A Study of Four Buildings:

Introduction

Church of Cristo Obrero
Eladio Dieste
Atlántida, Uruguay
1958

International Schools of Art
Ricardo Porro, Roberto Gottardi and Vittorio Garatti
Havana, Cuba
1962

Casa Baldi
Paolo Portoghesi
Rome, Italy
1959

Experimental House
Alvar Aalto
Muuratsalo, Finland
1953

with a concluding essay on the work of A.L. Aydelott

Introduction

This study explores two themes, one existential and one technical: change and diversity of masonry construction.

Change

Change is nothing new, but the world we live in today is changing more rapidly than ever. In the last 20 years, the world's population has grown by a quarter, global climate change has had observable effects on the environment, and globalization has created stresses world-wide. During the period,1952-1962, when the four buildings in this study were constructed, the world faced many changes that not only had effects on the Earth as a whole, but radically altered individuals' lives. During this decade the Korean War occurred, Dwight D. Eisenhower was elected president, the Brown vs. Board of Education decision was handed down, the Soviets launched Sputnik, the Cuban people revolted, John F. Kennedy became president, and the Vietnam War began. This was a time of great adjustment for the United States and a time of international conflict. The emerging Civil Rights Movement and the crusade against communism exposed underlying divisions in American society. As I studied the designers of the four buildings I visited, I realized that changes in each of their lives transformed them and their architectural ideas.

Diversity of Masonry Construction

Consistent across all four buildings is the use of masonry units as a building material. The Church of Cristo Obrero by Eladio Dieste located in Atlántida , Uruguay, is constructed of thin-shell vaults using traditional masonry units to produce two structural types: the freestanding vault and the “Gaussian” vault. In Cuba, the International Schools of Art (ISA) by Ricardo Poro, Vitorrio Garatti, and Roberto Gottardi feature the Catalan vault made of local brick and terra cotta tiles. At the Casa Baldi, designed by Paolo Portoghesi in Rome, Italy, its façade is constructed of tufa blocks, a site-specific material laid entirely by the architect’s father, a trained mason. At his Experimental House in Muuratsalo, Finland, Alvar Aalto tested a number of brick and ceramic materials to further his understanding of their properties and to learn how best to use them on future projects.

Each of the five essays that follow has three parts: transformation in the life of the architect, my own personal journey, and the building analysis. ‘Transformation in Identity’ will explain the type of change that occurred in each situation and how this contributed to the design of the chosen building. ‘My Journey’ will describe my personal experience traveling to each place. Finally, ‘The Analysis’ will provide a detailed examination of the elements and structure of each building.

Church of Cristo Obrero

Eladio Dieste
Atlántida, Uruguay
1958

Transformation in Identity: Eladio Dieste, from Engineer to Architect

In the twentieth century, several men trained as engineers used their understanding of equilibrium mechanics to evoke expressive architectural form. Swiss engineer Robert Maillart (1872–1940) specialized in reinforced-concrete bridge design, producing elegant spans that often appear to leap across the chasms beneath them. In Italy, Pier Luigi Nervi (1891–1979) made innovations in reinforced concrete that yielded structures like the Small Sports Palace in Rome (1956–59), which has a web-like ribbed dome and Y-shaped piers. Working in Spain, Eduardo Torroja (1899–1961) explored the possibilities of thin-shell concrete construction, as did Spain-born Felix Candela (1910–1997) after he immigrated to Mexico. Unique among these innovators was the Uruguayan engineer Eladio Dieste (1917—2000). Although many innovations in shell construction and pre-stressed concrete were finding their way to South America, Dieste turned to the traditional material, brickwork, and developed new forms that

satisfied the needs of his country (Pedreschi, 2007).

Dieste grew up in Artigas, the northernmost department of Uruguay, and graduated in engineering from the University of Montevideo in 1943. At this time in Uruguay there was a great intellectual and cultural community, which was enriched by economic prosperity after World War II. Dieste was influenced by this success and sought to apply his strong engineering background to improve the identity of his country and counter the perception that brick was a 'poor man's' substitute for concrete (Pedreschi, 2000).

Dieste's brick buildings, ranging from grain silos, factory sheds, and markets to churches, are scattered all across the second-smallest nation in South America. They are an exploration of structural philosophy, architectural expression, and ingenious construction and engineering techniques. His sense of architectural expression first appeared at the Church of Cristo Obrero in Atlántida, Dieste's first architectural commission. He was determined to produce a building that was beautiful, as well as functional. His transformation from engineer to architect was a lifelong devotion that took an ancient and everyday material, brick, and raised it to unprecedented heights of technical efficiency and aesthetic beauty.

My Journey: 5,715 miles

With finals completed and studio portfolios turned in, the month of May had whisked by and it was time for the first of my four trips to begin. I had just finished my third year of architecture school and had spent a semester preparing for the most exciting summer of my life. I had read

the only two books written on Eladio Dieste through and through, and in my mind I was prepared to recognize any of the engineer's designs upon reaching the country. Recorded in one of the books was a catalogue of what I thought were all of his constructed buildings, but I discovered while touring Uruguay that this list was surprisingly incomplete.

My attempt at contacting the existing engineering firm that Dieste was associated with until his death was one task that seemed impossible. Neither translated emails nor telephone calls made to the company of 'Dieste and Montanez' would prove successful in gaining me access to the firm. It seemed the firm had discontinued Dieste's vaulted architectural structures and had taken on more traditional construction projects. I would not let this disappointing discovery lessen my anticipation for the adventures to come.

Anxious about and excited for the travels ahead, my mother and I would have our first international experience together in a South American country where cows outnumber people two to one and soccer is considered a religion. We would spend the next ten days trekking Uruguay, where Eladio Dieste dedicated his life to innumerable brick and ceramic buildings that place him in the company of some of the most influential designers of the twentieth century.

* * *

With the morning sun shining through the airline cabin windows and the smell of coffee in the air, our long flight over the continent of South America was soon to end. We arrived at the Carrasco International Airport safely and made our way through customs by following the locals. A young Uruguayan rental-car agent walked us outside to show us our transportation for the week and made sure we understood the manual

operation of our Renault Clio's reverse gear, a necessity to say the least.

On this foggy Sunday morning the whole city seemed to be sleeping in, allowing us to get accustomed to driving in a different country and time to take in the exotic atmosphere. With only a little sleep in the past two days, we decided to check into our Best Western Pedro Figari hotel. It was located outside of the city with views overlooking the Atlantic Ocean in Carrasco, a neighborhood with lots of shops, restaurants, and even a casino. After much needed rest, we awoke as the sun was setting around 5 o'clock. The first night we went in search of food, and we opted for Burger King, the only place that looked North American. It would take us a few days to get adjusted to this new world and to become more adventurous.

On our first full day in Montevideo, we set out to find The Church of Atlántida, the building that was at the top of my list to see. We located it about fifty miles northeast of our hotel in a middle-class resort town known for its beautiful beaches. The church faced a secondary road, with the highway very close by, an unusual spot for such an architectural wonder. The community had one small store and a Catholic church pre-school next door to Dieste's church. Kids were riding bicycles down the road, and people waved to us as if to say, "welcome." The doors of the church were locked but the exterior of the building was more beautiful than I had imagined. We would come back another day to see the interior.

The rest of the week we spent searching for Dieste buildings across the country (Fig. 1). His signature vaults arose out of nowhere all throughout the landscape and seemed to adapt to any building function. Gymnasiums, restaurants, soda bottling plants, port warehouses, theaters,

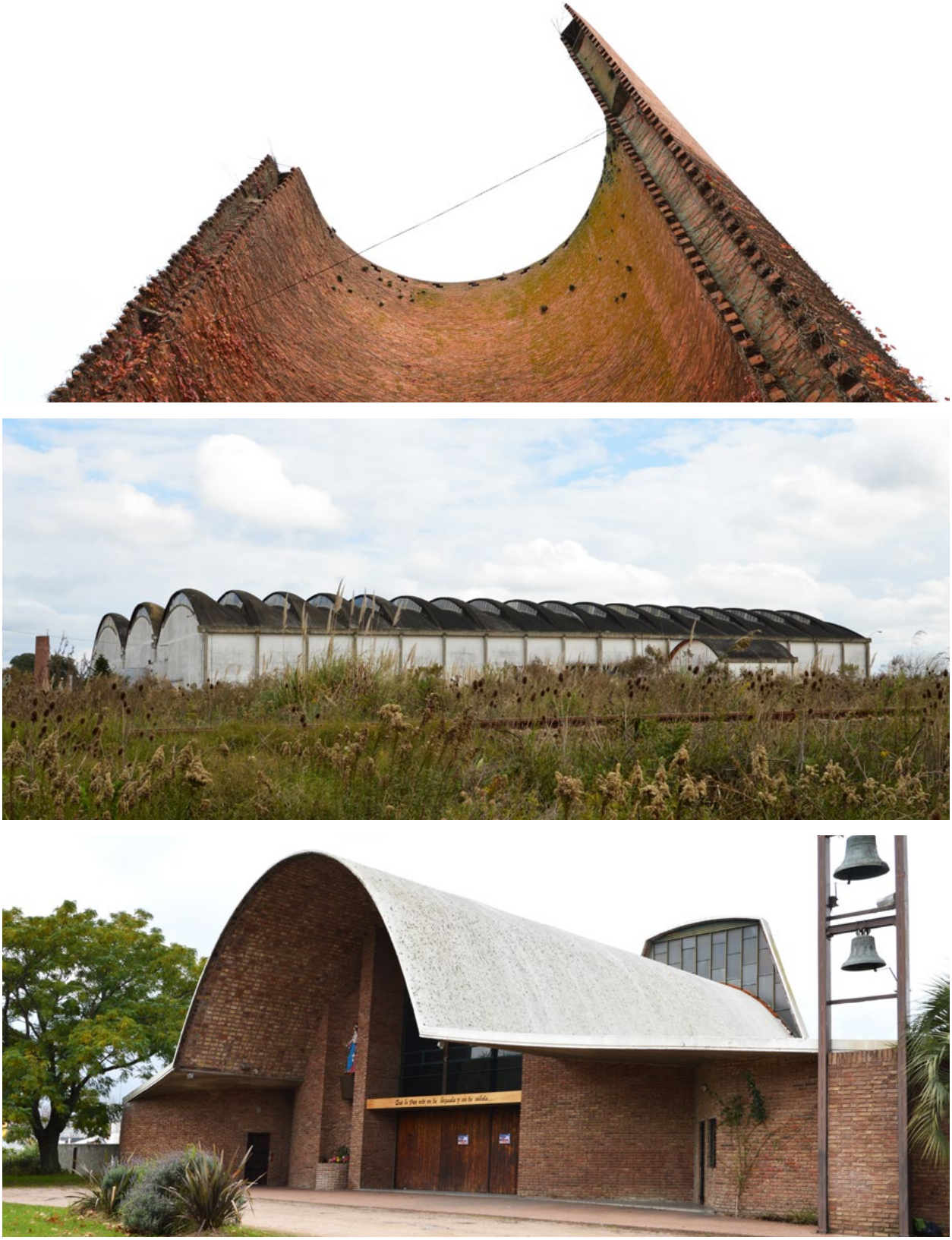

Fig. 1. Eladio Dieste, (top) unfinished church apse, (middle) Gausian vaults at wool factory in the countryside, (bottom) freestanding vault at Montevideo church, date unknown

and churches were just a few of the building types that Dieste stamped his mark on. With each building we happened upon, we were fortunate enough to come in contact with friendly locals who did not seem to mind our "Southern" accents and allowed us to investigate for at least a short period of time.

During our daily "I-Spy Dieste" excursions, we would normally skip lunch and treat ourselves to a large supper in the evening. Grilled beef dishes such as *asado*, a typical Uruguayan barbecue, and *chivito*, a traditional sliced steak sandwich, were meals chosen throughout the week. We even splurged one evening and ate supper at Garcia's, a local Carrasco restaurant that specialized in beef dishes, where we shared a baby beef steak with roasted sweet potatoes. Trying new food was a way for us to immerse ourselves in the local culture, and these experiences were some of the highlights of our trip.

On a cold Sunday morning, one of the last days of our trip, we traveled back to Atlántida one last time, in hopes of seeing the interior of the Church of Christo Obrero. We had our breakfast and made our way north up the now familiar highway. Just as we pulled up to the church the members were exiting the building. I knew our timing was perfect. As we approached, a tiny nun with a smile on her face appeared. She spoke very little English, but tried to communicate with us. She realized our intentions and made every effort to show us the interior and all of its detail. The morning sun was streaming through the stained glass windows into the sanctuary, and although the temperature of the room was cool, the experience was wonderful, as Dieste captured the essence of serenity in this place. At last, the building we had been waiting to see, was to be seen. Our trip was now a complete success!

On our last day in Montevideo we spent time in the city eating our last authentic beef-steak meal of the trip at the Mercado de Puerto, the old port city where local artisans sell crafts and souvenirs. Later we shopped for a few “happies” for family members and friends. We made it a point to purchase some *mate*, the Uruguayan herbal tea, which most locals drink all day. They would sip *mate* through a metal straw from a small cup and would carry extra hot water in a thermos bottle to add to the drink throughout the day.

After our few purchases of t-shirts and flags and a quick trip to the Dieste-designed mall, we made our way back to the hotel. We had packing to do and a final walk on the beach to take. Yes, it was winter in Montevideo, but the beach was not to be left off the tour. We then made our way back to the airport in our rental car, which by now had a few

Fig. 2. Eladio Dieste, front elevation, Fagar Bottling Plant, Sección 12, Uruguay, 1990

minor fender scratches. As we reflected on our days in Uruguay, we could not believe all the sights we had seen and knew that the memories would last a lifetime. Dieste had a lasting impression on me and even made the non-architect, my mother, learn to love his work. I felt that it would be difficult for the next three trips to top this one.

The Analysis: Dieste's Church of Cristo Obrero

Dieste's most celebrated creations are thin-shell vaults made of brick and ceramic tile. He created two types: freestanding (**Fig. 1,** bottom) and "Gaussian," (**Fig. 1, middle and Fig. 2**) the latter a term he coined in homage to Carl Friedrich Gauss, a mathematician who studied

Fig. 3. Eladio Dieste, front and right side wall, Church of Cristo Obrero, Atlantida, Uruguay, 1958

curved surfaces pertinent to vaults (Pedreschi, 2007).

Dieste's freestanding vaults are double cantilevers spanning in opposite directions from reinforced-concrete column-buttresses. The vaults are made of bricks with reinforcing steel between them. Atop the bricks, a thin layer of cement encases pre-stressed, longitudinal, looped steel tendons, which cause the construction to behave as a beam. Concrete edge beams accumulate lateral thrust and direct it to the column-buttresses. The vaults are the re-invention of a structural form with the benefit of contemporary analysis and interpretation rather than an evolutionary development of a traditional form of masonry construction. The language and expression are of lightness and slenderness rather than mass and solidity (Anderson, 2004).

Dieste used Gaussian vaults at the Church of Cristo Obrero (1958-60) in Atlántida, a working-class village near Montevideo. The church was commissioned in 1952 by Alberto Giudice, a wealthy religious leader. Giudice asked for a simple, low-cost building that would adequately serve the church congregation, but Dieste insisted that the church aspire to a greater outcome. Because Giudice would not hire an architect for the design of the building, Dieste, the engineer, took on the architect's role and guaranteed that the building would stay under budget. He became obsessed with the project, working on site all day while earning a living as an engineer at night. He was determined to balance the dispute between the economy of means and architectural expression through his first architectural work (Pedreschi, 2000).

Fixed between a "South American Baroque" style Catholic church and a local butcher shop, the church is an anomaly in the neighborhood. Its tall undulating brick walls and adjacent bell tower are elevated just

Fig. 4. Eladio Dieste, front facade and bell tower, Church of Cristo Obrero, Atlantida, Uruguay, 1958

Fig. 5. Eladio Dieste, left side wall light box for the Virgin Mary figure, Church of Cristo Obrero, Atlantida, Uruguay, 1958

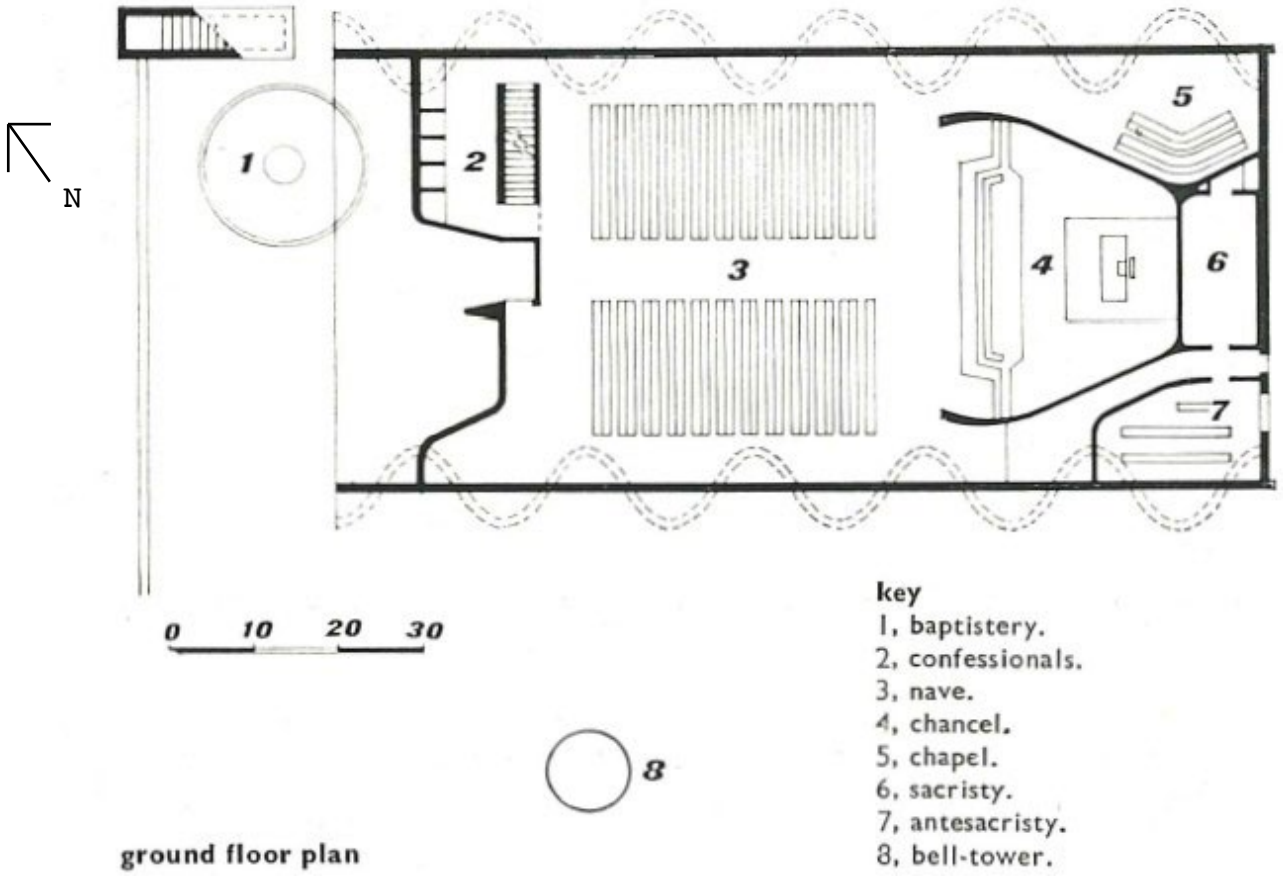

Fig. 6. Eladio Dieste, plan, Church of Cristo Obrero, Atlantida, Uruguay, 1958

high enough to be spotted when approaching the connected street.

The front face of the church (**Fig. 3 and 4**) appears like open arms welcoming people from all around. The brick façade is separated into two levels, visually dividing the first and second floor of the building. The entry to the church, two beautifully crafted wooden double doors with varying width vertical boards and rectangular stained glass panes, is centered and recessed within two curved brick walls. The wall to the left of the entry is convex, pulling visitors into the sanctuary, and the wall to the right of the entry is concave, a modern take on a classical

“niche”, where a wooden cross is permanently situated. The upper half of the façade is the most orthogonal element on the exterior of the building. Three horizontal bands consisting of repeating angled brick panels are framed by a thin brick border. Where each repeating panel overlaps the next, a translucent onyx spacer is placed between them, allowing morning and afternoon sun to enter into the interior church balcony.

The east and west sides of the building are identical. Each wall is set out by two sets of lines, a straight base line at ground level and a curving line at the underside of the roof. The two-brick thick, serpentine wall surpasses the front façade by half of a wavelength, terminating at the crest of the wave.

During construction, bricklayers followed the pattern of string

Fig. 7. Eladio Dieste, back wall, Church of Cristo Obrero, Atlantida, Uruguay, 1958

lines stretched between the base of the wall and a timber scaffold at the eaves. The bricks used in the wall construction are longer and thinner than a standard brick, making it easy for the eye to continuously follow the curved surface (Pedreschi, 2000). The bricks look as if they were randomly laid atop one another and separated by a thin mortar joint, allowing the wall to flow smoothly without a harsh break between each masonry unit. Laying brick in this manner requires considerable skill to continuously adjust the mortar bed and to align the brick correctly.

These curving side walls resist lateral thrust, as do hidden steel tie rods in the troughs of the vaults. The curved form of the walls may appear more suited to the fluidity of concrete construction, however the form is actually achieved more easily using brick, as Dieste fully exploited the flexibility of modular construction and avoided the complex formwork needed for a concrete wall (Pedreschi, 2000).

The back wall of the church (**Fig. 7**) faces a small soccer field and preschool play area. Unlike at the front façade, the side walls almost exactly meet up with the back wall face and include no roof overhang. A brick-cross is centered on the façade, a replacement for traditional ornament. The wall includes a service entry and a wall depression, where clerestory windows allow indirect light to reflect onto the interior rear wall of the sanctuary.

The roof is a double curvature Gaussian vault connected to an edge beam at the top of the wall. In the edge beam design, Dieste creates a detail that is complex but is rational in the way that it resolves a series of technical and architectural problems. The edge beam is a hidden detail, not visible from inside the building and appearing as a continuation of the roof externally. The roof itself

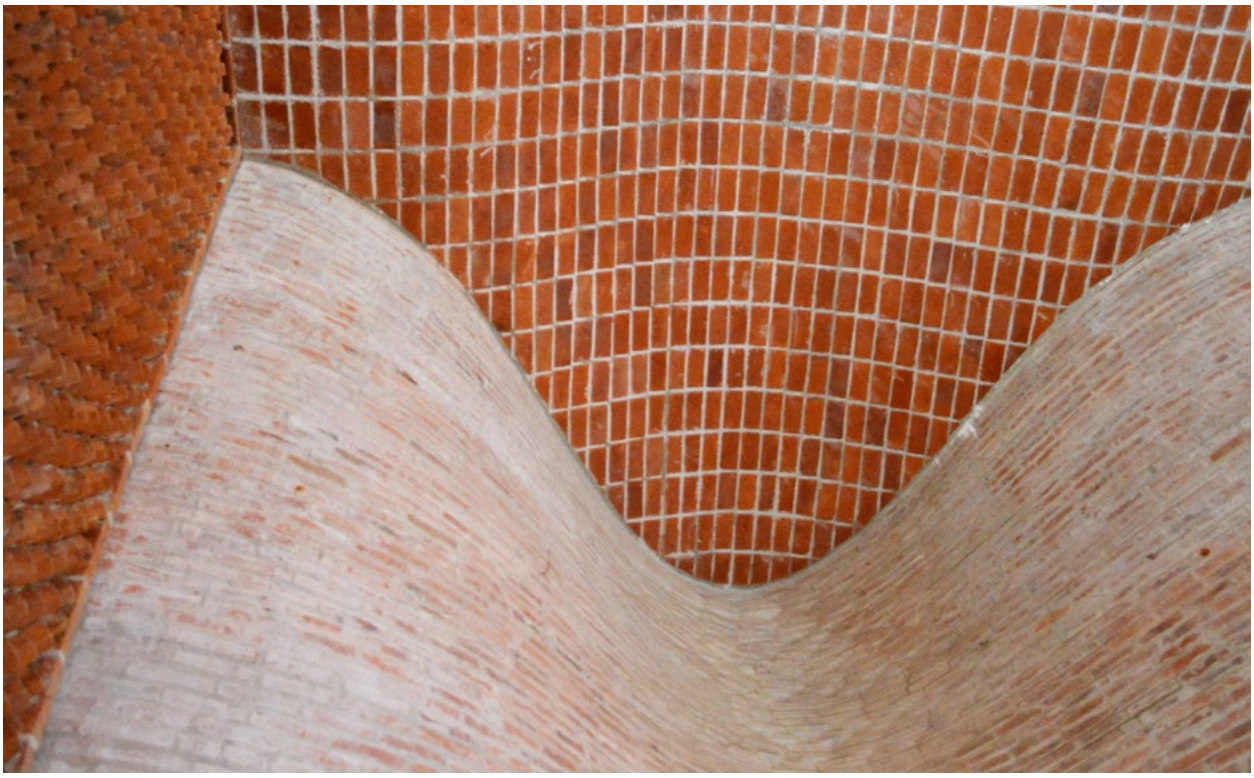

Fig. 8. Eladio Dieste, joint between the undulating side wall and the Gaussian-vault roof, Church of Cristo Obrero, Atlantida, Uruguay, 1958

is a fascinating exploration of geometry and a product of Dieste, the engineer and constructor (Pedreschi, 2000). The consistency and accuracy in the positioning of the bricks on the roof generates a series of intersecting lines that illustrate both the form and conception of the roof. Seen inside on the sanctuary ceiling, the joints are a graphical expression of the roof geometry, deliberately executed; they appear like the transformation of a three-dimensional wire-frame model into a solid surface.

The precision of the construction is also evident in the roof-to-wall junction. There are no transitional elements to cover where wall and roof meet. The walls were constructed first, up to the underside of the roof. The roof was then assembled on a prefabricated formwork supported off the side walls. Here Dieste pushed the construction technique to the

Fig. 9. Eladio Dieste, view down the nave to the chancel showing canted brick, Church of Cristo Obrero, Atlantida, Uruguay, 1958

limit, but with confidence in both his own mathematical calculations and the skills of his workforce. The undulating wall had to be accurate in finish level to no more than one bed joint. This is the reflection of an artist trying to achieve that which is both possible and worthwhile (Pedreschi, 2007).

The interior of the church consists of a large open sanctuary, with one-story brick partition walls, and a second-story balcony located at the northern end of the plan above the entry. When inside, the congregation is immersed in brick. Similar to the entry-door conditions, small stained-glass rectangles puncture the caps of the curves, allowing small amounts of light into the sanctuary. A U-shaped, brick partition wall wraps the chancel and altar and hides storage and classrooms behind it. The rear wall of the church is laid up in staggered bricks, their long

edge canted outwards, producing a deeply textured surface and backdrop to the sanctuary (**Fig. 9**). To the right of the altar is the *cappilla de la virgen*, a small worship space dedicated to the Virgin Mary. Here a hollow trapezoidal box (**Fig. 5**) is embedded in the undulating wall and capped with a face of white onyx, allowing natural light to radiate behind a Virgin Mary figure.

At the other end of the plan the second-floor balcony, where the church choir sits, is lifted above the entry and overlooks the sanctuary. A small brick stair with a brick-screen handrail rises to the balcony and hides storage off of the entry.

Another important aspect of the church is the baptistery, located in a circular underground chamber. This unique placement was a decision by Dieste to bring meaning and tradition back into the baptism ritual. The entrance to the baptistery is a triangular prism of brick rising up from the ground in front of the church and concealing a stairway. The ritual begins with the priest directing the family down into the baptistery, followed by the baptismal ceremony, and then a final welcoming into the church sanctuary, the whole experience symbolizing rebirth into the church (Pedreschi, 2000).

The Church of Cristo Obrero is an example of a new, rational, and economic form of construction that suited Uruguay, as it has an appropriate architectural language for its context and was constructed using inexpensive, indigenous materials. In one sense, its construction and design is a metaphor for Eladio Dieste's attitude towards what the church should be, a church for the people that takes pleasure in the familiarity of a local material, an everyday material, a modest material assembled using local labor to create an inspiring form, almost

not of this world. Throughout Uruguay, and elsewhere, Dieste's unique construction techniques have not been continued, perhaps because of the loss of skilled masons over time or perhaps because of the neglect of continuity from his family engineering firm. This was an unfortunate discovery for me, and I believe that the loss is unfortunate for Uruguay.

International Schools of Art

Ricardo Porro, Roberto Gottardi and Vittorio Garatti
Havana, Cuba
1962

Transformation in Identity : Ricardo Porro, Vittorio Garatti, Roberto Gottardi and their Response to the Revolution

From 1953 to 1959, the Cuban Revolution was in full swing conducted by Fidel Castro against the United States-backed, authoritarian government of Cuban President Fulgencio Batista. The legendary Che Guevara served as a primary military adviser to Castro and led the growing number of guerrilla troops in attacks against the crumbling Batista regime. On January 8, 1959, Castro's revolutionary group, "26th of July Movement," triumphed and the rebel fighters set out on a victory march to the island capital of Havana, where the young, victorious Fidel Castro would soon rule.

Unlike the dictator Battista, Castro valued rural teaching programs, and education became an important issue throughout the country. The new communist leader realized the economic impact and the importance of literacy for the country. Soon new schools were being constructed

Fig. 1. Fidel Castro and Che Guevara playing golf, Havana, Cuba, 1960

all across Cuba, including nurseries and kindergartens, primary and secondary schools, vocational schools, and university complexes. Over 17,500 schools were built in two years following the revolution. The guiding force behind the erection of the schools was the Ministry of Construction, which outlined a standard program (Loomis, 2011).

As many sources would later report, following the revolutionary victory Fidel Castro and his confidante Che Guevara decided to "take a day off" to enjoy a few rounds of golf on the private Country Club Park course in the Cubanacan district, the neighborhood considered to be Havana's equivalent to Beverly Hills (**Fig. 1**). During the revolution, most of the wealthy home owners of this area fled Cuba and their grand homes were taken over and used by government officials during the inner-city turmoil. On this well-documented golfing day, the guerrilla leaders, seemingly out

of place for their militant roles, walked the well-manicured course and envisioned the possibility of building a unique international arts school on the golf-course site. The school would serve Cubans as a center for the education of artists and instructors from which to spread cultural literacy throughout the island. It would also serve as an international center that would grant full scholarships to thousands of students from other countries in Africa, Asia, and Latin America. The visionary spirit in which the International School of Arts (ISA) was conceived would soon be symbolized by its design (Loomis, 2011). Cuba's vice-president, Carlos Rafael Rodriguez, recalled:

> Because of the unique features of the site, it was agreed by all, that the school would not be like any ordinary school, for it is precisely because this site and its unique features invite a design appropriate to this environment which should become the fountain of our future artists, the creators or interpreters of tomorrow's socialism (Loomis,2011, p. 21).

Ricardo Porro, a Cuban native who had evacuated to Venezuela during the revolution and become an urban planner, received the commission from Fidel Castro to plan the schools in August, 1961. He was given two months to complete the design of the "most beautiful art schools in the world" (Loomis, 2011, p. 28). Knowing that he could not make this happen on his own, Porro called upon his Italian colleagues, Roberto Gottardi and Vittorio Garatti. The three had first met in Venezuela during the 1950s, while Porro was teaching design and theory in the architecture school of the Universidad Central de Caracas. They all shared interests in history, politics, and the refinement of contemporary architecture (Loomis, 2011).

The three architects originally conceived the project as a single

center with shared services for five schools: Modern Dance, Plastic Arts, Dramatic Arts, Music, and Ballet. However, the directors of the school requested that each discipline have its own building, which demanded a new master plan. Each of the architects chose a separate building based on their differing interests in each art discipline. Porro picked two, the Modern Dance building because of its African folklore program and the Plastic Arts building because he was also a sculptor. Gottardi had an interest in theatre at the time, so he chose the Dramatic Arts School. Garatti had considered being a dancer and studied piano early in his life, so this led him to choose the Music and Ballet schools. During a walk on the course one day, each architect selected the site they liked the most and began to work immediately (Loomis, 2011).

All three agreed that the design of the schools would be governed by three guiding principles:

1. The schools would respect and respond to the verdant landscape of the former country club.
2. Brick and terra cotta tiles would be the primary materials.
3. Third and most significantly, the Catalan vault would be the primary structural system.

The decision to use traditional and relatively inexpensive construction materials such as brick and terra cotta tiles came about after the discovery in Havana of a skilled mason from Barcelona. This method made sense for the National Art Schools because building materials were scarce and workers could be trained quickly. This mason's father had worked with Antonio Gaudi, the architect famous for using the Catalan vault, which was invented in ancient Mediterranean countries but was perfected in Catalonia (Loomis, 2011).

The Catalan vault is typically very thin, deriving its strength from both its form and construction. Thin terra cotta tiles are laid both orthogonally and diagonally and fused together with a thick bed of mortar, sometimes greater than the thickness of the tile. The vault applies very little lateral thrust, which enables the structure to form gently curving shapes and become almost indestructible. This construction is very labor intensive and cannot be done without the knowledge of a skilled mason (Loomis, 2011).

In June of 1961, with ground not yet broken and designs still in development, Fidel Castro proclaimed that the National Arts Schools would be "the most beautiful academy of arts in the whole world," and he praised the architects as "artists" (Loomis, 2011, p. 28).

My Journey: 814 miles

I was startled by the sudden applause from and true excitement among many of the plane passengers when I realized we had safely landed in Havana. I peeped outside my cabin window and observed the small airport. Suddenly, unlike on the typical arrivals of my previous flights, passengers were out of their seats and ready to exit before the plane came to a complete stop. While everyone else around was in a hurry to get off of the plane and see their families, I was trying to slow down and take in as much as I could. Outside on the tarmac were men pushing dollies filled with luggage and large, blue plastic-wrapped bundles, ten times the size of the men themselves. What was I looking at? Was my little black rolling bag lost in all of that?

We eventually exited the plane and followed the crowd toward the

terminal and into an interior space where we would wait in line to show our Cuban visas and then move through the security check in. We would not truly arrive in Cuba until we made it to the baggage claim area. This large open room was where passengers surrounded two slow-moving conveyer belts and waited on their large plastic bundles and occasionally someone's checked luggage. I squeezed closer and closer to the belt until I was close enough to grab my bag when or if it rolled by. Standing there I could see through the clear plastic wrap on some of the large bundles as they lumbered by, and I was surprised by what I saw. Bike tires, concrete mix, new blue jeans, toilet seats, and children's diapers were among the various items visible. I realized that these items were essentials that were not commonly available to the Cuban people. The fifty-year trade embargo with the United States had made some of these ordinary items as valuable as gold.

My mother and I were among a group of eight tourists who were patiently waiting on luggage; and after one and a half hours all of our bags finally appeared on the belt. We were then guided to to the last of the security check points; here we could see the light of the outside world shining in every time someone was allowed to open the exit door. The sound of people cheering and screaming as the doors opened made me anxious and nervous to walk outside. At last, we were granted permission to leave, and when the doors slid open it was like a welcoming celebration. People smiled and cheered as we walked through the crowd. Everyone seemed overjoyed that their families had made it safely back to Havana and had brought with them those long-awaited plastic-wrapped packages.

Outside the terminal, the Insight Cuba tour group of eight women

gathered around our guide, Alfredo, who had flown with us from Miami. He, now along with a native bus driver and our Cuban guide, Marti, would escort us to all sites listed on our itinerary. We would travel in a comfortable, air-conditioned tour bus, visiting areas of Havana that had historical significance, like the Hotel National, and some not so notable but interesting, like the artistic garbage dump community of Muraleando. Every day we would experience the wonders of this tropical paradise, but we would also witness the ever-present material decay of many of the inhabited buildings and interact with locals who seemed to have little desire for anything better.

For the past fifty years the people of Cuba may have had adequate schools and universal health care, but Castro had stripped them of many civil rights and most families had suffered from lost property, lost businesses, and a loss of pride of ownership, or even choices. Cubans have grown accustomed to government handouts, and the majority of the people living there have no incentive to do anything more, good or bad. Our guides encouraged our questions, but most often there was no good answer. Castro's Cuba did not allow individuals to prosper or even to own property.

The recent death of Castro could mean a rebirth for the Cuban people and a revival of the beautiful buildings and culture they have tried to preserve for many years. The freedoms and choices we Americans have come to expect were rarely even a consideration there. Yes, we were now under their watch; we would see only what they wanted us to see, but even though my mission for this trip was to visit the National Arts Schools, my mom and I were in for so much more.

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Fig. 2. Vinales Valley landscape, Cuba, 2016

If one can interpret the picture in (**Fig. 2**), then one can understand how the National Art Schools were born. A two-day excursion away from the city of Havana landed my mom and me in the Vinales Valley, an outstandingly verdant landscape known for its traditional tobacco farms, vernacular architecture, and authentic crafts and music. Brightly colored houses are situated one right after the other, with each house's porch connecting to the next, creating an arcade of columns. Outside the houses children play in the dirt-brushed road where vintage cars line the street in front of each house and old men lay back in straight back chairs pulling on a "Melia Cohiba" cigar and laugh with their neighbors. The curvaceous terrain of the Vinales Valley hills stands tall in the background, covered with trees and tropical plants that spread for miles with no end in sight. The decorum of this place is unlike anything I have ever experienced; the Latin temperament and culture of people live with a

different set of rules than any place that I have ever been. The powerful and provocative landscape and exotic, extreme forms displayed at ISA now made more sense to me now that I have seen the Vinales Valley.

Visiting the International School of Arts (ISA), as our local Cuban guide would say, "*es complicado*", meaning that it was complicated to make changes in the tour schedule or to add anything more than the sites pre-arranged by Insight Cuba. The art school was closed for the summer and there were no tours or readily available people offering campus tours during this time of the year. Many telephone calls and emails led to the possibility of arranging a private tour with Jesus Noguera, another 'people-to-people' tour guide who frequently planned trips to the National Arts Schools during its open season. Jesus has lived in Cuba his whole life and has never been allowed to travel to the United States because of the strict visa requirements for access into the country. Jesus was the only person I could find who might escort me to the schools, but he was only available for a small block of time, if at all. I was getting nervous that our trip would not include the schools.

After spending a couple of days touring in Havana, I finally secured permission for our ISA trip. The arrangement was for Jesus to pick my mom and me up from our hotel lobby and to drive us to the schools. On Tuesday morning we loaded up with him in his new little red car. According to him, tour guides can make more money than some professionals in Cuba. He was always in demand. During the ride, we exchanged family stories and he shared his passion for Cuban baseball; within minutes of departing our hotel we had arrived at the secured gates of ISA, ready to take in as much of this site as we could.

Analysis: International School of Arts -
Garratti's School of Ballet and Porro's School of Plastic Arts

The schools are located outside of the Havana city center in an affluent suburb set apart from the rest of the city. Guards were posted at every entrance of the campus, ready to make multiple phone calls to assure the visit was legitimate. Through the brick-wall entrance gates we went and a new world unfolded before me. The chaos of what we had witnessed the days before was left at the front gate; clean air, open space, and the feeling of something new came over me.

We parked at what once had been the club house of the old golf course, where two women were mopping the marble-floored entry. Here we met our guide, who only had around an hour or so to show us the campus.

Fig. 3. Vittorio Garatti, entrance with domed pods beyond, School of Ballet, Havana, Cuba, 1961

We made the decision to see one school that was completely finished and one that was never completed.

Our first destination, the School of Ballet, was designed by Vittorio Garatti in 1961. Garatti is an Italian architect born in 1927, who graduated from the Politecnico di Milano in 1957 (Bone, 2014). In this same year Garratti departed for Venezuela, where he found employment on the Banco Obrero project and met his soon-to-be Cuban project mate, Roberto Gottardi.

The school, located at the southwest corner of the site, was almost buried in the ground (**Fig. 3**), with only the roof structures visible from a distance. We approached it from the highest point of the complex, where only the peaks of skeleton–like domes appeared in the foreground. A terraced walkway that once carried water down to the site

Fig. 4. Vittorio Garatti, entrance, School of Ballet, Havana, Cuba, 1961

Fig. 5. Vittorio Garatti, main ballet performance rotunda, School of Ballet, Havana, Cuba, 1961

was in shambles, with only a few tile pieces still bonded to the concrete steps. Trees surrounded the place like a buried fort in the jungle; vines and plant overgrowth had taken over the school and there was no sign of recent human activity among the brick ruins.

We approached the entrance to the compound (**Fig. 4**), which resembled the shell of an armadillo, with light showing through each overlapping layer. Nothing but darkness could be seen past the entry, and only one end of the school was accessible due to constant flooding. Inches of water stood in the main ballet-performance rotunda (**Fig. 5**), but the space could still be reached because of its stadium-like seating. Its back walls were covered in a green and black film, with various forms of graffiti left after years of neglect.

Custom bricks enriched the intersection of walls at each corner,

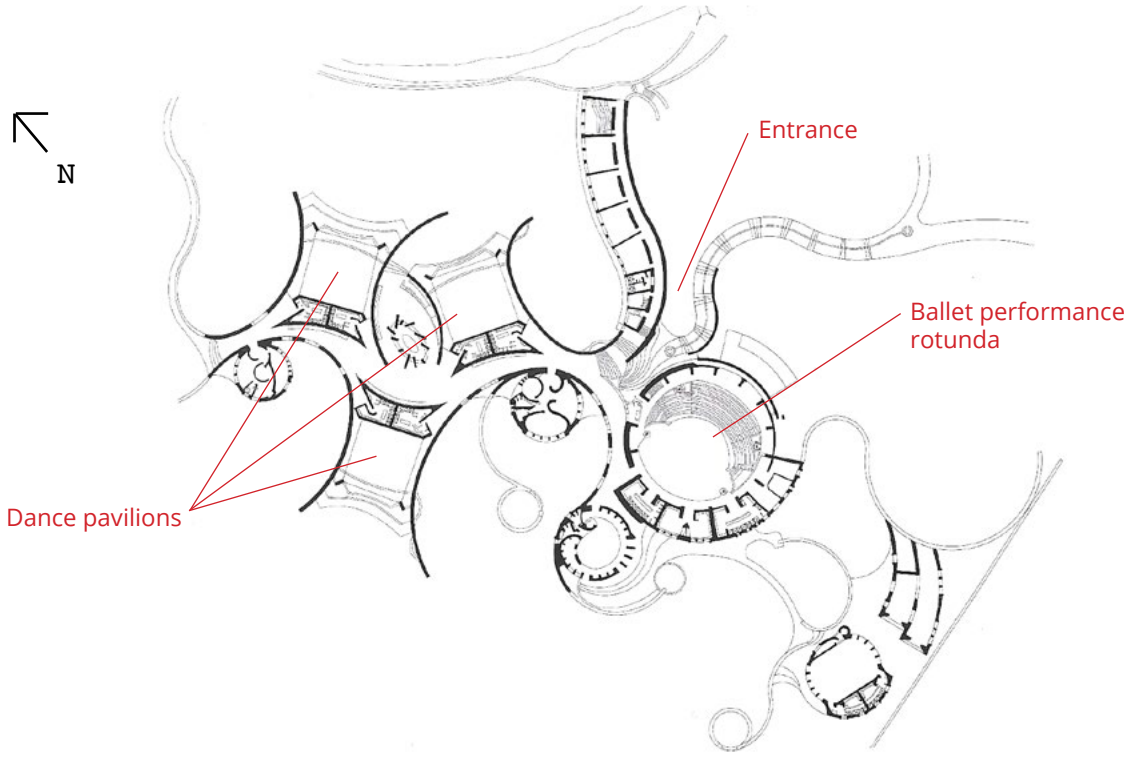

Fig. 6. Vittorio Garatti, plan, School of Ballet, Havana, Cuba, 1961

where two bricks overlap at an angle, and the smallest face of the brick is shown. Spacious tunnels are hidden off of the perimeter of the rotunda; I imagined that this might have been where performers stood before their performance, out of sight from the audience. Looking at pictures before visiting the place, I never imagined the large volume of the space and how it would now make me feel so small.

Along with a grand performance space, the other wing of the ballet school included a library, three smaller dance pavilions, a studio and performance preparation spaces, and an administration wing. All of these secondary spaces seemed to snake off from the larger circular space and be independent of other functions. The three hourglass-shaped dance pavilions converged to create a common covered court, where dancers could meet and wait for a class to start or practice when another class was in session. No line in the entire complex was orthogonal, except for the walls of the office spaces, almost imitating the pattern of a ballet dancers steps, always turning and somewhat playful.

The exterior of the ballet school was separated into pods, each space having its own white-capped, domed roof ribbed with terra cotta tiles (**Fig. 3**). Half-circle openings on each of the four sides were completely open to the air, where wooden half starburst screens once enclosed the space. Concrete bands separated each level and a perimeter waist-high brick wall surrounded the entire school. A canal separated the complex from the close-by music school to the northeast but could only be seen at certain spots.

After investigating the extent of the ruinous School of Ballet, we traveled past the School of Music and back through the front entrance of the campus, where the most well-known and completely finished school is

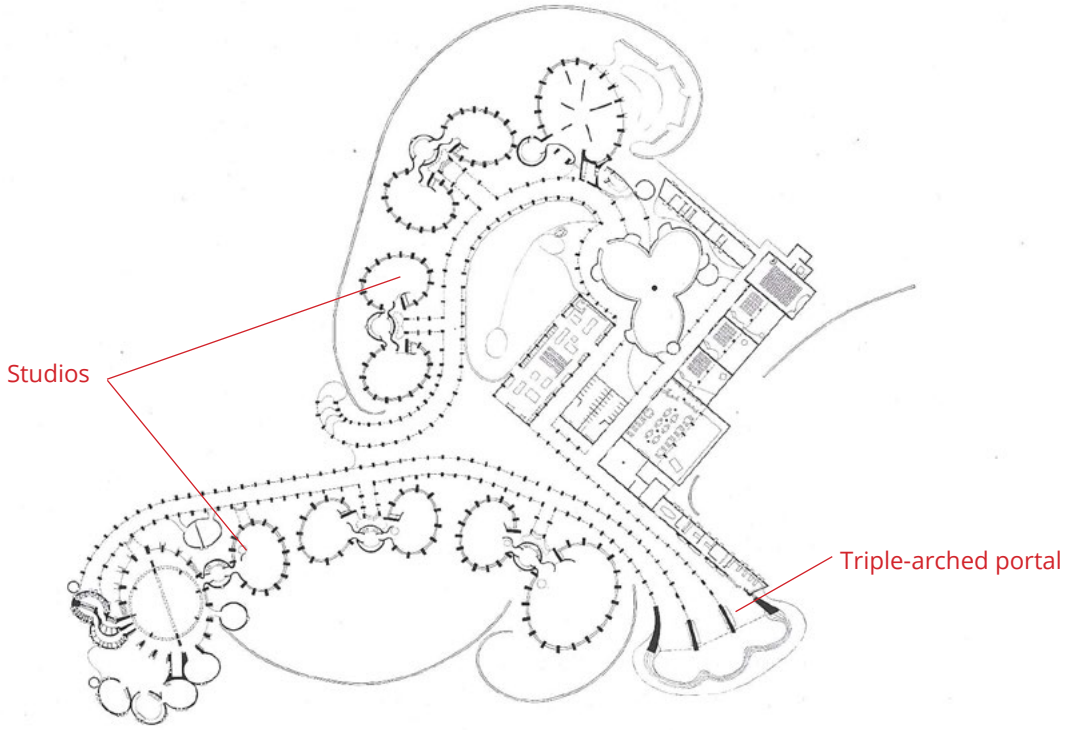

Fig. 7. Ricardo Porro, plan, School of Plastic Arts, Havana, Cuba, 1961

located: the School of Plastic Arts designed by Ricardo Porro.

Porro, a Cuban-born architect, graduated from the Universidad de la Habana in 1949. Throughout the 1950s, he designed a series of residences in Havana that were among the most important works of the modern-architecture movement in Cuba. By the end of the 1950s, he was forced to leave Cuba because of his support of the Cuban Revolution. This exile caused Porro to move to Venezuala, where he became a professor of urban planning and eventually met his fellow ISA architects Roberto Gottardi and Vittorio Garatti (Loomis, 2011).

The School of Plastic Arts was intended to suggest an archetypal African village filled with winding streets, curvilinear spaces, and open courts having elements and ideas suggestive of the female reproductive system (Bone, 2014). The entry to the complex (**Fig. 8**) was like a triple-

Fig. 8. Ricardo Porro, triple-arched portal, School of Plastic Arts, Havana, Cuba, 1961

Fig. 9. Ricardo Porro, hall with angled brick columns, School of Plastic Arts, Havana, Cuba, 1961

Fig. 10. Ricardo Porro, papaya shaped fountain with brick-domed studio beyond, School of Plastic Arts, Havana, Cuba, 1961

arched portal welcoming any person from the outside. Upon entering, the visitor would have to choose between three halls, one leading to studio spaces, one leading to a central court, and the last leading to classroom spaces. Each hall is separated by an arcade of large, angled brick columns (**Fig. 9**), which allow for views between different covered and uncovered spaces.

The innermost hall, which is not covered, is lined with a series of custom concrete scuppers leading into a courtyard space (**Fig. 12**), where a papaya-shaped fountain collects all of the water runoff (**Fig. 10**). The oval-shaped studio rooms are laid out as two opposing arcs in plan, suggesting the African village theme. Each studio, capped with a brick dome and centeral oval skylight and so resembling a female breast, was planned so that light would shine on a live model seated at the center

Fig. 11. Ricardo Porro, view out from the triple-arched portal, School of Plastic Arts, Havana, Cuba, 1961

Fig. 12. Ricardo Porro, view of courtyard space and studio domes, School of Plastic Arts, Havana, Cuba, 1961

of the room. From the exterior, the skylights look like glass prisms, a contrasting effect to the all-brick exterior. Wrapping the exterior of the oval rooms, tall, narrow windows with blue painted mullions allow views of the landscape outside at any spot inside the space. All of the curvilinear spaces and halls in the complex are open to one another, a *paseo archetectonico*, but cause some disorientation where the user cannot see the extent of his or her journey. Contrasting with the rest of the campus are the offices and lecture rooms that are block-like in plan and are not readily visible to the rest of the school from the arcaded halls.

For better or for worse, the International Schools of Art became a statement of complete transformation, following the Cuban Revolution. While initially celebrated, their designs became controversial as Castro's communist government consolidated its power. While efforts have been made to restore them, they remain as evidence of a dream not fulfilled.

Casa Baldi

Paolo Portoghesi
Rome, Italy
1959

Transformation in Identity: Paolo Portoghesi and a Return to Traditionalism

Paolo Portoghesi said:

> The city is the chief point of reference of architecture. It is the buildings, the spaces in between, but it is also much more. It is the city and the men who live and lived in it, men who have left indelible signs and traces of their presence. This is how the city wins its battles against the ravages of time and becomes an eternal present (Gottardo, 2011, p.16).

Paolo Portoghesi sees Rome as a city of layers, beginning with Ancient Rome founded in 753 BC. These layers include those of the Roman Empire, which began at the end of the 1st century BC and became known for the construction of large public buildings and innovative building techniques, and the 17th-century Baroque, known for its dynamic spaces and structural complexity. Portoghesi was fascinated by both periods (Fazio, 2014).

The founding of Rome is something of a mystery; some explain the earliest history of the city as a myth or legend. Most often told is a story of twin brothers, Romulus and Remus, who were suckled by a she-wolf. They decided to build a city together, but, after an argument, Romulus killed his brother and named the city Rome, after himself (Kostoff, 1999).

Ancient Rome grew from a small town situated on central Italy's Tiber River into an empire, at its peak encompassing most of continental Europe, Britain, much of western Asia, northern Africa and the Mediterranean islands. Rome from the beginning was destined for great things. The site, "a healthy spot amongst infested land," was far enough away from the sea to escape invasion but close enough to reap the benefits of trade (Kostoff, 1999, p. 191). The Roman architect Vitruvius said that, Italy was ideally situated halfway down the Italian peninsula, so positioned "that she might acquire the right to rule the world" (Kostoff, 1999, p. 191).

During the Roman republic, the government was run by a senate of notable families and elected magistrates. As Roman armies conquered more and more of Italy and beyond, the senate struggled to maintain a governmental system. A crisis arose, which led to the assumption of dictatorial power by the military leader Julius Caesar and the creation of the Roman Empire. The political system was changing and Rome was growing quickly. These political changes demanded new construction practices capable of producing very large buildings relatively quickly and economically. With the breakthrough of concrete and cement, Roman construction exploited new structural elements that acted in compression: the arch, the vault, and the dome. These elements became the basis for structural systems on a scale unimaginable with post and lintel

Fig. 1. (top) Roman Colisseum showing radial vaults, (middle) Roman Pantheon, intradose of the dome and oculus, (bottom) Basilica of Constantine, barrel vault and end wall

construction and enabled the Romans to build very large interior spaces (Fazio, 2014).

Imperial construction included the Colosseum (**Fig.1,**top), with its intersecting stacks of radial and concentric barrel vaults, the Pantheon (**Fig.1,** middle), with its system of relieving arches and its coffered dome, which is the standard by which domed spaces are still measured, and the Basilica of Constantine. The latter originally had three great groin vaults over its central space, with three barrel-vaulted bays (**Fig. 1**, bottom) to each side (Kostoff, 1999). Its three remaining barrel vaults allow us to appreciate the great distances that the Romans could span without the technologies available today.

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The 16th century Baroque period in Italy was a time of great change in the Roman Catholic Church. Baroque architects took the classical vocabulary of the Renaissance and used it in a new rhetorical and theatrical fashion. This architectural period was characterized by new explorations of form, light and shadow, and dramatic intensity (Fazio, 2014).

The Baroque was directly linked to the Counter-Reformation, a transformative movement within the Catholic Church in response to the Protestant Reformation. Rome owes its Baroque monuments to 16th-century popes who became the patrons of the greatest advocates of this style, such as the artist Gianlorenzo Bernini and the architect Francesco Borromini (Fazio, 2014). Most important for this essay, Borromini, a student of the work of Michelangelo, built San Carlo alle Quattro Fontane, or San Carlino, and the church of Sant' Ivo della Sapienza (**Fig. 2**). San Carlino

Fig. 2. Franceso Borromini, view of courtyard space and spiral lantern, Sant'Ivo della Sapienza, Rome, Italy, 1660

showcases the intensity of Borromini's organizational skills. Its plan consists of an undulating oval, conceived by interlocking a series of geometric figures from circles to equilateral triangles. The dynamic space is capped with an oval dome overlaid with a pattern of octagons, hexagons, and Trinitarian crosses. These geometries are expressed externally as an undulating façade.

At Sant' Ivo, Borromini created a Baroque masterpiece derived from work of the ancient period but brought to a new level. The building consists of a chapel inserted behind the curved end of an existing two-story courtyard at La Sapienza, part of the University of Rome. Borromini made use of two interlocking equilateral triangles as a conceptual structure for his complex plan, creating concave and convex walls that slope upward to form the dome. This dome is segmented into six sections that converge as a perfect circle and form the base of the lantern, which also has concave sides. The lantern, visible from the exterior, resembles a spiral staircase topped with a laurel wreath, a bronze orb, a dove, and a crucifix, and is considered to be one of the most distinctive spires on any church in Rome.

Paolo Portoghesi was born in 1931 and lived on the Via de' Monteroni in the heart of Rome. On his walk to his grandparent's house each day, he admired the work of Francesco Borromini. Portoghesi says that of all the architectural models of his childhood memories, the two that fascinate and impassion him the most are the dome of Sant' Ivo and the façade of the oratory of St. Phillip Neri, also designed by Borromini (Gottardo, 2011). Portoghesi describes himself as having been born "in the shadow of Borromini's Sant' Ivo" and much of his professional life as an architectural historian has revolved around this architect and this

building (Gottardo, 2011, p. 31).

Portoghesi graduated from the University of Rome with degrees in architecture in 1957 and in the history of art in 1958. In 1959, he was appointed professor at the school of advanced studies in the instruction and restoration of monuments. Throughout his education, he wrote about the Renaissance, Baroque Rome, the Art Nouveau, and modern architecture and concentrated most on Borromini (Gottardo, 2011).

Portoghesi the architect has constantly sought to merge theory and practice and natural and human elements in his work. He, along with other Italian architects of his generation, was uncomfortable with a modern architecture that did not reference the layers of history before him and was troubled by an architecture cut off from the past. Consequently, he revived a dialogue with the great masters of the past, to whom he has paid homage in his works by creating a new architecture that attempts to connect back to the Ancient Roman and Baroque periods (Portoghesi, 1983).

The Roman house that Portoghesi built for himself, the Casa Baldi, is located in the Labaro suburb, almost eight miles from the city center of Rome, off of the Via Flaminia, an ancient Roman road running north and south. The location is in the midst of a rocky tufa outcropping that overlooks the Tiber valley and a nearby Roman sepulcher (Gottardo, 2011). Today, it is impossible to find the local tufa quarry because of the residential development, but Portoghesi responded to the site by using the local tufa stone as his primary building material, saying that, “local materials are the tools that best express the feeling of being rooted, of belonging to a place, of being in harmony with the landscape and with what already exists environmentally” (Gottardo, 2011, p. 51).

In developing the Casa Baldi's plan, Portoghesi seems to have been more concerned with geometry than with space. Much like the cupola of Sant' Ivo and the façade of San Carlino, the exterior walls of the Casa Baldi curve and undulate. Vaulting, like that used during the Baroque period, appears on the interior of the Casa Baldi only in the stairwell.

The Casa Baldi was the starting point of Portoghesi's design career. As such, it represents a cross between two "codes," a synthesis that is characteristic of Postmodernism (Portoghesi, 1983, p. 7). First, from the Baroque, there are enveloping, sweeping curves, overlapping spaces, and various spatial foci interfering with one other. Second, derived from the local tufa stone, there is a modern Brutalist expression of material and rugged joinery.

My Journey: 5,230 miles

To me, Rome was like an ant hill that had been repeatedly stepped on: a layered city new on top of old with numberless ants running around uncontrollably. From the time that my mother and I stepped off of the plane at the Rome Fiumicino Airport, I felt like the world was moving in fast-forward around me. After a taxi ride from the the airport to the train station, a bus ride from the train station to a neighborhood bus stop, and finally what seemed like a forever walk from the bus stop to our hotel, we arrived in Rome, all amid chaos.

It took us a day or two to get accustomed to the busy city and its less than desirable public transportation system. Amid the hustle and bustle of the place, my goal was to retrace the steps of Portoghesi and see what buildings he was inspired by on his walk each day. Our first trip

took us south of our hotel, located close to the Borghese Gardens, where we spent the day touring ancient structures such as the Colosseum, the Basilica of Constantine, and the Pantheon. It was amazing to experience the scale of such large spaces constructed thousands of years ago thanks to the development of cement and concrete.

Close by the Pantheon was Sant' Ivo, a must-see on our architectural history path. Each day we would make it a point to determine if the doors to La Sapienza's courtyard were open because this building was the most important model in Portoghesi's development as an architect. Even though the church was under renovation, when we were finally allowed inside it was clear that the dramatic form of the cupola and lantern were mimicked by Portoghesi at the Casa Baldi.

Having spent almost three days exploring the city at this point, we felt that we could tackle the "out of the city" journey to the Casa Baldi. A metro ride north carried us to what looked like the last stop on the line. We exited the subway onto the Via Flaminia and struck out walking in the hot sun. The suburb of Labaro, where the Casa Baldi stands, was different from the American suburbs I knew. Apartments changed to cookie-cutter single houses, then to small private boutique businesses, then to more lavish homes that all looked different and had gated entries and yards with large trees. The Casa Baldi was surrounded by these large residences.

Gaining access to the Casa Baldi had always been a challenge because it is a private residence and I could find no record of who owned it. Dedicating a day to finding the Casa Baldi was the only chance we had of seeing the building.

After an almost two-mile hike through the dense neighborhood, I

Fig. 3. Paolo Portoghesi, wall detail showing tufa stone patterns, Casa Baldi, Rome, Italy, 1959

spotted the undulating exterior of the Casa Baldi and felt relieved that we had actually located the building after such a confusing and tiresome day of travel. Walking down the residential street, confined by homeowners' cars, I noticed two men having a conversation outside of the entrance gate to the residence. I approached them and asked if they knew a way into the building. One man spoke English and explained that he was its owner. He and the other man, a hired contractor, were in the process of renovating the Casa Baldi, which was soon to become an architectural museum. Our timing could not have been planned any more successfully. The owner gladly led my mom and me into the yard of the residence, and gave us full access to the interior and to the grounds.

Fig. 4. Paolo Portoghesi, exterior view showing three-tier organization, Casa Baldi, Rome, Italy, 1959

The Analysis: Portoghesi's Casa Baldi

Upon arriving at the site, I immediately focused on the concave tufa-block walls and cantilevered terraces created by the flat floor and roof plates (**Fig. 3**). Modular units made of tufa stone, about the size of a panel bricks, were stacked, creating walls that looked like they had grown directly out of the ground. Each tufa block was unconventionally laid, with its longer side running vertically and its shorter side bearing the load. On the first level, each block on the face of the wall was uniform in color and size. With each level above, the stones became smaller and darker in color, and the mortar bed that separated each block became thinner and smoother. Such a composition separated into three tiers (**Fig. 4**), with roughness on the piano noble level and smoothness

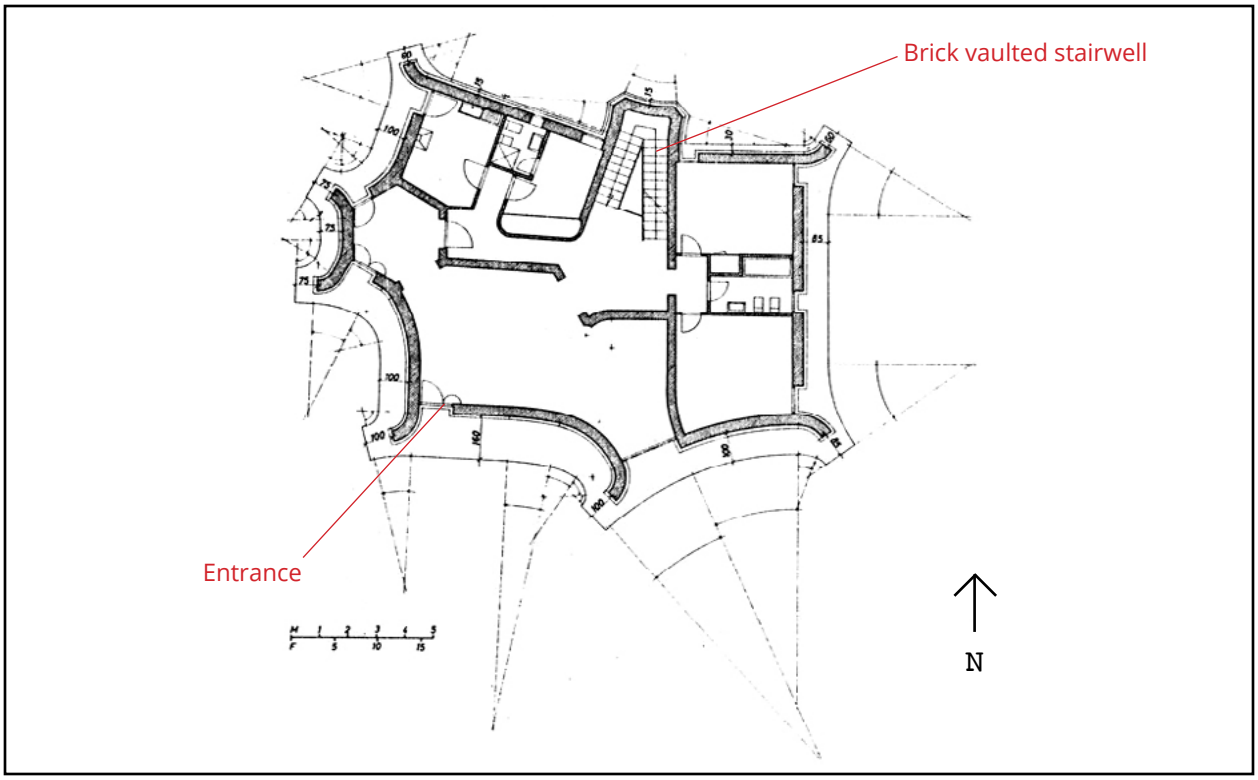

Fig. 4. Paolo Portoghesi, plan, Casa Baldi, Rome, Italy, 1959

Fig. 6. Paolo Portoghesi, stair with herringbone brick vaults, Casa Baldi, Rome, Italy, 1959

on the walls above is comparable to 15th century palazzos built for noble Roman families.

Where a concave wall continued past the intersection of another wall, the stones on the back face of the wall were laid out in a checker board pattern so that each stone was thinner and a different color than the last. A thin horizontal ceramic band ran every four, three, or two courses of bricks, depending on the wall, separating what seemed to be a veneer hiding a structural element inserted so that the weight of the blocks does not become too heavy from the courses above.

The floors of the home were distinctly separated in a trisection with a concrete floor band dividing them. Below each floor plate was a carefully designed brick molding where the layer between the wall and roof is inset, allowing the plates to appear as if they are floating.

The interior of the building promises more than it delivers spatially (**Fig. 5**). Doors are tucked between the intersection of two concave walls, Portoghesi's way of responding to the corner detail. The first floor of the home is the service floor, and the main living spaces are located on the second and third floors. We entered by way of an exterior stair into the living room area, which was much like a typical home, with white walls and ceiling and no reference to the exterior material. We continued into the stair space, where much of the interior design work was concentrated (**Fig. 6**). The ceiling of the stair was vaulted in a herringbone pattern with bricks, not the tufa stone used on the exterior. An iron handrail led us to the third and final floor, where a roof terrace provided views of the Tiber River, seen through the surrounding tree canopy, and in the distance the city of Rome.

I had come full circle, beginning with my study of Ancient Roman and

Baroque models, and ending here at the Casa Baldi, where Paolo Portoghesi made his decision to abandon Modernism and return to traditionalism. Here in the Labaro neighborhood, he chose to unite his house with its landscape and exercise the Baroque's free-form curves, resulting in one of the most convincing historicist buildings of the 1950s.

Experimental House

Alvar Aalto
Muuratsalo, Finland
1953

Transformation in Identity: Alvar Aalto and his Search for Finnish Identity and a New Personal Life

On February 3, 1898, Hugo Alvar Henrik Aalto was born in Kuortane, Finland to Johan Henrik Aalto and Selma Matilda Aalto. In 1921, he graduated from the Helsinki Polytechnic Institute with a degree in architecture and shortly after graduation opened a private practice in Jyväskylä, a town in central Finland (Quantrill, 1983). During his formative years, Finnish architects were searching for a regional architectural identity that respected local building traditions and so were experimenting with a Nordic version of Neo-Classicism, a mid-18th-century style derived from Vitruvian principles, the work of the Italian architect Andrea Palladio, and National Romanticism, which emphasized strong emotion, spirituality, creativity, and drama (Fazio, 2014).

While working in Jyväskylä, Aalto married fellow architect Aino

Marsio. They spent their honeymoon in northern Italy, and this is when Aalto first fell in love with the region, particularly its hill towns, which would influence his architecture for the rest of his life (Quantrill, 1983). After their travels, the Aaltos adopted so-called Nordic Classicism, derived from vernacular architecture, Neo-Classicism, and Functionalism. In 1927, they moved their practice to Turku and in 1933 to Helsinki. In 1938, the couple visited the United States for the first time to see the Finnish Pavilion they had designed for the New York World Fair. Alvar Aalto's fame led to a position as a visiting professor at the Massachusetts Institute of Technology during the 1940s (Salokorpi,1970).

In 1949, Aino Aalto died of cancer. She has been described as the

Fig. 1. Alvar Aalto, view from the south toward the council chamber, Säynätsalo Town Hall, Säynätsalo, Finland, 1952

“quiet meander” to Aalto’s volcanic personality and the moderator of her husband’s “unfounded” ideas, and so this was a difficult change for him. He continued to work and eventually married his office assistant, Elissa Makiniemi, in 1952. This year marked a new start for the couple, which led Aalto to design and build a summer house to serve as their private retreat. The lake cottage is situated on the island of Muuratsalo, overlooking Lake Päijämme in central Finland, near the island of Säynätsalo, locale of Aalto’s Säynätsalo Town Hall (**Fig. 1**). The honeymoon cottage is best known as the ‘Experimental House’ because the architect tested brick and ceramic materials on site to study aging and surface transformations over time. Aalto explained that “an architect must know his materials. It is not allowed to experiment with client’s money. Therefore, I have used some of my own to test some materials and effects”(Quantrill, 1983, p. 138).

Additionally, in 1952 Aalto completed the design and construction of the town hall for the small factory town of Säynätsalo, with Elissa working as the project manager (Nerdinger, 1999). This building with four wings provides an entire civic center for this small community and includes municipal offices, a council chamber, a public library, and retail shops. The complex was constructed on a hillside and has an opening on its southern side, with grassy steps leading up to a central, square courtyard bordered on three sides by the vertical glazing of the U-shaped office wing. Aalto’s scheme is similar to configurations he had seen in Italian hillside towns.

There are design elements in Aalto’s Experimental House that could have been transferred from the Säynätsalo Town Hall. The role of the courtyard in its plan and the use of the mono-pitched roof most notably

resemble the town hall. Both the civic building and the honeymoon retreat marked a transformation in the new couple's lives and influenced many of their later architectural works.

My Journey: 4,906 miles

As mom and I boarded the Finnair plane, a feeling of relief came over me. The past week in Rome had been a constant hassle. From fighting large tour groups, to making sure we got on the right bus before we unintentionally reached the other side of the city, we were ready for a more peaceful atmosphere. I looked around, and the airplane cabin was filled with cotton-topped, blue-eyed families; even the flight attendants looked Scandinavian. After only a three-hour flight from Rome, our plane landed in Helsinki, Finland and from the airport, one shuttle bus took us straight to our hotel. We checked into our all-too-familiar Best Western Helsinki, located less than a mile from the central train station and ended our night with a shared plate of Tex-Mex nachos in the hotel lobby. The next day we would venture off to see the city, but tonight we needed rest. We both decided we were going to like this place.

Our first full day in Helsinki happened to be on the city's birthday, June 12th. Every open public space was filled with tents occupied by people selling homemade wooden crafts and authentic Finnish food, such as salmon soup, fried vendace (a small, local fish), grilled sausages, and fresh fruits and vegetables. During the day we took a small boat ride off of Helsinki's shoreline to view its surrounding clusters of beautiful islands, the Suomenlinna Maritime Fortress, and Finland's fleet of gigantic icebreaker ships. The ride was chilly, but the experience of

the vast coniferous countryside and the land of “a thousand lakes” was the most peaceful time we had had up to this point.

The next day or two we spent learning the local train system, much easier to understand than in Rome, and set out to find some of Aalto’s buildings, so that we could visit them at the end of the week. After two days in Helsinki, it was time for us to pack our bags for Jyväskylä, the northern city where Aalto’s archives and museum are located. It would take us almost half a day to reach the city by train, but this was a way for us to see the Finnish landscape and how people outside of the city lived. Beautiful lakes and dense forests made it a summer vacation spot for most locals.

After the high-speed train ride from Helsinki to Jyväskylä, there was next a ride on a city bus to the Säynätsalo Town Hall, and then a short alternate bus ride from Säynätsalo over the connecting bridge to the island of Muuratsalo, until my mother and I were dropped off at the last stop on the route, a small café. Here the café owner assured us that we were finally “close to” our destination, just a mile more to the experimental site (**Fig. 6**). Then, as we walked along a peaceful neighborhood road, we noticed a small gated entrance area just off the street and overlooking a thick forest dominated by spruce and birch trees. Here a small sign marked “Experimental House” was posted on the wooden gate, confirming that we were finally at the right spot. I had reserved our tour weeks earlier on the Alvar Aalto website, and now it seemed that we truly had arrived!

As we waited here alone, I felt a bit of uncertainty, but just minutes later a small bus and two taxis pulled up and unloaded other travelers. Exactly at the reserved time for our tour, a guide appeared

Fig. 2. interior of the boat shed, Muuratsalo, Finland

Fig. 3. log construction of the sauna, Muuratsalo, Finland

from out of the woods to greet us. He opened the gate and instructed us to follow closely behind him. The group reminded me of a mother duck and her ducklings, all walking quietly through the woods in a single file. A narrow dirt path felt soft under my feet, while tall, lush, green trees towered above us. As we moved closer to the lake's edge, our first destination was Aalto's boat shed (**Fig. 2**), which held the "Nemo Propheta in Patria", his only form of transportation to the site before a bridge was constructed during the 1980s connecting the island to Säynätsalo. The boat had recently been restored and a new boat shed had been constructed by architecture students to display it permanently. Continuing our scenic hike along the bank of Lake Päijämme, we saw the sauna house that Aalto had designed. It resembled a small log cabin and was built on bedrock. Here Aalto used tapered wooden logs to create its sloped roof. Inside, the wooden sauna benches were still intact and a brick furnace remained and was covered in black soot.

Analysis: Alvar Aalto's Experimental House

Climbing higher in the forest, we finally arrived at the north façade of the Experimental House (**Fig. 4**). Two mono-pitched brick masses seemed to collide and the intersection of the clay-tiled butterfly roof of his Experimental House appeared. Here, our tour guide explained, Aalto used the same foundation techniques as at the sauna: large logs laid atop the bedrock (**Fig. 5**). One roof sloped dramatically to the west side, like a megaphone opening out to the water. Only two small windows punctured the façade, allowing sunlight to light the living space. We did not enter here, but circled around the perimeter of the building until we reached the south façade (**Fig. 8**). Here, the white-washed brick walls

Fig. 4. Alvar Aalto, view up to the north facade, Experimental House, Muuratsalo, Finland, 1952

Fig. 5. Alvar Aalto, log and stone foundations, Experimental House, Muuratsalo, Finland, 1952

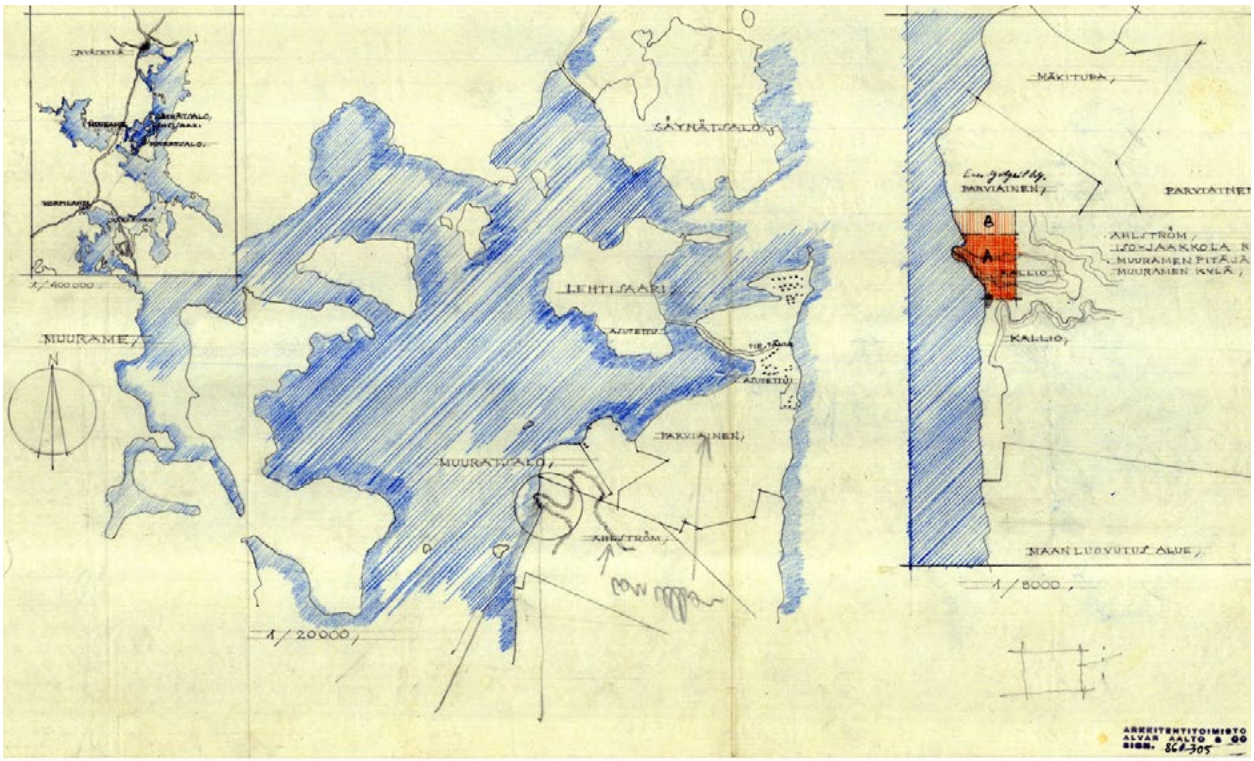

Fig. 6. Alvar Aalto, Regional plan, Experimental House, Muuratsalo, Finland, 1952

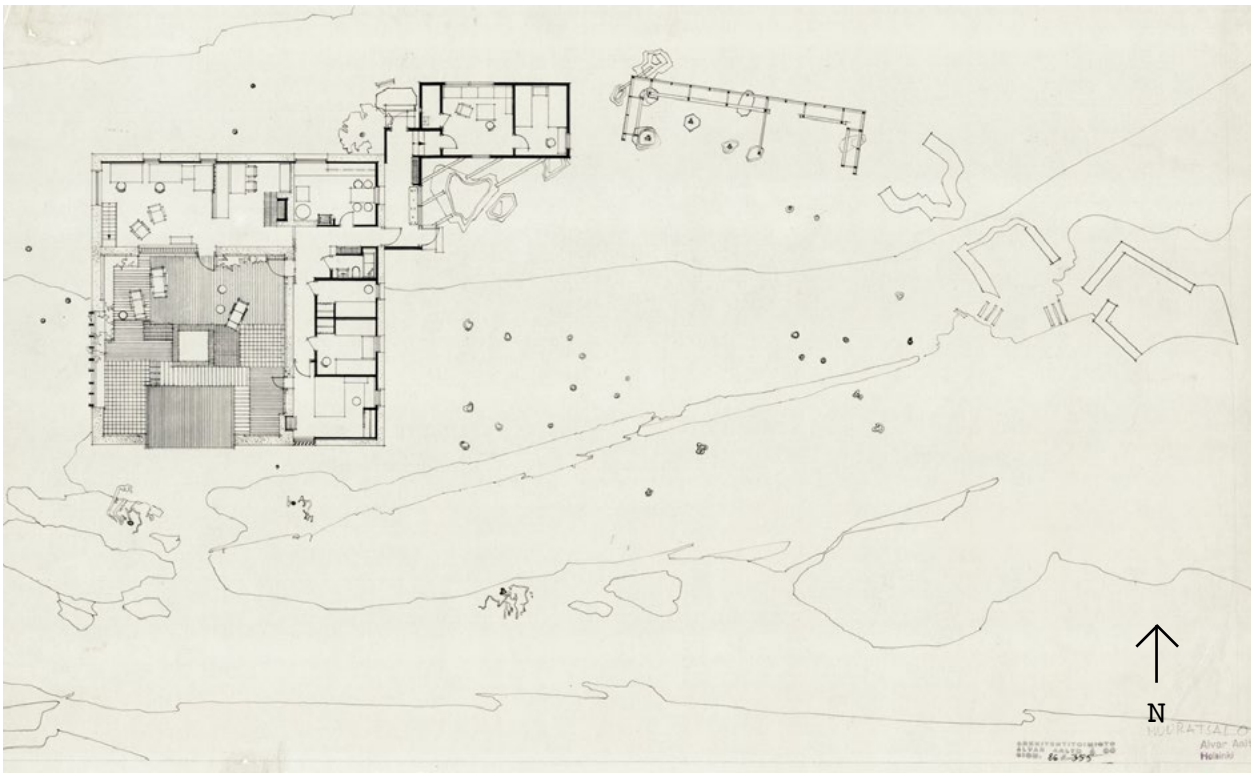

Fig. 7. Alvar Aalto, site plan, Experimental House, Muuratsalo, Finland, 1952

Fig. 8. Alvar Aalto, southwest corner of experimental courtyard, Experimental House, Muuratsalo, Finland, 1952

became taller and a large opening was filled with thin vertical members resembling the white-barked birch trees rising beyond. Lush vines grew up this vertical screen, making the façade appear ruinous and of the earth. Beyond, the southwest corner of the house pointed to beautiful Lake Päijänne.

The house's courtyard (**Fig. 7**), perfectly square in plan, is surrounded on three sides by heavy, unpainted brick walls. Aalto used this area to "experiment" with different shapes and forms of brick, testing their properties before using them on his other projects. The brick and tile experiments create a rich patchwork-quilt effect on the walls and floor.

At the center of the courtyard, a firepit (**Fig. 10**) acts as a focus

Fig. 9. Alvar Aalto, painting loft, Experimental House, Muuratsalo, Finland, 1952

Fig. 10. Alvar Aalto, firepit in courtyard and view to Lake Päijamme, Experimental House, Muuratsalo, Finland, 1952

for the entire building. The fire represented a threshold between interior and exterior space, where Aalto and his family could spend time together during chilly summer nights and he could warm himself while painting outside during the day (Quantrill, 1983).

Defining two sides of the courtyard is an L-shaped building, with one wing containing a loft for painting, a studio space, and kitchen and dining areas separated by a thick, brick interior fireplace. The painting loft, raised above the living room, is supported by large wooden beams, naturally finished, and offers a beautiful contrast to the stark white interior walls. Aalto-designed curtains hang in the loft, available to enclose the space when needed. The other wing of the L contains a long narrow hall and the bedrooms once used by Aalto and his family. Each bedroom is furnished with Aalto's furniture designs, a natural extension

Fig. 11. Alvar Aalto, brick patterning in the courtyard, Experimental House, Muuratsalo, Finland, 1952

Fig. 12. Alvar Aalto, courtyard window framing the view of the lake, Experimental House, Muuratsalo, Finland, 1952

of his architectural thinking.

From the waters edge, to the forest of trees, then to the vertical membered screen, then to the courtyard, then to solid brick masonry wall, the home has many different layers of enclosure, a necessity for the varied climate in Finland. This screening also gave the Aalto's a sense of privacy, a retreat away from the rest of the world and even away from boaters on the lake.

Inside the courtyard, the patterning of the bricks resembles a De Stijl relief (**Fig. 11**), De Stijl being an artistic movement founded in 1917 with principles only allowing the geometries of the straight line, the square, and the rectangle, along with primary colors. The paintings of Aalto are expressionist in character, so this De Stijl moment might represent his systematizing an architectural expression in a painterly

Fig. 13. Alvar Aalto, brick and tile patterning at the bedroom wing, Experimental House, Muuratsalo, Finland, 1952

form. The modular organization of the walls reinforces the "painterly" neo-plastic origins of the design. Also, the elaborate patterns of the brick floor of the court are very much dependent upon the square (Quantrill, 1983).

The northwest wall of the courtyard is the least treated of the four walls because it contains the window that frames the view of the lake (**Fig. 12**). The view becomes like a piece of art, so the wall itself is secondary, the effect being much like that of a fresco. The two walls that enclose the living and bedroom wings of the L are much more articulated with the geometric type of patterning that presents the essence of Aalto's brick "experiments." The sloped wall enclosing the studio and living space, with its large three-light window, contains more varied elements than any other wall. Large, horizontal expanses

Fig. 14. Alvar Aalto, back of the house with guest wing and fire wood shed to the right, Experimental House, Muuratsalo, Finland, 1952

of uniform bricks contrast with small, bold projections of perforated clay blocks and royal-blue, square ceramic tiles, all framing the large opening.

More rectangular curved glazed tiles are reserved for the bedroom wing wall, along with a horizontal clerestory window and wooden diagonally battened door (**Fig. 13**). All clustered in one group, the tiles appear to randomly cover or patch an old window that now appears as a recess. Flat panels of different bricks surround the tile motif, making it the primary focus of the wall and again suggesting a painting-like feature.

Built off of a corner of the perfect-square building is a guest wing, which is unlike the main brick mass (**Fig. 14**). It is stick-built and clad in wooden drop siding. A shed for fire wood and supplies along with other planned brick experiments that were never completed, trail up

the landscape and the orthogonal nature of the living quarters contrasts with the playful nature of these additions. The white painted external walls, the mono-pitch roof, louvered windows, and the loose scattering of outbuildings that ascend the hillside from the back door all became common elements in Aalto's mature work.

The true value of experiencing the Experimental House comes from seeing the later buildings that resulted from the materials testing done here. From town halls to theaters, churches, libraries, universities, and private homes, Aalto's work embraced almost all public institutions during his prolific career (Curtis, 1996). His architecture is distinctively Finnish and is marked by a warm humanity and strong individuality. His buildings derive their special aesthetic character from their essential relationship with their natural surroundings, their human scale, superbly executed details, a unique treatment of materials, and an ingenious use of lighting. Aalto's architecture transcends national boundaries. His work is not the exclusive property of Finland; it forms a part of a common cultural heritage of European and worldwide significance (Quantrill, 1983). I can now see how Alvar Aalto and Finland occupy a special place within the history of Modern architecture.

Concluding Essay: A. L. Aydelott

(Before I made the four trips far away, I made one closer to home.)

In 1918, as World War I came to an end, a new architectural style emerged based on changes in society and advances in technology. A new way of thinking among designers prompted them to explore the rational use of materials, the principles of functionalist planning, and the rejection of ornament. Artists and designers such as William Morris, Louis Sullivan, Adolf Loos, and Le Corbusier were key players in the movement. In the 1930s, many of these modernists moved to the United States where their unique designs emerged and soon became the dominant style of the 20th century (Frampton, 1992).

Among the regional leaders of Modernism in the United States was Alfred Lewis (A. L.) Aydelott (1916- 2008), a University of Illinois School of Architecture graduate and eventually a Fellow in the American Institute of Architects in 1964. In the 1950s and 60s, Aydelott designed his own architectural office building, several classroom and dormitory buildings on Christian Brothers College campus, the Shelby County Office Building, the Memphis City Hall, the Downtown Federal Building, and the Immaculate Conception High School and was often described as the "father of modern architecture in Memphis, Tennessee." He believed that the South was often overlooked when it came to modern building design and his goal was to change this notion (Michelson, 2005).

Year in and year out, he won national *Progressive Architecture Design Awards*. From 1951-1954, Aydelott and his team swept the competition

winning regional and national awards including the following: Hospital of the Year Award, Modern Hospital Publishing Company, 1951; Grand Prize Winner for a Residence, Carrier Corporation Competition, 1952. Progressive Architecture Design Awards, Central Apartments, 1954; and 1st Honor Award for an Office Building, AIA, Gulf States Chapter, 1954 (Schuler, 2016).

In 1973, at the height of his career, Aydellot discovered that he was very ill with lung cancer, and he believed that he only had a few months to live. With this news, he locked the doors of his office, and he and his wife moved to Orcas Island, Washington and eventually settled in Carmel, California. At some point, Aydellot discovered that his illness was not terminal, but this did not change his decision never to return to architecture. He left behind so completely his successful practice and his modern designs that he is hardly known today in the field that he once commanded (Schuler, 2016).

I wanted to know more about A.L. Aydelott and his work, so I made a trip from my peaceful college campus to Aydelott's home for most of his life, the bustling city of Memphis, Tennessee. My first stop was the office of A.L. Aydelott and Associates, completed in 1950, on the outskirts of downtown Memphis in a residential neighborhood near the Christian Brothers University campus.

The office was a modern structure amongst a sea of 1910s and 20s cottages and bungalows (Whitehead, 2012). Now unoccupied, the corner-lot building was like a bunker hidden behind overgrown shrubbery and capped with a flat roof (**Fig. 1 and 2**). Seen from the street, the south façade seems to hug the ground, and so presents a formal face to the public. An undulating brick wall defines the south and west sides of the

Fig. 1. A.L. Aydellot, office property before construction, A.L. Aydelott Office, Memphis, Tennessee, 1950

Fig. 2. A.L. Aydellot, office today, view from the south, A.L. Aydelott Office, Memphis, Tennessee, 1950

Fig. 3. A.L. Aydellot, west facade from the north, A.L. Aydelott Office, Memphis, Tennessee, 1950

Fig. 4. A.L. Aydellot, view towards the conference room, A.L. Aydelott Office, Memphis, Tennessee, 1950

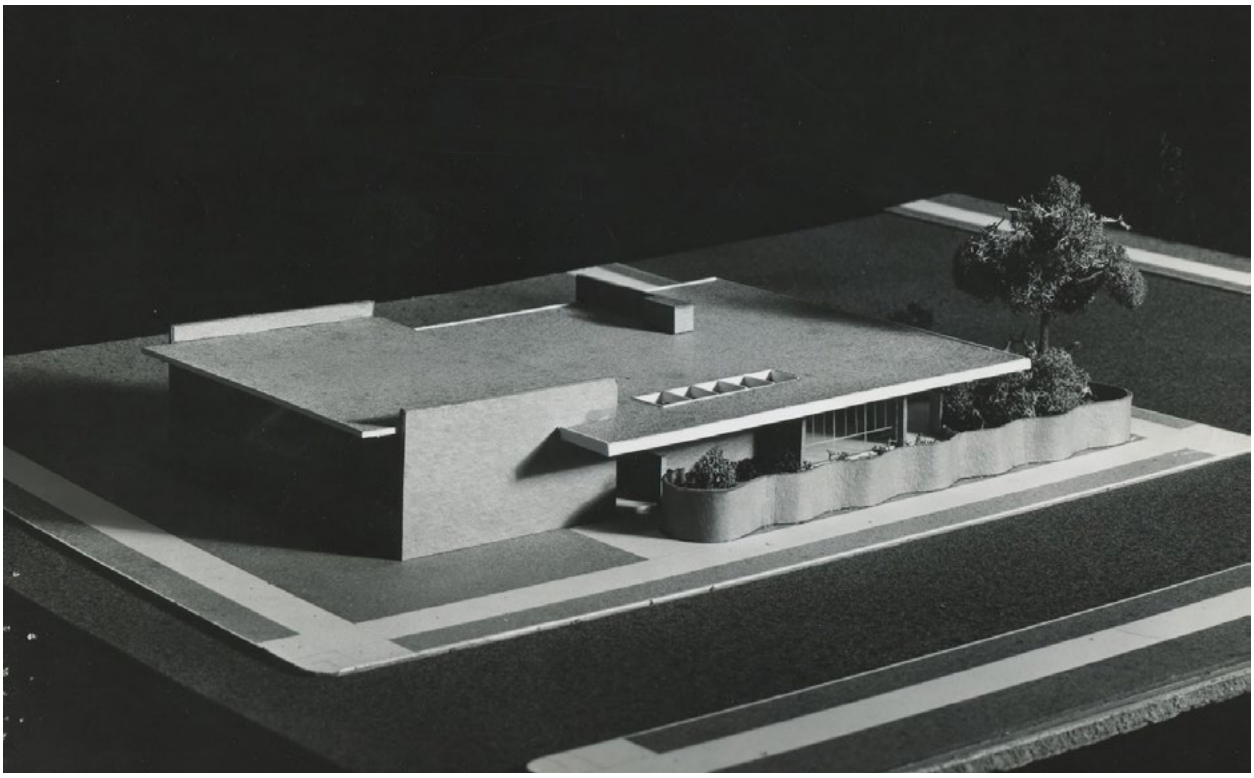

Fig. 5. A.L. Aydellot, model photograph with conference-room wall seen above the roof at the back corner, A.L. Aydelott Office, Memphis, Tennessee, 1950

property, and frames the front entrance, which appears tucked away and hidden. Inside these brick walls, the office has tall glazed steel sash windows, which allowed me to look inside (**Fig. 3 and 4**). Unfortunately, the original partition walls that separated the office's reception area, model room, office rooms, and a large drafting room have now been removed, but I could still imagine the scene in Aydellot's day.

Each face of the building is different and seems to have been designed appropriately for the function taking place inside and to prevent exterior distractions while work was being done. At the south end of the plan, I could see a large conference room (**Fig. 4**) where Mr. Aydelott, a charming salesman type, might have "rolled out the red carpet" for potential clients, presenting them with glamorous drawings and persuasive architectural ideas. The conference room was rather

unconventional, elaborated with an inviting fireplace and a textured masonry wall rising above the roof, only visible from the front façade (**Fig. 5**).

The northern end of the office, designed to be no less attractive than the southern end, houses a large, open drafting room (Whitehead, 2012). The north façade has a full curtain wall of windows that begin about shoulder height and continue up to the flat roof. This allows natural light to penetrate without outsiders being able to see inside. On the west façade, the connection between the interior and exterior is a layering of permeable walls, the most solid being the building envelope, preceded by a screen of columns, which is protected by a roof canopy, then by a row of strategically placed trees.

Following the office visit, the next site was the Christian Brothers University, a private Catholic institution, where Aydelott developed a master plan and designed a number of buildings. When the masterplan was commissioned, a "Neo-Collegiate Gothic" style was dominant, but Aydelott felt that this style was inappropriate as a model for an over-all modern development. His master plan (Fig. 6) acknowledged the style of the original buildings by including medieval groin-vaulted covered walks and "tracery" in the form of perforated brick walls. The layout of the Christian Brother's campus takes the layered qualities of the office building to a much larger scale. The layering strategy includes a large lawn along the street with strategically planted trees, then the covered groin-vaulted walkways, then the existing buildings. Aydelott located new buildings to form quadrangle enclosures, which produced not only visual appeal but a sense of tradition.

Constructed in 1958, a brick bell tower rises just off of the covered

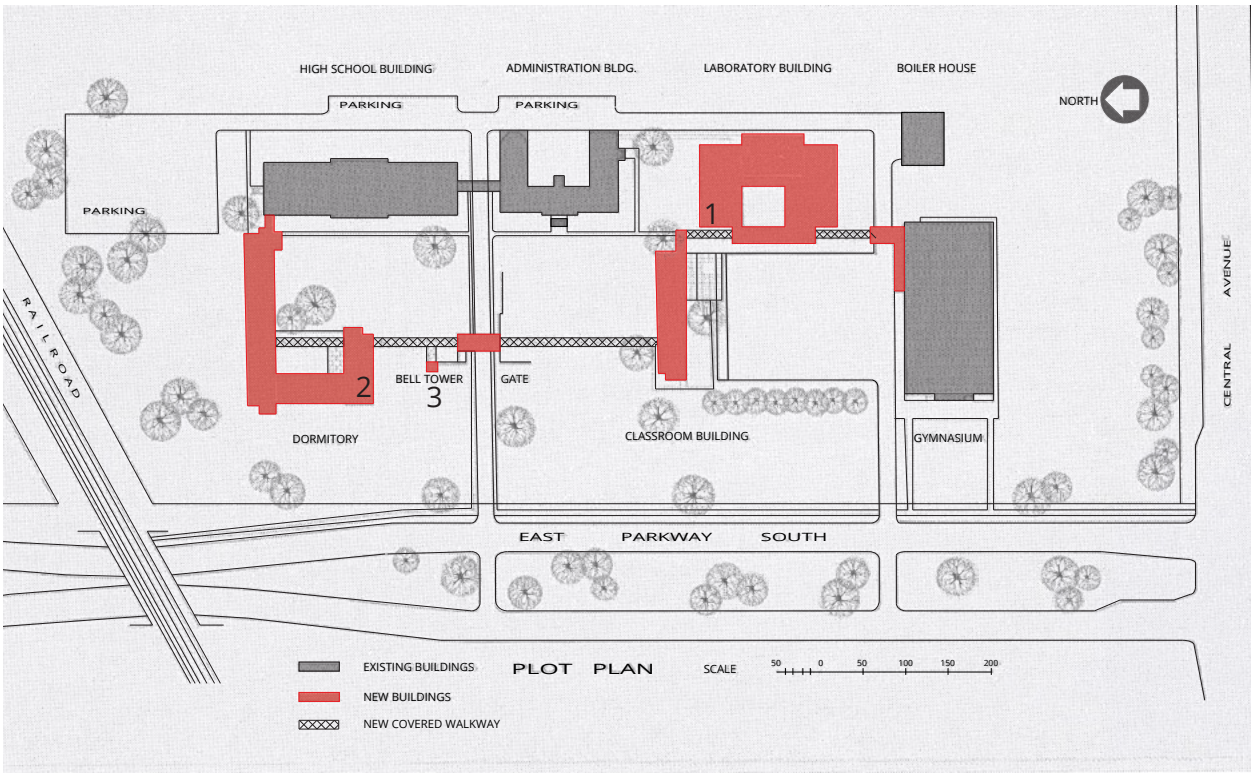

Fig. 6. A.L. Aydellot, master plan, Christian Brothers University, Memphis, Tennessee, 1955

walkway on the front campus and is dedicated to “all the deceased mothers of Christian Brothers’ students.” It marks the point of automobile access to the campus (Johnson, 1990).

Among the new buildings were St. Joseph Hall, finished in 1955, for the beginning stages of an engineering program. Presently, a renovated St. Joseph Hall houses the campus police and safety staff but still displays design elements that I believe Aydelott transferred from his own office building. The brick and stone building utilized the technology of its time, with an envelope of steel-sash ribbon windows very similar to the windows in his office. The same kind of layering effect occurs at St. Joseph Hall, as perimeters have a layering of finished walls, columns, and strategically placed shrubs and trees.

At the north end of campus, a dormitory building, Maurelian Hall,

Fig. 7. A.L. Aydellot, view inside groin-vaulted wallkay, Christian Brothers University, Memphis, Tennessee, 1955

Fig. 8. A.L. Aydellot, Maurelian hall and groin-vaulted wallkay, Christian Brothers University, Memphis, Tennessee, 1955

Fig. 9. A.L. Aydellot, view northeast toward the bell tower and Maurelian Hall, Christian Brothers University, Memphis, Tennessee, 1955

is connected to St. Joseph Hall by the signature groin-vaulted covered walkways (**Fig. 7 and 8**). The dormitory is a three-story L-shaped building with a central court sunken half a story below the finished ground level and shaded by a large oak tree. The red-brick façade has sand-colored concrete bands that differentiate each level. Sheltered stairwells located at each end of the building have a perforated brick design running up each south-facing wall, a pattern Aydelott used as a substitute for traditional ornament.

The campus has expanded beyond the master plan developed in the mid 1950s. However, Aydelott's buildings and covered walkways still create the framework for the front face of the institution and give the place a distinctive identity.

The third stop of the day was the Shelby County Office Building and

Fig. 10. A.L. Aydellot, view from the northeast, Shelby County Office Building, Memphis, Tennessee, 1959

Supplementary Court (1959) located in downtown Memphis (Johnson, 1990). The office building (**Fig. 10**)was designed as an annex to an existing "Renaissance-style" criminal court building. Aydelott's did not recreate the style of the existing structure but complemented its monumental character using contemporary forms and methods.

The office building currently appears as two separated structures, one at the ground level that is temple-like, inserted beneath another lighter and more contemporary block. The first-floor building is Brutalist in appearance, with slender vertical windows in the solid limestone walls and a recessed entry. This lower part contains various county administrative and clerical offices and commission rooms and is accessible to the public. The second, third, and fourth floors of the building appear to be hovering over the first floor building mass. This construction is

light and permeable, with the full curtain wall façade providing maximum daylighting for the various offices. Shifting perforated metal panels hide the floor plate of each level but do not aid in sun shading or building enclosure, and so are something of an anomaly. A court room and the offices of the district attorney occupy these levels.

The day trip to Memphis was like a journey through the mind of the late A. L. Aydelott and for me the stylistic evolution of his local buildings over time. The consistencies in his designs and modernistic architectural ideas brought a new era in modern Memphis municipal construction. Beginning my journey with this trip, I gained a better understanding of why Mr. Aydelott created a travel award for young architecture students. He valued the experience of seeing great works of architecture, not just in photographs and renderings, but up close and personal; he wanted students to be prepared for what I "will continually be required to do in my career," to not only "see" but to research and analyze the best buildings all around the world, and even those not so far from home (Aydelott Application Material).

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