ever design. Its otherworldly form has been copied many times since its completion, and it has become perhaps the most recognizable icon of Columbus, IN. In 2000, thirty-six years after its completion, it was designated a National Historic Landmark as a testament to its value to the town and to postwar American architecture.

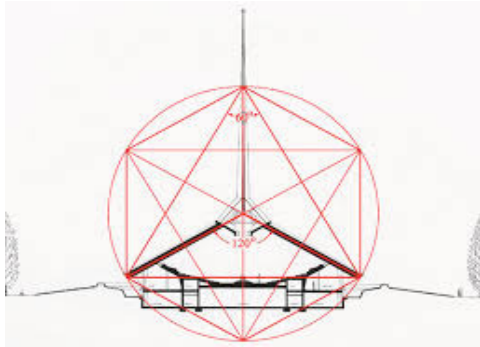
The church's famous design was conceived as a response to changes that Saarinen noted in contemporary religious construction. In his view, modern sanctuaries had become



Top Down:

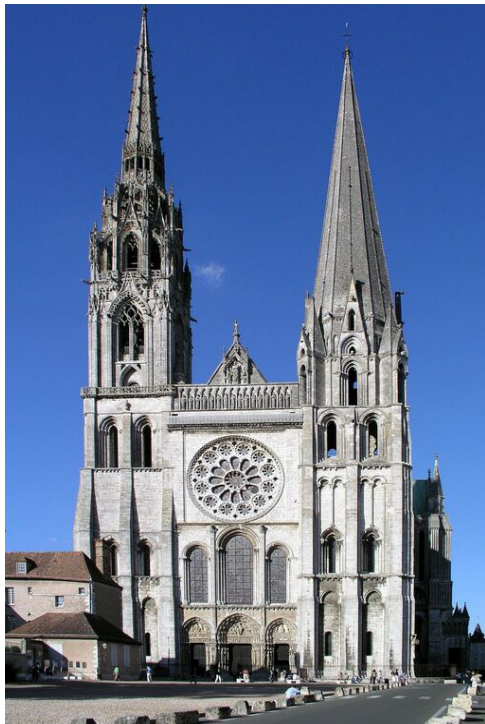
1. North Christian Church Baptistry
2. North Christian Church Indirect Daylight in Sanctuary
3. North Christian Church Sanctuary Plan Geometric Relationships
4. North Christian Church Holtkamp Organ





Above: North Christian Church Geometric Relationships in Section
Below:

1. Salisbury Cathedral; Salisbury, England; 1226-1258
2. Cathedral de Notre-Dame; Chartres, France; 1134



afterthoughts to massive complexes of secondary spaces in church buildings, which invariably included gathering spaces, classrooms, and even recreational lounges. While an expanded religious presence was not inherently a bad thing for Saarinen, the shift of focus away from the act of worship seemed to de-center God from religion. His objective was therefore to design a building that could meet contemporary needs without losing focus of the church's original function as a place for worshipping and coming closer to God.

Programmatically, Saarinen communicates these priorities first by simply discriminating between primary and secondary church functions and placing them on separate floors. The above ground level is devoted to the large central sanctuary and the ambulatory that surrounds it. The remaining spaces required by the clients – the bathrooms, kitchen, and fellowship hall – are buried into the ground, literally and symbolically placed beneath the worship space.

Aline Saarinen quoted Eero's comments on the design of the North Christian Church in her 1962 book "Eero Saarinen on His Work" published by the *Yale University Press*:

"Let me explain a little of my thinking about the problem of designing a new church for the Disciples of Christ in Columbus. I think we have to face first some of the problems of what has been happening in America today with the church and religion and architecture.

In the 11th and 12th centuries, there was the cathedral and it was the significant thing. Maybe it had a cloister or a priory or some little low building off to the side, but the cathedral building itself dominated everything. Today, there are Sunday school rooms and good-fellowship rooms and kitchens and gymnasiums and square dancing rooms and so forth. All these have tended to sprout into separate buildings and to get bigger and bigger and more and more important and finally, the church itself has become an insignificant, and almost forgotten little thing.

So, in this church, I would like to put all that activity downstairs. Maybe underground, hidden away and put only the sanctuary above ground and make it the significant visual and architectural thing.

So I think this sanctuary should be elevated and make you climb into it. There is another reason why this church must be elevated and that is the site. It is a flat site in a residential district. The church must be elevated so that it stands proudly above the parked cars and surrounding little ranch-type houses and can be seen.

After the approach, there is the act of entering. There should be awareness of a changing environment, like a decompression chamber from the outside world into the church. Maybe you would go down and up again into the sanctuary. The light, of course, would begin to change, too.

I guess another reason people go actively to church is so they can worship with a group of people of like mind. They will do this in the sanctuary and they should feel they are all in unity and harmony in a special and appropriate spiritual atmosphere. As I understand the Disciples of Christ, communion is a very important act and the congregation participates in it. The communion table should be the focal point. We can have the congregation sitting around the communion table where everyone feels equal and joined together.

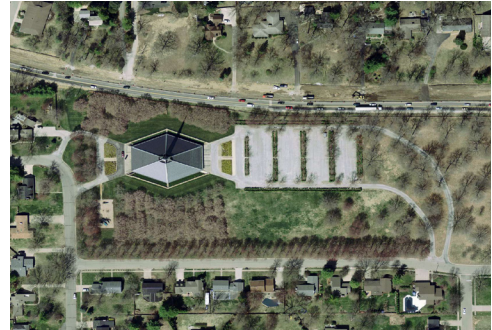
Whatever way we solve that, the congregation should have a positive feeling of being within the church, in a special, enclosed spiritual world. I see it as a very simple interior with organ pipes an important element in the sanctuary design. The primary element to create the right spiritual atmosphere would, of course, be light. That is the crucial thing.

On this site, with this kind of central plan, I think I would like to make the church really all one form: all the tower. There would be the gradual building up of the sheltering, hovering planes becoming the spire. The spire would not be put on a box or come up from the sides of the roof, as we did at Stephens College. The whole thing, all the planes, would grow up organically into the spire.

It would be good as an exterior form, because the spire is a marvelous symbol of reaching upward to God and because it would proclaim this as a church in the silhouette of Columbus. It would also work well as an interior space. It would give a feeling of soaring space and a feeling of special enclosure. It would work well for the light. The primary light source would be an oculus in the spire. It could give intense light on the communion table. This light would lead you as you saw it from the narthex. It would also keep you from being distracted by the people across from you, but you would be aware of them. Then there could be a feeling of contracting light back in the seating area. And this spire form would work well structurally. The structure could be very simple and would clearly and logically express the form and character of the church."

As is often the case with Saarinen's buildings, the geometry of the church is elegant in its simplicity and ingenious in its structural arrangement. In plan, the church is a simple hexagon, elongated slightly along the East-West axis with entrances on the shorter sides. From each corner of the hexagon, massive piers support the structural ribs of the roof that converge at the top of the roof and angle upward into a spire. The height of the building rises to a soaring 192 feet, just shy of the 200-foot mark that would have required the unwilling architect to place an airplane beacon atop the gold cross.

Though he labored with four previous schemes he found wanting, Saarinen designed the long, angular, symmetrical sanctuary and the 192-foot tall spire in a single stroke: "On this site, with this kind of central plan, I think I would like to make



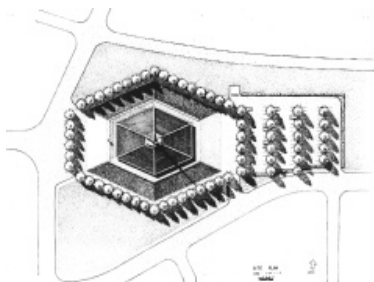
Top to Bottom:

1. North Christian Church Aerial Plan
2. North Christian Church Entry Drive
3. North Christian Church Parking Buffer
4. North Christian Church Kiley Landscape Edge





Above, Top to Bottom:
1. North Christian Church Spire Under Construction
2. North Christian Church Structural Base & Downspout
3. Dan Kiley's Landscape Plan for North Christian Church



the church really all one form: all the tower. There would be the gradual building up of the sheltering, hovering planes becoming the spire. The spire would not be put on a box or come up from the sides of the roof, as we did at Stephens College. The whole thing, all the planes, would grow up organically into the spire."

From outside of the building, the spire symbolizes reaching upwards to God. On the inside, it creates an enclosed soaring space for the congregation. The church was designed to remove man from the earthly world, so instead of being anchored to the ground with solid rectangles, Saarinen used pointed angular forms that hover and point to the heavens.

The church's baptistery is a small space on the lower level, decorated with a sunburst design, symbolizing the Holy Trinity. It is separate from the main sanctuary, designed to give the ceremony a more intimate dignity. The separation between the baptistery and sanctuary also recalls the tradition of the Early Christian church, when only those who were baptized could attend Communion.

North Christian Church is the last of three projects in Columbus that Saarinen designed with noted landscape architect Dan Kiley. Kiley's extensively landscaped grounds were developed in the years after the completion of the building and Kiley's landscape has reached maturity with great integrity.

Kiley's landscape filters and controls views of the experience of approaching and entering the church. The site itself is conceived and executed as an enclosure, with areas of varying qualities and character defined by the plantings and the spaces between them. Instead of an object surrounded by plantings, the church building is integrated to the site's fabric and rhythm.

The entry sequence involves along curvilinear drive through an open woods of old native hardwoods from which one emerges off center to the church rising on the horizon with a series of parking lots to the left, formed into courtyards with high hedges and perimeter trees. A shaded path on the main axis of the church and spire gathers congregants from the parking lots to a procession that emerges into daylight and wide steps up a low earthen berm from which the church hovers. The low-pitched slate roof extends over the berm and a surrounding magnolia grove.

The site's perimeter is defined by a series of maple allees. A small meadow bounded by woods, allees, magnolia grove and hedges provides the single unobstructed view of the church.

In 1999, the Indiana Chapter of the American Society of Landscape Architects (ASLA) named North Christian Church one of 10 ASLA Centennial Medallion recipients in Indiana. This award recognizes the most significant American designed landscapes of the last 100 years.

In 2000, the building and its grounds were designated a National

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Historic Landmark as part of a larger National Historic Landmark District recognizing the importance of modern architecture, landscape architecture, and design in Columbus. For landscape architecture, this was the first time in our nation's history that a work of modern landscape architecture design received such recognition.

As the membership has decreased and upkeep costs have increased, the congregation is struggling raising the necessary funds for maintenance of the structure. In April 2018, the Indiana Landmarks historic preservation organization added the church to its list of 10 Most Endangered Indiana landmarks to raise awareness of the problem and find ways to save the facility. In 2006, the slate roof, copper gutters and slate fascia were replaced to stem leaks at a cost of \$600,000.

In 2019, Landmark Columbus received a 2019 Keeping it Modern Architectural Conservation Grant from the Getty Foundation for the iconic church. With this grant, Landmark Columbus—together with Prudon & Partners, Reed-Hilderbrand, Bryony Roberts Studio, Enrique Ramirez, ICR-ICC and others—are developing a conservation management plan to provide the historical context and strategic guidance necessary for the church's long-term upkeep.

When originally completed, the congregation averaged 300 at weekly worship. Today, that number has dwindled to 35 members. A spokesman admits that the church is not in the position to afford the types of repairs the aging building needs now. Those include replacing the building's heating, ventilation and air conditioning system, among other repairs and maintenance that need to be done.

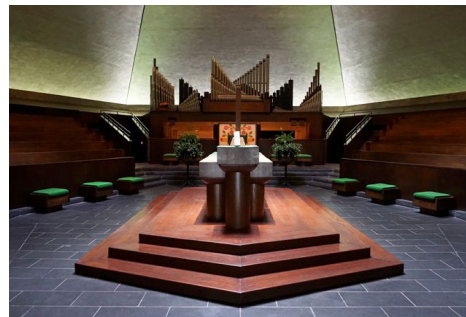
The Saarinen building, along with the Bartholomew County Courthouse by Don Hisaka, are two of the most recognized buildings people think of when Columbus, IN comes to mind, said local architect Louis Joyner, chairman of Indiana Landmarks Indiana Modern affinity group. The congregation has sought a national Sacred Places Grant, which provides up to \$250,000 in grant money, which needs to be matched by the local community with \$250,000 in donations, Dollase said. "The problem you have is you have to match those grants," Dollase said.

Indiana Landmarks also has a Sacred Places Indiana grant program and North Christian was in the first cohort of applicants three years ago, Dollase said. That grant was used to try to come up with ideas for additional uses for the building. But because of a number of internal issues, the congregation was unable to come up with a plan as the membership continued to dwindle, he said.

National Historic Landmark status is an honor, but it brings no money to help support the site, according to Indiana Landmarks. The church hopes space sharing may be a saving solution in the future.



Top to Bottom:
1. North Christian Church; Columbus, IN
2. North Christian Church Sanctuary
3. North Christian Church Altar
4. North Christian Church Exterior



Dollase said he is hopeful that some national foundations and trusts might see North Christian Church on the Indiana Landmarks list and take an interest in an endangered Modernist building with such an important pedigree.

Saarinen viewed most post-World War II churches as ordinary structures that lacked the grandeur and prominence achieved by cathedrals of earlier times, Indiana Landmarks officials said. "He aimed higher, seeking to inspire worshippers inside as well as viewers from afar with his revolutionary design, with a hexagonal sanctuary on a raised berm topped by the sky-piercing 192-foot spire," the Indiana Landmarks news release said of Saarinen, who died three years before construction was completed in 1964.

"It's an amazing building," Joyner said of the church. "You can learn so much about Saarinen — what he was thinking in terms of the design. He was always innovating ... this is really innovation in a church ... an expression of faith. The whole building grows out of that idea."

In addition to the craft, design and construction of the church being top-notch, Joyner said Columbus residents should not forget that the church is surrounded by a landscape design by Dan Kiley (1912-2004), who is nearly as famous in landscape design as Saarinen is in architecture.

Kiley placed four parking courts amid meadows and woods, with magnolias, dogwoods and flowering plants filling the 13.5-acre grounds.

"It's one of Dan Kiley's most important landscapes," Joyner said. The ultimate goal of placing North Christian on the top 10 endangered list is to find support and solutions to upgrade the building, so that the congregation can complete renovations and work to preserve the building into the future.

The Move to Hamden, CT; 1961:

In 1960, Yale University offered Eero a teaching position. Wife Aline relished the idea of being closer to the artistic center of the country's culture and arts media in New York City. The University sold Saarinen a Tudor home it owned in East Rock, an upscale New Haven neighborhood at a substantial discount to incentivize the Saarinens to make the move.

Saarinen set about redesigning the home, but died of a brain tumor on September 1, 1961 before work could be completed. Eero had instructed Aline to remove the home's crown moldings and paint the walls white. Aline and their son Eames lived in the home briefly before selling it back to Yale.

Cesar Pelli who also settled in New Haven when Saarinen moved the office from Michigan calls Yale and New Haven the "Saarinen legacy," though Eero died before completing the move. But Pelli and others involved in Saarinen's firm saw through the move to the Elm City. Over the decades, that decision has brought even more designers to town, Pelli said. For Pickard, whom Pelli considers "family," Yale's role in New Haven's architecture scene is just as significant as Pelli's.

"Our disproportionate number of nationally and internationally recognized architects have elected to build their practices in walking distance of the University because Yale attracts the most talented young architects," he said.

Pickard, who has designed a number of distinguished skyscrapers around the country, including the 1180 Peachtree in Atlanta and the Eaton World HQ in suburban Cleveland, noted that Yale also facilitates many attractive architectural events for New Haven residents, including a series of lectures. Pickard's most recent contribution to Cleveland is an uninspired glass box world HQ for paint manufacturer Sherwin Williams which shyly backs away from its important Public Square address.

Robert A.M. Stern ARC '65, previously dean of the Yale School of Architecture, who runs a private architectural firm in New York City, added that the relatively low cost of living and working in New Haven — especially compared to New York — is another attraction for young architects.

CBS Building; New York, NY; 1960-1965:

In 1928, William S. Paley used \$500k of his money from the family's share in a cigar business to acquire 51% of the Columbia Broadcast System. As President, Paley presided over the next 50 years to compete with his larger rival, NBC. With the advent of television in the early 1930's, Paley featured dramas and emerged as a major newscaster in WWII. After the war, Paley became chairman and Frank Stanton became president. In 1935, CBS planned a new headquarters by the prominent modernist William Lescaze, but they never pulled the trigger.

By the 1950's, the growth of CBS involved record manufacturing, television sets, musical instruments, publishing and a talent agency. The invested in theatrical productions and for a time, owned the New York Yankees, with offices in buildings around Manhattan. NBC's new headquarters at Rockefeller Center put a line in the sand Paley felt obligated to surpass, noting, "I think we were ...determined that if we built a building for CBS, it would have to be of the highest aesthetic quality."

Paley found a site on the east side of Sixth Avenue between W. 52nd and W. 53rd, a few blocks north of NBC in 1960 and hired Saarinen, one of the most prestigious and best known modern architects of the day. Both Saarinen and Paley wanted a skyscraper that would differ from the established International Style of the 1950s represented by such New York towers as Skidmore, Owings & Merrill's Lever House and Mies van der Rohe's Seagram Building. "After all," said Saarinen's widow Aline, "that's why they came to Eero and not to Skidmore."

Saarinen experimented with models showing various possible shapes for the tower, ranging from the wedding-cake profile encouraged by then existing zoning laws to various square and rectangular towers rising from a plaza.

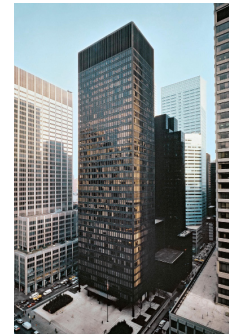
Saarinen eventually settled on a rectangular tower, as he wrote to Paley in March of 1961; "I think I now have a really good scheme for C.B.S. The design is the simplest conceivable rectangular free-standing sheer tower. The verticality of the tower is emphasized by the relief made by the triangular piers between the windows. These piers start at the pavement and soar up 424 feet. Its beauty will be, I believe, that it will be the simplest skyscraper statement in New York."

The 'Black Rock' nickname was derived from the black granite Saarinen selected for the tower's exterior. Paley's wife wanted pink granite. One of Saarinen's children observed, "Actually there was some resistance by Paley's wife because the granite was black, and she didn't want black granite - she wanted pink granite. But I think my dad was thinking it's kind of a manly building or maybe more of a formal structure, and wanted it black, so it stayed black, thank God. He needed to do a building that was not surrounded by buildings because you never see it. It's easy to see it in a model but he wanted it to be set back from the street. Glass and steel are kind of flash and we're in the city, and there are a lot of glass and steel buildings, you know, but he



Top to Bottom:

1. William & Babe Paley
2. Lever House, SOM
3. Seagram Building, Mies van der Rohe
4. CBS HQ Rendering



wanted something that was kind of dense and strong-looking. Obviously he wanted to make a different impression on New York."

"He wanted it not to be flimsy and glass and metal and flashy - he wanted it to be permanent - to look strong."

Paley went to Saarinen's office in Detroit to see a model and was unimpressed. On a second visit, however, Paley changed his mind: "I saw what I had first thought of as austerity really came through as strong, exquisite, ageless beauty. In July, 1961 I decided to go ahead with Saarinen."

John Dinkeloo later said that Saarinen had been "especially excited about this design." In Saarinen's words: "I wanted a building that would be a soaring thing. I think Louis Sullivan was right to want the skyscraper to be a soaring thing. I wanted a building that would stand firmly on the ground and would grow straight up. Your eyes should be led up to comprehend a building as a whole thing." None of this 'base, middle and top' articulation or even the mass atop a colonnade base as was the vogue. None of this thin curtainwall slab stuff."

Roche learned of Saarinen's sudden death coming out of a meeting with Paley at CBS. After Saarinen's death, Paley chose to continue with the firm. Paley was an actively involved client. In the words of a contemporary critic, Eric Larrabee: "Where CBS left off and Saarinen began is now difficult to determine, especially since he was the kind of architect...who...cared less who got credit for an idea than whether his own ideas prevailed." Of the building's completion, Paley wrote: "Participating in the creation of Black Rock was one of the great sources of satisfaction of my life."

The premise of Saarinen's design, a freestanding tower in a plaza, was bound up in changes then being proposed to New York City's zoning laws. The 1916 zoning ordinance, in effect until 1961, had encouraged progressively set-back towers. The new ordinance encouraged tall towers set back in plazas.

Saarinen met with the architects and planners working out the new zoning proposal, including Gordon Bunshaft of Skidmore, Owings & Merrill, and James Felt of the New York City Planning Commission, to explain the economics of his tower. CBS wasn't just one of the first towers to be built under the new zoning; Saarinen's designs and calculations for the tower actually helped shape the new regulations. In the words of *New York Times* architectural critic Ada Louise Huxtable, the CBS Building "set the shape and standard for New York building today."

Saarinen designed the CBS Building as New York's first postwar skyscraper built of a reinforced concrete frame instead of structural steel. Instead of an internal cage from which to hang a seemingly weightless glass curtain wall, he designed exterior walls of triangular load-bearing concrete columns, which together with the interior service and elevator core support the building.

By using the columns, he emphasized its verticality. Instead of a flat facade, Saarinen made the concrete piers in a three-dimensional projecting triangular V-shape – like the Noyes dorm at Vassar, with the glass recessed behind them. And instead of creating a transparent glass, shiny steel, or aluminum facade, he sheathed the concrete piers in dark gray granite, and filled in the intervening window bays with gray-tinted vision glass. Instead of the illusion of a glass box, he created the illusion of a slab of dark granite - earning the building the sobriquet "Black Rock."

The five-foot widths of piers and window bays tied into the modular design of the entire structure. Each entrance on West 52nd and 53rd Street fit into one bay, and was planned with revolving doors, which required a minimum of five feet. Five-foot modules also met the needs of then standard office furniture arrangements.

The precise dimensions of pier and window were carefully adjusted. Roche did a series of mock-ups of the proposed building in New Rochelle, New York, and Paley wrote he "must have gone out to New Rochelle at least thirty times to study the various mock-ups . . . when Roche, Stanton and I went out to look at [the mock-up], we realized that the difference between the window area and the column area was not right. Your eye could tell you that. We started then to change it. We got down to talking about a quarter of an inch or a sixteenth of an inch. We must have put up five or six different-sized mock-ups before we finally got it right."

Saarinen proposed the use of dark gray granite, but the final selection was made by his successors. Loja suggested that her husband was thinking of executives in dark gray suits. Dinkeloo believed that dark stone projected strength better than glass. Saarinen himself wrote: "A dark building seemed more quiet and dignified and appropriate to this site." Paley recalls deciding in favor of true granite after rejecting a synthetic version, because "in the long run it would be worth it. The building would be built to last a hundred years. Granite would retain its beauty as long as the building stood. "After examining granite from Africa, Japan, Norway, Sweden, Germany, France, Spain, Portugal, and the United States, they settled

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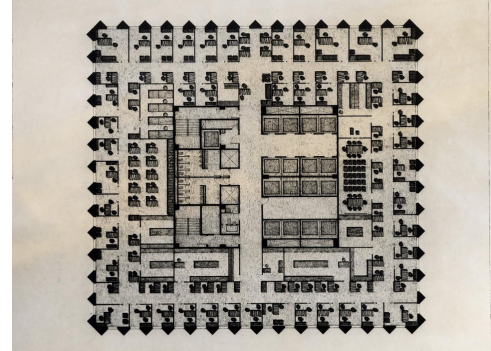
Clockwise:

1. Citicorp Tower, Hugh Stubbins
2. Guggenheim Museum, Frank Lloyd Wright
3. Whitney Museum of Modern Art, Marcel Breuer
4. Pan Am/ MetLife Building, Walter Gropius

on Canadian Black granite from the Robitaille family quarry in Alma, Quebec.

Saarinen's triangular piers and modular design created a three-dimensional study in architectural illusion. From directly across Sixth Avenue, for example, the tower's bays appear open, with five-foot-wide granite piers alternating with five-foot-wide window bays of single sheets of plate glass. When viewed from afar and necessarily at an angle, the V-shape of the piers effectively eclipses the view of the glass, creating the effect of a gray granite slab. The bays of any of the building's four sides thus appear to open directly in front of a viewer but appear to close up like a vertical Venetian blind to the right or left. As the viewer walks along the sidewalk, the bays appear to open and close in succession, rather like an accordion, as critics remarked. This optical effect was described by one contemporary writer as "trompe l'oeil," (Huxtable, 1982) and by another as "op-arch." Saarinen, describing the effect in motion, wrote: "We had learned the way a changing relief gives life to a facade."

The austerity of the CBS Building derives in part from the almost complete absence of interruptions in the facades. There are no setbacks. The main entrances on the side streets are through doors set discreetly within bays and integrated into the facade's design. There are no entrance canopies. Saarinen created the effect of a pure glass and granite slab on Sixth Avenue. The commercial spaces at the ground floor, set behind gray glass, are rendered practically invisible from outside, with very discreet signage.



Top to Bottom:

1. CBS HQ Floor Plan
2. CBS HQ Exterior
3. CBS HQ Interior Office





Top to Bottom:
1. CBS HQ President's Office
2. CBS HQ Executive Office
3. CBS HQ Entry
4. CBS HQ Columns



Though he put the CBS Building in a slightly sunken plaza, Saarinen tried to respect the street wall of Sixth Avenue, keeping the plaza small and siting the tower a little off-center. In Saarinen's words, "We tried to place the building on the site so that we could have a plaza and still not destroy the street line. A tower should not be tied in with lower street buildings. It should stand alone with air and light around it. A plaza is a very necessary thing in a city. It lets people sit in the sun and look at the sky. A plaza allows a building to be seen. Our buildings should be seen, because they are monuments of our time. But . . . we have to remember the street line and we have to remember the space between is as important as the towers. These arrangements should be orderly and beautiful."

The CBS Building is a freestanding, 38-story reinforced-concrete tower, sheathed in dark gray granite and gray-tinted vision glass, rising straight up 490 feet without setbacks. The tower, with a 135-foot by 160-foot footprint, is placed within a sunken plaza that occupies the entire western end of the block bounded by Fifth and Sixth Avenues and West 52nd and 53rd Streets on a site that is 200'-10" by 216'-10." The tower occupies approximately 60 percent of the plaza's area and is set slightly towards the east. The plaza is set five steps - approximately three and a half feet below the sidewalk level at Sixth Avenue, six steps below on West 52nd Street, seven steps below on West 53rd Street, and slopes downward to the east.

The building is rectangular in plan, with twelve bays on the eastern and western facades and fifteen bays on the wider northern and southern facades. Each facade is composed of five-foot-wide piers faced in "Canadian Black" granite flanking large, five-foot-wide panes of glass framed in bronze-finished aluminum. The windows are 19'-10" high on the ground floor above bronze-finished aluminum sills, and nine feet high on the upper floors. At the first level above the ground floor, instead of glass the bays contain grilles. The profile of each pier is a projecting triangular or V-shape; at each of the building's four corners the V's meet to form double-width piers, creating the effect of chamfered corners. Ground floor commercial uses behind gray glass are rendered practically invisible from outside.

There is no entrance to the CBS Building on Sixth Avenue. The building has fourteen ground floor entrances, seven on both West 52nd and West 53rd Streets. The entrances, containing three door types, are fitted unobtrusively into the narrow bays. The entrances in the seven central bays on the West 52nd Street side are arranged as follows from west to east: 1) A single-door entry, flanked by side-lights, providing entrance to the commercial space; above it is a simple, modestly projecting light box. 2) A double-door entry with a simple, modestly projecting light box above. 3, 4, 5) Each has a revolving door with a simple, modestly projecting light box above with the raised letters "CBS." 6) A double-door entry with a simple, modestly projecting light box above. 7) A double-door entry with a simple, modestly projecting light box above, serving as entrance to a restaurant; there is a second simple, modestly projecting light box above, at the top of the bay. Discreet lettering on several windows identifies the restaurant. The single doors, double doors, revolving doors and their housings, and projecting light boxes are all of the same bronze-finished aluminum.

There are seven entrances and one window bay in the central bays on the West 53rd Street side, arranged as follows from west to east: 1) A double-door entry to the commercial space, with a simple, modestly projecting light box. 2) A double-door entry with a simple, modestly projecting light box above. 3, 4, 5) Revolving-door entrances with simple, modestly projecting light boxes above with the raised letters "CBS." 6) A double-door entry with a simple, modestly projecting light box above. 7) A window of the restaurant, with a simple, modestly projecting light box above it and an additional simple, modestly projecting light box at the top of the bay. 8) A double-door entrance to the restaurant, with an angled projecting marquee with backlit letters indicating the restaurant's name, "China Grill." The material of the doors and light boxes is the same as that used on West 52nd Street.

At the east elevation, the ground floor bays are as follows from south to north: 1, 2, 3) Glass windows. 4, 5, 6) Bronze-finished aluminum with a double door. 7) Bronze-finished aluminum with a grille. 8) Bronze-finished aluminum. 9) A glass double door, with bronze-finished aluminum above. 10, 11, 12) Glass windows for the restaurant. There are simple, modestly projecting light boxes in the 2nd, 5th, 8th and 11th bays.

The plaza is paved in gray granite slightly lighter than that on the building's piers. The depressed plaza level forms a gray granite retaining wall with parapets and vertical slits on the inside faces. Wide steps lead down to the plaza from each street side; a narrower staircase with eight steps leads down to the plaza from the east. Each set of steps has two freestanding bronze-finished aluminum railings. A ramp (not original) with a dark bronze-finished aluminum handrail has been added to the steps from West 52nd Street.

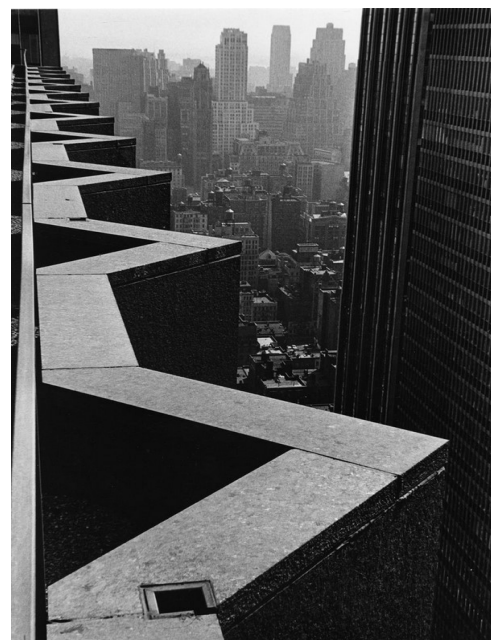
The ends of the parapets above the retaining walls have polished bronze letters and numerals (replacements of the original) flanking the steps: "CBS" on Sixth Avenue, "51" for the address on West 52nd Street, and "52" for the address on West 53rd Street. Planters with trees have been placed in the plaza, planters with bushes have been placed on the parapets of the retaining wall. At the eastern end of the plaza, the retaining wall has been enlarged, and includes a wheelchair-access ramp (a later addition), and a staircase leading down to a "messenger entrance." A portion of the tax lot has been excluded from the Landmark Site and has been re-landscaped as part of the plaza for the adjacent building to the east.

Critical reaction has varied somewhat, but the CBS Building has been generally accepted as one of New York's premier post-World-War-II-era skyscrapers and one of the country's great works of modern architecture, though it is not Saarinen's finest work. Even before its completion, the *Times* wrote that, "if buildings were rated like television programs, the Columbia Broadcasting System would have a new hit."

The CBS Building represented a departure from the International



Top to Bottom:
1. CBS HQ
2. CBS HQ Parapet





Top to Bottom:
1. CBS HQ Florence Knoll Office Design
2. CBS HQ Interior
3. CBS HQ Plaza Rendering



Style, and some critics did not understand or appreciate that. Some thought that the building's piers did not explicitly express their function -- an important concept in International Style design -- because they didn't narrow towards the top where they supported less weight than at the bottom). Yet others praised the piers as "directly expressed from plaza to sky, rather than concealed behind curtain walls as in neighboring office buildings." Similarly, Saarinen's biographer, Allan Temko, writing in 1962, faulted the tower for not growing "visually more open and light as it rises."

In 1964, the Architectural League of New York cited the building as one of eight recent CBS projects across the country built to high architectural standards, and awarded a medal to CBS president Frank Stanton for "significant contributions and effective encouragement of the role of the arts in business and industry." Reporting on the award, the *New York Times* wrote: "Seeking to promote its corporate image, Columbia insisted on high architectural standards and employed some of the country's leading architects to achieve them."

Biographer Allan Temko commented that though CBS had a plaza, the plaza was "scarcely more than a protective border for the freestanding tower, and is in no sense a real civic space." Temko opined that if Saarinen had had the opportunity to design additional skyscrapers, they would have overcome such weaknesses, making his untimely death "one of the cultural disasters of modern times."

Saarinen's 38-story, sheer, freestanding tower set in its own shallow sunken plaza is unquestionably good architecture because it is original, consistent, boldly expressed and daring. Initially, some observers did not like its dark coloration, and considered sunken plazas anathema and its aloofness rather condescending and disrespectful of the common man, that is, the pedestrian. These attributes, however, were not really negatives given its context of fronting on an avenue whose smile then displayed many broken and missing teeth because of the existing irregular pattern of nearby public plazas. Moreover, its context along the Avenue of the Americas was generally undistinguished design.

The CBS Building's proportions and rhythmic facades are, in fact, far better than those of the celebrated Seagram Building across town on Park Avenue. This is a powerful building, whose angled piers thrust skyward with great energy, assertively expressing its dynamic structuralism in a manner that makes the Seagram Building almost seem dainty and frail. An important key to its cohesive expression is the equal division of its facades into five-foot-wide sections of piers and large, vertical, single-pane windows. Simplicity and focus are this building's bywords.

The angled columns are actually load-bearing and not curtain-wall applications. The piers are concrete and hollow to contain ducts for the building's heating, ventilating and air-conditioning (HVAC) equipment. They are clad in Canadian black granite and

meet at the building's corners where they make a 45-degree angle with the plane of each facade. The granite cladding of the piers is not polished which flattens and breaks up the reflectivity of the windows. It would be interesting to envision the effect had the cladding been polished. Such a treatment would have made the building appear much more faceted with interesting reflective patterns, but it would also have lessened the tower's bold impact as the duller, unpolished granite creates a more dense and deeper facade appearance and not necessarily a "deader" one.

The shallow plaza is bereft of public seating although a low perimeter wall fulfills part of that need. The Deutsche Bank Building's through-block plaza directly to the east of the CBS building, fortunately provides more open space and, indeed, is one of the most attractive in the city. The Deutsche Bank Building, however, significantly blocks most of the views from the east of the CBS Building and its pink granite cladding and exterior design does not relate at all to the CBS Building and pales in comparison.

Inasmuch as the historic character of midtown is a chaotic mélange of contrasting styles, CBS's arrogant tower cannot be faulted terribly on account of its great strength, which is simple a challenge for its neighbors to meet and, indeed, the owners of the former J. P. Penney directly across the avenue reclad their tower and added three large, bright green bronze sculptures of women by Jim Dine that enliven the streetscape and actually would be fine sitting in front of the CBS Building. The wonderful sculpture, "Lapstrake," by Jesus Bautista Moroles, in the Deutsche Bank Building Plaza actually is a better foil to the CBS Building than its own building.

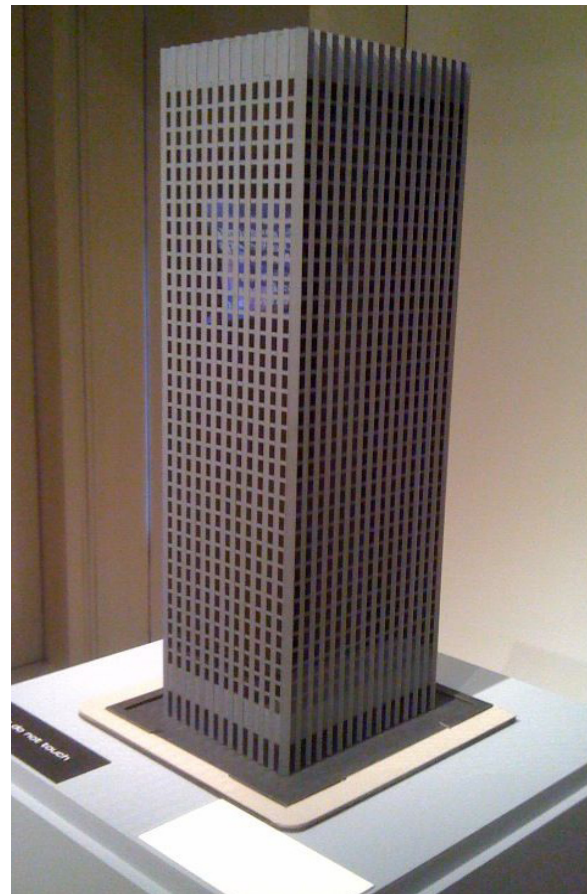
The building is often referred to as the "Black Box," but the black granite more often appears to be dark gray. Like the Solomon R. Guggenheim Museum designed by Frank Lloyd Wright at Fifth Avenue and 88th Street, this building needs more space to be appreciated as a sculptural object. When it was erected, CBS was a very powerful television network headed by William Paley and the building was clearly meant to be an architectural competitor to the former RCA Building, now the GE Building at 30 Rockefeller Plaza, which houses many facilities of the NBC television network. Obviously, a much smaller project, nonetheless it was intended to be an important architectural statement.

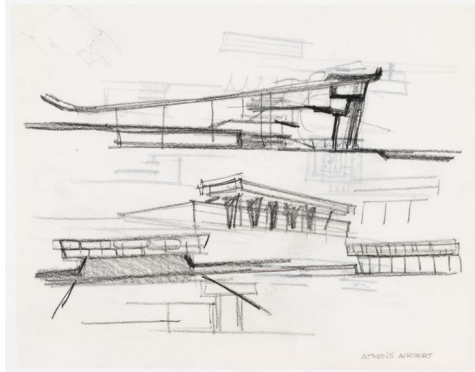
Its arrogant posturing has been diminished by the renaissance in the late 1990's of Times Square and the flamboyance of some later towers such as Citicorp Center on Lexington Avenue at 63rd Street.

The CBS Building is not considered a masterpiece because its proportions are a bit bulky and its massing falls short of being Brutalist enough to be truly memorable. Brutalism was an architectural style of the period, best personified

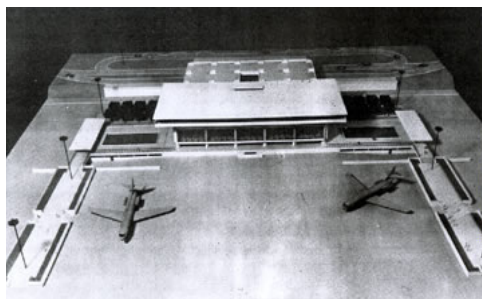
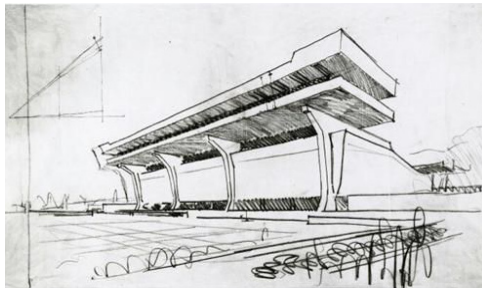


Above, Top to Bottom:
1. CBS HQ Steps to Plaza
2. CBS HQ Model





Top to Bottom:
1. Hellenikon Airport Concept Section; Athens Greece
2. Hellenikon Airport Concept rendering
3. Hellenikon Airport Interior Rendering
4. Hellenikon Airport Model



by the Marcel Breuer's Whitney Museum of Modern Art on Madison Avenue at 75th Street, and the former PanAm, now MetLife Building straddling Park Avenue at 55th Street, designed by Walter Gropius. Still, the CBS building has an elegance that is neither under- nor overstated, something that was very much needed for this avenue.

Hellenikon Airport; Athens, Greece; 1960-1969:

The main building of the Athens Airport, referred to as the East Terminal, was one of the last works by Eero Saarinen. Saarinen stated that it was his intention to combine the best functional solution and to create a building that would be representative of 20th century technology and express the Greek spirit as well.

The building entrance level contained check-in booths, customs inspection, shops and a balcony with restaurants that was also open to the transit lounge. The intermediate mezzanine housed the foreign exchange services and customs offices, while the dramatic transit lounge was on the runway level with an internal height of three floors, along with the departure gates. On the lower basement level were the luggage handling facilities, and the airport's operating services. The large projecting upper floors included restaurants and the roof overlooked the runways and the Saronic Gulf and was popular among passengers and visitors alike. On an intervening floor was the VIP lounge and administration offices.

The dynamic and plastic form of the building was constructed of exposed pre-stressed concrete that enabled Saarinen to create large openings and projections. The façade overlooking the airport is divided into five parts, supported on large piers and crowned with two parallel projections that shade the extensive glass surfaces.

Saarinen's original conceptual sketches reflected a terminal with a kinetic energy from its curling vertical columns, reminiscent of Dulles, and reflect how the columnar rhythm and load-bearing, post and lintel construction of Greek temple architecture served as his initial inspiration.

In a letter to Solon Ghikas, the Greek Minister of Communications and Public Works and the project's client, Saarinen admitted that the airport design was "a bit influenced by the beautiful monasteries of Athos." Saarinen was likely referring to the way in which the Mount Athos Monastery buildings descend their steeply sloping site and present their principal façades to the sea.

The Athens Airport site sloped gently toward the airfield and Saarinen used this condition to provide entrance at the second floor level, giving users the choice of mounting to the mezzanine level or descending to the departures and arrivals floor below. And Saarinen insisted that the principal façade should face the airfield, welcoming passengers to Greece. Saarinen sought to

further link the airport to its location through the planned use of local Pentellic marble - the white stone of the Parthenon, as part of the concrete aggregate used for construction and for the desks and floors on the interior.

These sources of inspiration become subsumed in a final design of structural logic, clarity and elegance. The airport comprises two stacked volumes, the lower one serving as the arrivals and departures level, while the upper volume, cantilevered twenty-two feet on three sides, housed restaurants, offices and a mezzanine level providing dramatic views of take-offs and landings. The Parthenon's columns here become cruciform beams, containing air conditioning ducts whose capitals are transformed into splayed fingers that provide further support for the upper level.

Saarinen's terminal was one of two terminals at the airport. The west terminal was for Olympic Airways and Saarinen's west terminal was for all other airlines. The airport was designed to accommodate 11 million travelers annually, but was accommodating over 13 million passengers as it approached the 21st century.

In preparation for the 2004 Olympic in Athens, the city abandoned the airport to create the new Eleftherios Venizelos airport south of Athens at Spata, which opened in 2001. Now that the Hellenikon airport has been abandoned, provision has been made for Saarinen's heritage building to be utilized by acquiring a new, cultural function. The project, called the Hellinikon Metropolitan Park, is to include the development of a seaside resort of hotels, residences, and shops, which is expected to give the city a major economic boost and contribute to the upgrade of the beachfront.

The project would extend to Vouliagmeni Avenue and connect the residential suburbs of Alimos, Glyfada, Argyroupolis, and Elliniko to the waterfront. The design focuses on highlighting the historical aspect of the site, transforming Saarinen's terminal of "emotional importance" to the Greeks into an exhibition center and museum. One of the runways will be transformed into a long sidewalk, and many trees and local flora will be planted, providing a new green lung to the city overwhelmed by traffic. Part of the airport is still derelict and is occupied by squatters.

Saarinen's Death; 1961:

Eero Saarinen celebrated his 51st birthday on August 20, 1961, and the next day paid a visit to a doctor, who diagnosed a brain tumor. A week and a half later, he was dead.

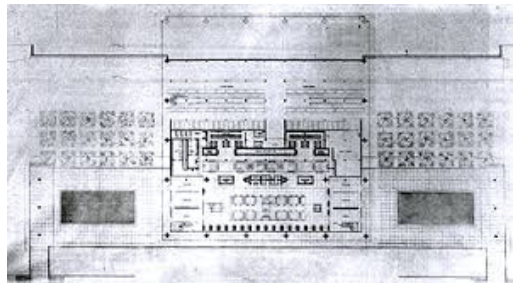
Eero Saarinen died on September 1, 1961 in Ann Arbor, MI while undergoing surgery for the brain tumor. His doctor had told him that the tumor was in the area of his brain that affected creativity and that he had a very slim chance of surviving the surgery. Eero chose to proceed. He was in Ann Arbor overseeing



Above: Hellenikon Airport upon completion

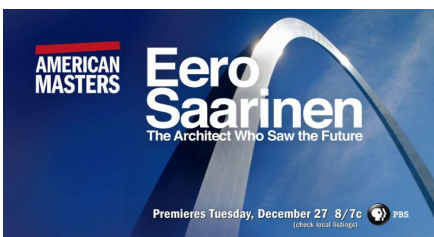
Below:

1. Hellenikon Airport Plan
2. Hellenikon Airport Deserted





Top to Bottom:
1. J. Irwin Miller
2. Eero Saarinen's Grave
3. Kevin Roche
4. Eero Saarinen in Womb Chair
5. "Eero Saarinen: The Architect Who Saw the Future"



the completion of the new School of Music, Theatre and Dance for the University of Michigan.

His funeral service was designed and organized by Irwin Miller – their final interaction. Saarinen is buried in White Chapel Memorial Park Cemetery in Troy, MI. Twenty years later when helping to establish a chair in Eero's name at Yale, Miller wrote, "Eero Saarinen will undoubtedly emerge as the greatest architect of his generation. His qualities of thoughtful innovation, warm concerns for humans, disdain of fashions and identifications with the needs of his clients are all too rare nowadays."

Kevin Roche, John Lacy and John Dinkeloo worked to complete twelve Eero Saarinen projects which were incomplete at the time of his death, including North Christian Church, TWA Flight Center at JFK, TWA Terminal at Dulles International Airport, the Deere & Co. HQ, Bell Labs in Holmdel, NJ, the Vivian Beaumont Theatre at Lincoln Center, the Ezra Stiles and Samuel Morse Colleges at Yale and the St. Louis Arch.

Roche and Dinkeloo founded their own firm in 1966. John Dinkeloo passed away in 1981 at the age of 63. Kevin Roche passed away on March 1, 2019 at the age of 96. Dinkeloo's son, Christiaan, returned to the firm and rose to lead the firm with Roche after his father's death.

Recognition:

In 1940, he received two first prizes together with Charles Eames in the furniture design competition of the Museum of Modern Art in New York City.

The Kleinhans Music Hall (1940) was designated a National Historic Landmark in 1989.

The Crow Island School (1942) was designated a National Historic Landmark in 1990. The school received the prestigious Twenty-Five Year Award from the American Institute of Architects in 1971.

The Des Moines Art Center (1948) was listed on the National Register of Historic places in 2004.

In 1948, he won the first prize in the Jefferson National Monument competition.

The Case Study #9 House in Pacific Palisades, CA (1949) was listed on the National Register of Historic Places in 2013.

The Christ Lutheran Church in Minneapolis was designated a National Historic Landmark in 2009. In 1977, the building was the eighth recipient of the American Institute of Architects Twenty-five Year Award, one of only two places of worship to have been so honored.

Eero Saarinen was elected a Fellow of the American Institute of Architects in 1952 at the age of 42.

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The Boston Arts Festival in 1953 gave him their Grand Architectural Award.

He was elected a member of the National Institute of Arts and Letters in 1954.

His Irwin Union Bank & Trust building in Columbus, IN (1954) was designated a National Historic Landmark in 2000.

The Irwin Miller House (1957) was designated a National Historic Landmark in 2000.

He received the First Honor award of the American Institute of Architects twice, in 1955 and 1956, and their gold medal in 1962.

In 1955, he received a *Progressive Architecture* Award Citation for the Milwaukee War Memorial.

The General Motors Technical Center (1956) was designated a National Historic Landmark in 2014 with its architectural importance was cited as the primary reason for the center's designation. The American Institute of Architects honored it in 1986 as the most outstanding architectural project of its era.

The Concordia Senior College campus was the first college campus in America to receive a First Honor Award from the American Institute of Architects.

The TWA Terminal at JFK was listed on the National Register of Historic Places in 2005.

In 1962, he was posthumously awarded a gold medal by the American Institute of Architects.

The St. Louis Gateway Arch was designated a National Historic landmark in 1987.

In 1955, he took first prize in US Embassy competition in London.

The North Christian Church in Columbus, IN (1964) was designated a National Historic Landmark in 2000.

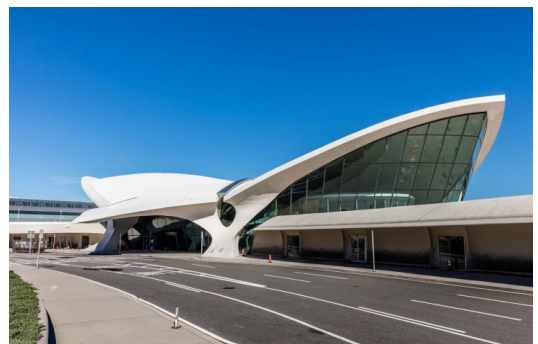
Legacy:

Saarinen is now – finally - considered one of the masters of American 20th-century architecture. There has been a surge of interest in Saarinen's work in recent years, including a major exhibition and several books.

This is partly because of the Roche and Dinkeloo donation of its Saarinen archives to Yale University, making Eero's

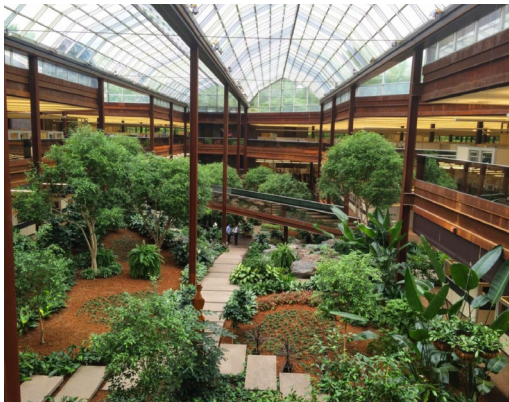


Top to Bottom:
1. St. Louis Gateway Arch
2. North Christian Church
3. Yale Ingalls Ice Rink
4. TWA Terminal at JFK





Above: Eero Saarinen; TWA Flight Center, JFK Airport, New York
Below:
1. Deer & Co. HQ; Moline, IA
2. TWA Dulles Airport



work more accessible. That archive laid the basis for a museum show that began traveling in 2006 at the Museum of the City of New York before moving to Yale. This was the first full career retrospective devoted entirely to his work.

Many of his papers were donated to the 'Archives of American Art' in 1973. An exhibition of his work called 'Eero Saarinen: Shaping the Future' was held by New York's Finnish Cultural Institute. It toured the United States and Europe from 2006 to 2010.

The papers of Aline and Eero Saarinen, from 1906 to 1977, were donated in 1973 to the Archives of American Art, Smithsonian Institution. In 2006, the bulk of these primary source documents on the couple were digitized and posted online on the Smithsonian Archives' website. The Eero Saarinen collection at the Canadian Centre for Architecture documents eight built projects, including the Athens airport in Greece, the former US Embassy Chanceries in Oslo, Norway and London, England, corporate projects for John Deere, CBS, and IBM, and the North Christian Church in Columbus, Indiana.

The resurgence in attention to Eero Saarinen's work is also because Saarinen's oeuvre can now be said to fit in with present-day concerns about pluralism of styles. He was criticized in his own time - most vociferously by Yale's Vincent Scully - for having no identifiable style. One explanation for this is that Saarinen's neo-futuristic vision was adapted to each individual client and project, which were never exactly the same.

Thirdly, interest may also be attributable to the fact that many of Saarinen's projects have recently undergone major renovation - TWA/ JFK, MIT, Yale, and his Irwin Union Trust Bank, Irwin Residence and North Christian Church in Columbus, IN. These renovations have served to reacquire the profession and public with Eero's commitment to design excellence.

In 2016, *Eero Saarinen: The Architect Who Saw the Future*, a film about Saarinen that was co-produced by his son Eric premiered on the PBS American Masters series.

Saarinen's pluralist approach was a result of his hunger for knowledge. He researched projects extensively to develop a comprehensive understanding of the client's program and associated issues and problems before providing solutions.

Even Vincent Scully, who has come to chair symposiums on Saarinen, admitted in the book *Yale in New Haven: Architecture and Urbanism* that "his designs from Kennedy to Dulles exemplified what has been called 'the style for the job,' and each of them evoked a brand new, knock-your-eye-out form coupled with some equally new and spectacular structural device and functional innovation. At the time I did

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not like Saarinen's buildings very much but I respect and admire them now. They have rather surprisingly worn very well."

Saarinen's interests were limited to architecture. He worked 12-16 hour days seven days a week, and expected as much from his staff. He never wrote a book. His career was one of regular innovation on a broad range of project types and the broadest range of variation in the scale of projects he was favored to design.

In his only eleven years after the death of his famous father, Eero's portfolio was more rich and diverse with a multi-valiant vocabulary capable of symbolic interpretation in ways in which other modern architects were less successful.

As such, Saarinen's work was more representative of the values, aspirations and beliefs of the clients and society his work was gifted to enrich. His sculptural forms - TWA at JFK, Ingalls, Dulles, Kresge Auditorium, the St. Louis Arch - provided an architectural drama previously unknown. Eero Saarinen made modern architecture fun and so much more than the uniform cookie-cutter boring boxes most architects dropped on their clients.

Perhaps it took Frank Gehry's polymorphic excesses to sharpen the focus on Saarinen's daring in not only being a consummate form-giver, but being wedded to the engineers to figure out how to get it done, and done well long before Catia software and computers for advanced calculations became tools for such problem solving to more easily enable bold form-giving. Saarinen's long-term unstable reputation has been given a reappraisal about what constitutes an exemplary modern architect.

Today's architects like Santiago Calatrava, Frank Gehry, Daniel Libeskind and Zaha Hadid have moved quite a distance from Modernist orthodoxy. While Saarinen demonstrated adeptness at the early modern doctrine of rectangular prisms and the basic forms for modern architecture with his large corporate projects for GM, IBM and Bell Labs, he is largely responsible for the trend toward exploration and experimentation in architectural design that departed from the conservative orthogonal characteristics of early modern architecture.

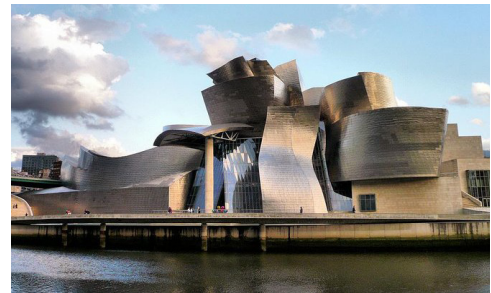
And a great deal of Saarinen's work, especially his adventures in fluid geometry, today looks as if it was the predecessor of the work of today's starchitects. It is easier now to regard Saarinen's expressive buildings as a principled attempt to reconcile the Modernist drive to purify and clarify with the abiding human desire for something that strikes other, warmer and no less essential chords.

Eliel: "It is an easy task to let one's imagination run wild and to produce such forms as never existed before. The value of



Top to Bottom:

1. Eero Saarinen; TWA Flight Center; JFK International Airport, New York
2. Frank Gehry; Guggenheim Museum, Bilbao, Spain
3. Zaha Hadid; Heydar Aliyev Center; Baku, Azerbaijan
4. Zaha Hadid; Changsha Meixhu Intl. Culture & Arts Center
5. Santiago Calatrava; Auditorio de Tenerife





Top to Bottom:
1. Kleinhaus Music Hall
2. Crow Island School
3. Christ Lutheran Church



Top to Bottom:
1. Irwin Miller House
2. Milwaukee War Memorial
3. Concordia Senior College
4. TWA Terminal at JFK
5. GM Technical Center



art does not depend upon one's rich imagination. The value of art depends on how one's rich imagination is mastered."

It is not surprising that in the 60 years since his death, the survivability of Saarinen's projects reflects a mixed storyboard.

Saarinen's TWA Flight Center at JFK lived a relatively short life (1962-2001) because at the time of the project's design, TWA had not committed to larger jet planes as other airlines did, and the Terminal proved to be too small for number and size of TWA's international flights as it expanded service to meet demand. TWA was sold to American Airlines in October 2001. But American operated flights out of Saarinen's terminal for only three months until the lease expired in December 2001.

Eero's Dulles terminal for TWA has been added on to in order to meet growing passenger and plan volume thanks to its linear design on a virgin site.

Eero's North Christian Church in Columbus, IN survives in near-pristine condition thanks to a costly roof repair and the continued use of the facility as a church is challenged by the shrinking membership which now stands at 35 compared to the 350 that built the facility.

The Deere HQ continues its life in Moline, IL. The Gateway Arch has received an expanded Visitors Center and landscaping upgrade, but the arch is unaltered.

A number of Saarinen's larger projects were a product of optimistic commercial expansion after WWII that proved to be unsustainable. Not until the technology giants hatched in Silicone Valley have appetites for such large facilities reappeared.

At the IMB Watson Center in Rochester, MN, 4400 employees representing over 30 IMB enterprises work at Saarinen's

1,680,000 sf facility. The Rochester Post-Bulletin has reported that IBM is contemplating transferring its manufacturing jobs to Mexico.

The breakup of Ma Bell does not reflect on Saarinen for the enormous 2,000,000 square feet Holmdel, NJ Bell Works Lab Building. Corporations today are not vertically integrated as Bell was at the time and so facilities of such size are rarely seen. And the US government pursuit of the Bell system's size and integration to enforce anti-trust legislation greatly impacted Bell and the Holmdel facility.

The Bell Labs Holmdel site, a 1.9 million square foot structure set on 473 acres, was closed in 2007. In August 2013, Somerset Development bought the building. The facility has undergone renovations into a multi-purpose living and working space, dubbed Bell Works by its redevelopers.

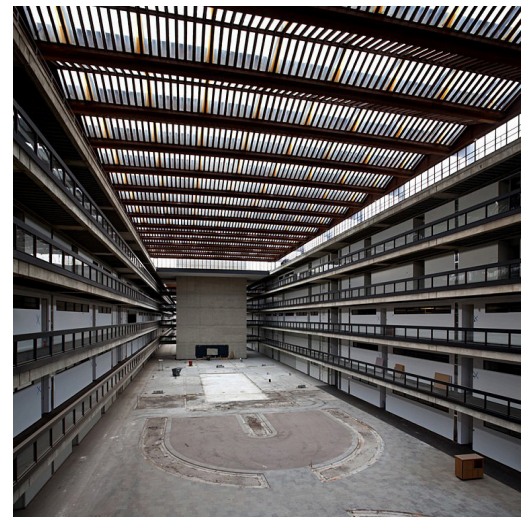
The Bell Labs Holmdel Complex in Holmdel, New Jersey was created as a new research and development facility for Bell Telephone when they decided to move operations out of Manhattan. Constructed between 1959 and 1962, Saarinen died a year before Holmdel was completed and six years before the six story complex would be named Laboratory of the Year by *R&D Magazine*. The outside curtain wall of mirrored glass that allowed in 25 percent of the sun's light while blocking 70 percent of its heat led to the Holmdel Complex being christened "The Biggest Mirror Ever" by Architectural Forum, and the complex was used in universities as example of one of the crowning achievements of the modernist architectural style.

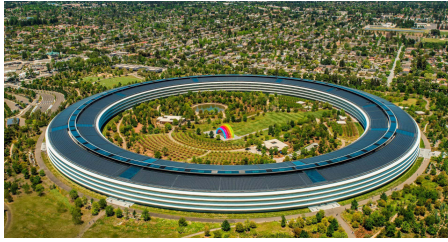
Once inside, a 70 foot high cross-shaped atrium divides the site into four segments where over 5,600 researchers and engineers worked. One of these researchers, Steven Chu, went on to receive the 1997 Nobel Prize for his work at Holmdel using laser light to trap and cool atoms. Two others, Arno Penzias and Robert Wilson, received their Nobel Prizes for the Holmdel Horn Antenna, credited with proving the Big Bang theory, and Arthur Schawlow and Charles Townes invented the laser at Bell Labs in 1958. Other notable technological advancements brought about in Bell Labs include cellular phones, microwaves, modems, and the transistor and the development of satellite and fiber optic communications.

Two later additions to the facility would bring it to a total size of two million square feet, and the parent company Bell Telephone would become AT&T, then Lucent, and finally Alcatel-Lucent. Alcatel-Lucent planned to sell the 473-acre property in 2006 to a developer who intended to raze the campus and build an office park. Preferred Real Estate Investments (PREI) CEO Michael O'Neill remarked in a New York Times piece, "So many of these lavish old commercial buildings have a great history to them, and then one day their useful life is over."



Left Above, Clockwise:
1. Bell Labs Original Atrium
2. Bell Labs Abandoned





Top to Bottom:

1. Apple HQ; Cupertino, CA; Sir Norman Foster
2. Facebook; Menlo Park, CA; Frank Gehry
3. Facebook; Menlo Park; Gensler
4. Google; Mountain View CA



The backlash from the scientific community was swift and passionate. Petitions were started, preservation groups were contacted, and the media response was highly critical. A year later the deal fell through. In 2013 Somerset Development Corp bought the property for \$27 million, and their plan is to retain “as much as possible of the original design”. According to Tom De Poto in *The Star-Ledger*, the building will house “a health and wellness center, skilled nursing facility and assisted living center, a hotel, restaurants and shopping, spa, office spaces and a 20,000-square-foot public library.”

Architect Alexander Gorlin allowed Bell Labs to be photographed shortly before the renovation began. Much of the interior had been stripped to the basic elements and the plants in the atrium were gone, but the architecture was still mesmerizing. Many of the rooms were entirely anonymous after everything in them had been removed.

In 2019 the complex was partially renovated and reopened as Bell Works, and the building is home to dozens of businesses and even a farmer's market.

Today, for most large enterprises, an exit strategy in the strategic real estate plan is typically part of the occupancy planning to be able to limit shareholder exposure for hiccups or declines in business and space demands. In the expanding economy of Eero's time after WWII, such considerations were not given time or thought.

Today's technology giants diversify their people and real estate for critical mass and the ability to recruit and retain talent across the nation inasmuch as its employment needs for technology workers is inevitably limited in a given community.

Apple's Cupertino, CA ring-shaped HQ by Sir Norman Foster contains 2.8 million sf for its 12,000 HQ employees.

Facebook has 2.22 million sf in a variety of facilities in New York City. Its kitschy Menlo Park, CA facility by Frank Gehry comprises 430,000 sf. Facebook added to its Menlo Park offices with a 950,000 sf complex from Gensler in 2012.

Facebook has 3 million sf in Seattle for 3,000 people. In 2020, Facebook bought an unused 400,000 sf Seattle office complex from office retailer REI for \$367.6 million. I do not know anyone who paid anything close to \$941/sf for a vacant building.

In 2018, Facebook took 1.13 million sf at Dexter Square after taking 150,000 sf on Westlake Ave. for another 900 people.

As Facebook's new chief in Seattle said, “Every Silicone Valley company has a presence in Seattle.” Because of the tech talent there. Facebook has 7,000 people in Seattle.

Google 2,000,000 sf at the Mountain View, CA HQ. Largest is 111 Eighth Ave., NYC which Google acquired in 2020. In

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the fall of 2020, Google proposed expand its corporate campus by building 1850 residential units, shops and public spaces on 40 acres in Mountain View for its employees.

As of 2017, Amazon occupies 8.1 million square feet of office space in 33 buildings in Seattle, employing 40,000 white collar workers, though CNBC has reported that Amazon's Seattle office footprint totaled 13.6 million sf.

With the exception of Apple in its Cupertino ring HQ by Foster, none of the tech giants have attempted to consolidate all of its headquarters or research personnel in one location. This is attributable today to the size of these tech giants and the fact that they cannot expect to draw all of the skilled personnel they require from a single community.

The Amazon 2 feeding frenzy of 2019 had every community in the country pitching its best sites in hopes of landing a home for Amazon's projected 40,000 employees in the knowledge that it had reached its maximum recruitment of skilled personnel in its other locations.

Saarinen's legacy is remarkable when considering that he practiced out of his father's shadow for a mere 11 years.

December 2021



Top to Bottom:
1. Amazon HQ; Seattle; NBBJ
2. Eero Saarinen at his home studio
3. Eero (L) and Eliel (R) Saarinen

