ELADIO DIESTE'S MODERN RELIGIOUS ARCHITECTURE: INNOVATION THROUGH FORM, PROGRAM, AND ARTISTIC INSPIRATION AT THE CHURCHES OF CRISTO OBRERO AND SAN PEDRO

by

JESSE R. ELLIOTT

A THESIS

Presented to the Department of the History of Art and Architecture
and the Graduate School of the University of Oregon
in partial fulfillment of the requirements
for the degree of
Master of Arts

June 2019

THESIS APPROVAL PAGE

Student: Jesse R. Elliott

Title: Eladio Dieste's Modern Religious Architecture: Innovation through Form, Program, and Artistic Inspiration at the Churches of Cristo Obrero and San Pedro

This thesis has been accepted and approved in partial fulfillment of the requirements for the Master of Arts degree in the Department of the History of Art and Architecture by:

Keith Eggener	Chairperson
Jenny Lin	Member
Ocean Howell	Member

and

Janet Woodruff-Borden	Vice Provost and Dean of the Graduate School

Original approval signatures are on file with the University of Oregon Graduate School.

Degree awarded June 2019

THESIS ABSTRACT

Jesse R. Elliott

Master of Arts

Department of the History of Art and Architecture

June 2019

Title: Eladio Dieste's Modern Religious Architecture: Innovation through Form, Program, and Artistic Inspiration at the Churches of Cristo Obrero and San Pedro

Eladio Dieste was a tireless innovator of engineering and architecture during the latter half of the twentieth century. His work has not been investigated extensively, although his structural ceramic construction techniques have been analyzed more than his architecture—but both with little historical context regarding his connections and influences. However, his background significantly contributed to making him a confident modernist architect. Taking Dieste's two most famous Uruguayan churches as the focus of this thesis, Cristo Obrero in Estación Atlántida and San Pedro in Durazno, the context for his production of religious architecture is clarified—in addition to his design approach and the technical details developed. The methodology employed is historical with formal analysis of photographs and plans, site visits, interviews, and recent photos. The intent is to understand how and why Dieste, as an engineer with no formal training in architecture, created these works of considerable architectural merit.

CURRICULUM VITAE

NAME OF AUTHOR: Jesse R. Elliott

GRADUATE AND UNDERGRADUATE SCHOOLS ATTENDED:
University of Oregon, Eugene

DEGREES AWARDED:
Master of Architecture, 2018, University of Oregon
Technical Teaching Certificate in Architecture, 2018, University of Oregon
Bachelor of Arts, English Literature, 2005, University of Oregon
Second Lang. Acquisition and Teaching Certificate, 2005, University of Oregon

AREAS OF SPECIAL INTEREST:
Modern Art and Architecture

PROFESSIONAL EXPERIENCE:
J. Elliott Design - Owner
Architectural Designer, 2007 – present

Johnson Broderick Engineering - Employee
Designer, 2015 - 2017

2G Construction Inc. - Partner
Project Manager, 2007 – 2017

Wolf English and Da Cheng Vocational High School (Taiwan) - Employee
English Teacher, 2013 – 2014 school year

J. Elliott Construction - Owner
Craftsman and Project Manager, 2001 – 2007

Specialty Constructors, Inc. - Employee
Carpenter, Ironworker, and Foreman 1996 – 2001

GRANTS, AWARDS, AND HONORS:
Department of the History of Art and Architecture Research Travel Award

ACKNOWLEDGMENTS

I have an interest in politically progressive countries, and when I began studying Art and Architectural History, I was already considering expanding my knowledge in the direction of South America—a continent I had not visited. A shoe repair man with Argentinian roots in Spain told me how his country was the most culturally European of Latin American, and this provoked my interest. A couple terms into my studies I came across Eladio Dieste's Church of Cristo Obrero in Estación Atlántida, Uruguay, and I was quickly hooked on his unique architecture and perspective.

Getting my feet on the ground to see and discuss Dieste's work in Uruguay was the single greatest aid to my research, and I am grateful to all those who helped me along the way. I am especially indebted to Esteban Dieste for tirelessly ushering me to many sites around Montevideo. Esteban's perspective and professional insight into his father's work has been indispensable. I am also grateful to the office of Dieste y Montañez for entertaining my visit and showing me Eladio Dieste's personal items and work space. Nelsys "Buby" Fusco was instrumental in orchestrating my visit, and the architect Hugo Ferreira Quirós provided critical insight, a tour, and many unpublished documents at key moments. Mónica Silva also provided guidance with critical resources and insight.

At the University of Oregon, I want to express gratitude to Professors Keith Eggener, Jenny Lin, and Ocean Howell for teaching me to approach the history of architecture in a meaningful, entertaining, and educational fashion. In addition, I am grateful to the University of Oregon's department of the History of Art and Architecture for making my research in Uruguay possible through a travel grant.

TABLE OF CONTENTS

LIST OF FIGURES

Figure Page

Figure Page

Figure Page

CHAPTER I

INTRODUCTION

Eladio Dieste was not merely an engineer who happened to become an architect. He was also a well-connected and prolific builder and professor, taking on all four of these roles officially and simultaneously for much of his career. In addition to his foundation in engineering, mathematics, and physics, his background was filled with artistic influences and experiences with architectural projects that made him a confident modernist architect. Coupling this background with his conversion to Catholicism, Dieste positioned himself to create a unique body of religious architecture, as will be investigated here through two of his churches: La Iglesia de Cristo Obrero y Nuestra Señora de Lourdes (The Church of Christ the Worker and Our Lady of Lourdes) in Estación Atlántida (figure 1.1); and La Iglesia de San Pedro (The Church of Saint Peter) in Durazno (figure 1.2). These churches will be addressed by their abbreviated Spanish monikers representing their patron saints hereafter as, "Cristo Obrero" and "San Pedro" respectively. Cristo Obrero is a new Catholic church near the beach town Atlántida, a half-hour by car east of Montevideo, and San Pedro is a remodeled Catholic church in the heart of central Uruguayan farm country (figure 1.3).

Dieste's religious architecture is best considered as an architecture of intentional divergence from the paths of developed countries.[1] What Dieste sought was a modern architecture appropriate to his region, rather than a fully industrialized modern architecture handed down from fully developed countries.[2] His buildings are an attempt to be "deeply practical" about all aspects of architecture, including on a moral level, regarding cost, sustainability, and nurturing the basic human need for art.[3] This thesis

proposes that Dieste was an exceptional modernist who simultaneously excelled at engineering, building, and architecture. However, it aims to contextualize his accomplishments by clarifying his connections to other professionals, artists, and society. Dieste's history reveals a progression from professional engineer toward architect and master builder through a logical sequence of events; there is not a single aspect of his background or personality that allowed him to rise to the challenge of architecture. Instead, a network of influences, associations, and historical circumstances will be explored here. These, coupled with Dieste's talents, enabled him to produce architecture that is as much art as it is science.[4]

Cristo Obrero was initially completed in 1960 and is Dieste's most famous work of architecture—in fact it is the single most famous work of architecture in Uruguay today.[5] San Pedro was completed a decade later in 1971, long before Dieste stopped working in 1996, and died in 2000.[6] These two small churches offer insight into Dieste's religious architecture; he considered the pair his most important works, although he didn't have a favorite, saying it depended on his mood.[7] They are very different buildings: Cristo Obrero is curvilinear and San Pedro is rectilinear; Cristo Obrero is a new church, and San Pedro is a reconstruction; Cristo Obrero came before the Second Vatican Council convened in 1962, and San Pedro after it closed in 1965.[8] The contrasting scenario for each helps elucidate Dieste's approach, which is similarly pioneering for both churches, and reveals a creative, critical thinker who engaged all stages of the design and building processes. However, a close look at Dieste's history also reveals his unusual beliefs, coupled with a brilliant personality that inspired many

along the way. Additionally, an extensive network of collaborators influenced his aesthetic development and specific design ideas, and were also critical to his work.

Cristo Obrero received extensive international press coverage in the early 1960s, but it was not sustained, and Dieste's large oeuvre has still not received the level of attention such innovation normally garners.[9] There is much about his work, methods, and history that has not been published, even regarding this most famous project. While Dieste's work is largely unprecedented for its application of metal reinforcement to slender brick structures, it is also reacting to larger architectural and engineering trends. Brick was a common building material throughout Uruguay, found in colonial era and nineteenth century industrial buildings, residences, and other structures; it was part of a palpable artisanal tradition.[10] However, brick was not an exciting new material, and its use contributed to the lack of recognition for his work.[11]

Dieste was a modernist not because he adhered specifically to any popular trends or styles, but because he constantly innovated and applied the most up-to-date thinking to his projects.[12] Although clearly an innovator, being labeled a modernist would not have sat well with Dieste, as he was disconcerted by the majority of what modern architecture stood for, and when visiting modern architectural sites in Europe, he often found them disappointing.[13] From 1954 forward, Dieste designed many structural brick projects in collaboration with those at his design-build company. These projects totaled over 150 in Uruguay, along with more than 40 in Argentina, 26 in Brazil, and 5 in Spain, and are testament to Dieste's persistent process of innovation.[14] With brick as a locally available and cost-effective material, coupled with metal reinforcement akin to that used for structural concrete, he was able to create a new building technique called "structural

ceramics."[15] "Ceramics" here refers to the various sizes and shapes of individual bricks or baked clay modules. "Brick" is the preferred term when discussing these modules, but the brick sizes vary from the standard shape to include smaller, flat tile or paver-like shapes, and much larger hollow ceramic units.

Notable works on Dieste have been written in both Spanish and English (among other languages), but the vast majority of those probing deeper are in Spanish. However, even these texts rarely address the historical circumstances concerning his background, the histories of the projects, his professional and intellectual connections, or the religious context for his work.[16] Instead, much of the literature analyzes Dieste's engineering feats or gives brief descriptions and impressions of the architecture. The aim of this investigation is to offer a more comprehensive assessment of the historical context for Dieste's work as seen through the process of creating Cristo Obrero and San Pedro.

Critics have tended to elevate Dieste himself without noting his important collaborators and influences, but there were many such figures—some acknowledged directly by Dieste, and some not.[17] Here, his network of contemporary influences will be discussed. Acknowledging Dieste's connections to architects, engineers, artists, workers, and society does not diminish his formidable creative acts; rather it introduces a richer, more intelligible, and historically accurate perspective on his work, and in particular his process for creating religious architecture. In 1961, a number of international journal articles were published following the construction of Cristo Obrero, and Juan Pablo Bonta published the first monograph on Dieste's work in 1963.[18] However, Dieste's building techniques were not re-discovered by the rest of the world until 1991, when German engineers were shocked that his methods had developed in almost complete

isolation.[19] Stanford Anderson's 2004 collection of essays, *Innovation in Structural Art,* is the leading English-language book on Dieste, and it is admirably thorough from a structural perspective, but as an overview of Dieste's work, it can only offer a few pages to each project.[20] Dieste was so prolific that no author has yet documented his entire oeuvre, but this is a task that should be attempted while many of his collaborators are still alive to tell the stories.

Jorge Nudelman's works are illuminating for an in-depth historical perspective of Uruguayan architecture in the modern era, especially for insight into Le Corbusier's influence, along with those who worked in Le Corbusier's office before practicing in Uruguay.[21] Mary Mendez' *Divinas Piedras*, on architecture and Catholicism in Uruguay from 1950-1965 probes deeply into the history of Cristo Obrero and engages the religious component of Dieste's work alongside the architectural.[22] In 2016, a Getty Foundation grant was awarded for the study and rehabilitation of Cristo Obrero, and a thorough conservation management plan was prepared collaboratively by 45 professionals, including in-depth chapters on the building's historical development and construction.[23]

All of these works were foundational to this thesis, which focuses on the architectural history of Cristo Obrero and San Pedro. The organization is thematic by chapter and chronological within chapters for each church, moving from background information presented here to an assessment of the design and construction processes in Chapter II. Chapter III focuses on the programmatic design, and Chapter IV on the artistic elements and influences. Chapter V concludes by reflecting on the aftermath of both projects and offers summary insights into Dieste's methodology.

This thesis uses historical texts, interviews, site visits, photographs, plans and formal analysis to clarify how Eladio Dieste's religious architecture is modernist through its genesis, innovations, and connections to other projects and architects. On the surface, "Regionalist" appears a fitting framework for Dieste's architecture as he was opposed to universal modernism; Dieste's rhetoric is reminiscent of Paul Ricoeur's discussion of "the ethical and mythical nucleus of mankind," in opposing mediocrity to simultaneously "become modern and to return to sources," (as referenced by Kenneth Frampton).[24] Dieste promoted his cost-effective, sustainable techniques, including their aesthetic potential, and he freely dispersed the construction details and engineering techniques through publications and lectures.[25] However, while he "[aspired] for some kind of cultural, economic, and political independence," no regional movement or school was established, rendering his work clearly out of sync with "critical regionalism."[26] Frampton's admission that "regionalism. . . is often. . . the output of a talented individual working with commitment toward some sort of rooted expression," is a better description for Dieste's efforts, yet without a following in his wake the term is not helpful.[27] Furthermore, Dieste's architecture is not rooted in autochthonous culture, but modern physics, contemporary architecture, and poetic visions.[28] Finally, if critical regionalism is committed primarily to place, both of these churches are more invested in the spaces created.[29] The prioritization of space becomes especially clear at his Spanish churches built during the 1990s, which are re-interpretations and elaborations on Cristo Obrero and San Pedro (with other architectural maneuvers drawn from his industrial repertoire), as these do not feature significant adaptations to their sites.[30] Ultimately, this thesis sidesteps extensive theoretical discussion to focus on how and why Dieste's religious

architecture came into being—to elucidate the particular history of a modernist architect through his two most famous works.

The Background of Eladio Dieste

Dieste began designing Cristo Obrero late in 1954, eleven years after his graduation from college. These were critical years, filled with relevant work experiences and important contacts.[31] Born in the far northern city of Artigas, Uruguay, located 600 kilometers (373 miles) north of Montevideo on Brazil's border, Dieste moved to Montevideo at the age of 16 to complete high school and enter college (figure 1.3).[32] Artigas was a new city with many European immigrants. Dieste's parents were well-educated and had lived adventurous lives, and they settled there, creating an extensive home library that acted as a cultural center for the town.[33] Dieste's father taught history and eventually became a director of a school.[34] While his parents provided a cultured and respectful upbringing, they lacked the money to send him to Montevideo to continue his studies.[35] This was made possible by his going to live with a friend of his mother's, Antonio Grompone, a brilliant lawyer who became dean of the law school at the University of the Republic.[36]

Dieste completed high school in Montevideo, and began his undergraduate studies in the engineering department at the University of the Republic in 1936, which at that time was housed in the same building as the architecture department.[37] By 1942, before graduating, Dieste was already performing structural engineering work.[38] Upon graduation in 1943 he began working at the university as an engineering professor of the

foundational course “Rational Mechanics,” a position he held until 1964; he also held a professorship of “Bridges and Large Structures” from 1953 to 1973.[39]

Dieste was at the forefront of the “Generation of “45,” an optimistic era in Uruguay characterized by its great critical spirit and advancement of arts and letters across all branches of society—including technological pursuits and even the armed forces.[40] He appreciated his foundation in the engineering department during an extraordinary era, with outstanding professors helping him achieve an excellent basis in mathematics, physics, and studies of material resistance.[41] It was his home environment however—filled with artists and writers, many of whom he met in his father’s library—that gave him a solid artistic foundation.[42] While his education was focused entirely on engineering, he made friends with many architecture students, as they shared an appreciation for music and art.[43] During this era Dieste was influenced by the renowned artist, Joaquín Torres-García, who introduced him to the work of Antoni Gaudí.[44]

In addition to teaching, Dieste started working professionally after graduation. He took an engineering position at the National Department of Transportation and Public Works from 1944 to 1947, where he designed the structural portions of building projects.[45] This experience was important to Dieste for developing the skills to engage design problems with architects, and he gained a reputation for collaborating with them effectively.[46] One of his early designs there was for a bridge; his boss found the beauty of Dieste’s structure offensive and even immoral, and initially rejected it.[47] Dieste persevered however, as his design was also more cost effective and constructible.[48] During this era, he also worked as an engineer for the Danish construction company

Christiane and Nielson, where among other industrial designs, he engineered at least two 20-meter (65 foot, 7 inch) reinforced concrete vaults that were built with slip forms.[49]

After this, from 1949 to 1958, Dieste worked as the director of Viermond Incorporated designing and constructing machines from scratch to support this contracting company which started in 1946 and specialized in bridge, pier, and building foundations.[50] Dieste said this work was important to his understanding of space and movement as it was not possible to draw the dynamic machines first; he had to imagine their movement and discovered he had a special capacity for the application of physics to the design of mechanical devices.[51] He designed a lot of furniture at Viermond too, and he enjoyed this; he also designed the furniture for his own house, which he noted survived his 11 children.[52] During his time at Viermond, Dieste read numerous architecture magazines, as he was interested by the problems they solved.[53] He read *L'Architecture d'Aujourd'hui*, *Casabella*, and *L'Architettura: Cronache e Storia*.[54] He also read engineering magazines, such as *Revista de Ingeniería*, with a special interest in the construction-related solutions.[55] He even read Sigfried Giedion's *Space, Time and Architecture*, as well as *Architecture as Space* by Bruno Zevi.[56]

While still at Viermond in 1953, he went back to engineering structures and started collaborating on projects with his former engineering classmate Eugenio Montañez.[57] In 1954 they officially formed their design-build company, Dieste y Montañez, where Dieste tended primarily to the creative work and Montañez to the business side of operations.[58] In the early days, Dieste y Montañez designed and built foundations, but vaults and water towers soon became their specialty.[59] They collaborated with many architects, including famous ones in Uruguay such as Mario Payssé Reyes.[60]

However, the most influential collaborators for Dieste's formation were Justino Serralta and Carlos Clémot, whose offices were next door to Dieste y Montañez in the years leading up to Cristo Obrero; there was always an open door between them, so they were almost working in the same room.[61]

Serralta and Clémot both worked for Le Corbusier between 1948 and 1951, and conveyed many architectural lessons to Dieste through frequent collaborations after their return to Uruguay in the early 1950s.[62] Le Corbusier first visited Uruguay in 1929, with additional trips thereafter, and while his impact there was limited, he powerfully affected those who had worked for him in France.[63] Serralta knew the Modular system intimately, where his tasks in Le Corbusier's office included developing the updated "Modular 2" drawings (figure 1.4).[64] Dieste came to know the Modular system well enough from Serralta that in a joking tone he would say: "Let's give this 2.26 as Serralta says."[65] Dieste and Montañez shared a title block with Serralta and Clémot on some project documents starting in 1955, where all four names appear together in alphabetical order (figure 1.5).[66] These collaborations helped Dieste learn about architecture because they were not projects completed by architects and then handed off to engineers to calculate, but projects designed simultaneously by architects and engineers.[67] A photo of the four collaborators with their wives sharing a meal is a testament to their congenial relations (figure 1.6).

Dieste wrote extensively about his work, referring to many contemporary architects and engineers, as well as to writers such as G.K. Chesterton, Honoré de Balzac, Joseph Conrad, and Pierre Teilhard de Chardin.[68] He used the ideas of writers and poets to help understand the world, and when he visited Europe for the first time in 1960 he

found it exactly as he'd imagined: perfectly fitting de Balzac's depictions in *Droll Stories*.[69] Dieste did not consider his own essays rigorous and comprehensive arguments, but reflections or meditations on subjects that preoccupied him.[70] In these he presented himself as an engineer, who through the act of building large sheds and warehouses, found he was actually practicing architecture.[71] He discussed Gothic Cathedrals and ancient villages, analyzing what worked about their designs, but concluded that overdependence on tradition was as wrong as completely neglecting it.[72] Of modern architecture, he worried about a "kind of evaporation of the imagination and consequently of the creative capacity."[73] Giving a disproportionate importance to drawings and the means of representing modern architecture also disturbed him, as the essential nature of architecture was his primary concern.[74] Dieste also discussed the significance of the Industrial Revolution, noting how iron allowed structures to become independent of architectural space, making way for the free plan.[75] He questioned the ensuing rapid construction techniques of the modern era with their expedient planning and building results that did not allow for projects to evolve gradually as they had for millennia, "impregnated with personality."[76]

Dieste's conversion to Catholicism—an unusual decision for a young man in a proudly secular country—bolstered his opportunity to design Cristo Obrero and San Pedro.[77] Long a place where religious beliefs were kept in the private sphere, Uruguay became constitutionally secular in 1918, when it officially separated church and state.[78] It is not without irony that Uruguay's most famous work of architecture is a church—Cristo Obrero—and that it was designed by a Catholic engineer.[79] However, in the early 1950s The Catholic Action of Uruguay, started by Pope Pio XI in 1934 and actively maintained

until 1964, endeavored to increase the number of parishes, chapels, and religious schools, which were then rapidly constructed across the countryside, and Dieste found himself in the right place to design his first church.[80]

Notes

[1] Marina Waisman, introduction to *Latin American architecture: six voices*, ed. Malcolm Quantrill (College Station, Texas A & M University Press, 2000), 18. Waisman acknowledges Kenneth Frampton would likely include this notion as part of "Critical Regionalism," as "an architecture of resistance," but her notion of intentional divergence from the examples of developed countries is much more accurate and consistent with the way Dieste discussed his work and philosophy for architecture.

[2] Eladio Dieste, ed. Galaor Carbonell. *Eladio Dieste: La Estructura Ceramica.* (Bogota: ESCALA, 1987), 23.

[3] Eladio Dieste, "Some Reflections on Architecture and Construction," *Perspecta 27* (1992): 193.

[4] Ibid.

[5] Mary Méndez. *Divinas Piedras: Arquitectura Y Catolicismo En Uruguay, 1950-1965* (Montevideo, Uruguay: Universidad De La República Uruguay, 2016), 81.

[6] Stanford Anderson and Eladio Dieste, *Eladio Dieste: Innovation in Structural Art*, ed, Stanford Anderson, and Dieste, Eladio. 1st ed. (New York: Princeton Architectural Press, 2004), 60.

[7] Eladio Dieste. "Eladio Dieste: en la parte que no se ve," interview by Lucio Muniz, Montevideo, 1992, *Uruguayos de memoria* (Montevideo: Ed. Fin de Siglo, 1998), 36.

[8] John W. O'Malley. *What Happened at Vatican II* (Cambridge, Mass.: Belknap Press of Harvard University Press, 2008), 317-319; Esteban Dieste, email to Jesse Elliott, March 11, 2019.

[9] Eladio Dieste and Graciela Silvestri, *Escritos Sobre Arquitectura* (Montevideo, Uruguay: Irrupciones Grupo Editor, 2011), 154.

[10] *Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, http://www.getty.edu/foundation/initiatives/current/keeping_it_modern/report_library/cristo_obrero_church.html, 164.

[11] Stanford Anderson, "A Principled Builder" in *Seven Structural Engineers: The Felix Candela Lectures*, ed. Guy Nordenson, Félix Candela, and Museum of Modern Art. (New York: Distributed Art Publishers, 2008), 39.

[12] Oxford English Dictionary online, s.v. "modern," adj. and n., accessed June 2018. Oxford University Press. http://www.oed.com.libproxy.uoregon.edu/view/Entry/120618?redirectedFrom=modern.

[13] Eladio Dieste. Interview by Jorge Nudelman, July 20, 1978. *Entrevistas. Edición especial, libro 2* (Montevideo: FADU-UdelaR, 2016), 207.

[14] *Iglesia de la Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, http://www.getty.edu/foundation/initiatives/current/keeping_it_modern/report_library/cristo_obrero_church.html, 16. Spans became wider as towers became taller, and the specific construction details were often improved upon from previous projects. Dieste's son Esteban pointed out these differences at many sites, noting that no two projects were ever the same for Dieste as he kept improving details and techniques.

[15] Jorge Nudelman Blejwas, "'Corbusians' in Uruguay; a Contradictory Report," in *Latin American Modern Architectures: Ambiguous Territories*., eds. Del Real, Patricio, and Gyger, Helen (New York: Routledge, 2013), 68.

[16] Mary Méndez. *Divinas Piedras: Arquitectura Y Catolicismo En Uruguay, 1950-1965* (Montevideo, Uruguay: Universidad De La República Uruguay, 2016), 83.

[17] Ibid., 103.

[18] Juan Pablo Bonta. *Eladio Dieste* (Buenos Aires: Facultad de Arquitectura y Urbanismo: Instituto de Arte Americano e Investigaciones, 1963).

[19] Antonio J. Mas Guindal. and Josep Mª Adell. "Eladio Dieste Y La Cerámica Estructural En Uruguay," *Informes De La Construcción* 56, no. 496 (2005): 15. They discuss how Karl Ludwig Diehl's publications in the 9th International Brick/Block Masonry Conference in Berlin in 1991 shocked everyone to see the evolution of such a traditional material.

[20] Stanford Anderson, and Eladio Dieste. *Eladio Dieste: Innovation in Structural Art*, 1st ed. (New York: Princeton Architectural Press, 2004).

[21] Jorge Nudelman, "'Corbusians' in Uruguay; a Contradictory Report." In *Latin American Modern Architectures: Ambiguous Territories*., eds. Del Real, Patricio, and Gyger, Helen, (New York: Routledge, 2013); Jorge Nudelman, *Tres Visitantes En París: Los Colaboradores Uruguayos De Le Corbusier*. (Montevideo: Universidad De La República, 2016); Jorge Nudelman, "*Tres visitantes en París: los colaboradores uruguayos de Le Corbusier*." Master's Thesis (Madrid: E.T.S. Arquitectura (UPM), 2013), http://oa.upm.es/19877/.

[22] Mary Mendez. *Divinas Piedras: Arquitectura Y Catolicismo En Uruguay, 1950-1965*. (Montevideo, Uruguay: Universidad De La República Uruguay, 2016).

[23] *Iglesia de la Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, http://www.getty.edu/foundation/initiatives/current/keeping_it_modern/report_library/cristo_obrero_church.html, 18.

[24] Kenneth Frampton, "Prospects for a Critical Regionalism," *Perspecta* 20 (1983): 148-9.

[25] Eladio Dieste, ed. Galaor Carbonell. *Eladio Dieste: La Estructura Ceramica.* (Bogota: ESCALA, 1987), 205-286. This book features an appendix of specific engineering methods of calculation for Dieste's structural ceramic building techniques, including drawings, tables, equations, and explanations of their details. Some of these methods were likely previously published in part through engineering-related publications; *Eladio Dieste: 1943-1996: Métodos de Cálculo.* 4th Ed. (Sevilla: Consejería De Obras Públicas Y Transportes, 2001), 1-139. This separate book of calculations with more forms and explanation was published in a stand-alone volume as an additional exhibition catalog for the 1997 traveling exhibit, *Eladio Dieste: 1943-1996.*

[26] Kenneth Frampton, "Prospects for a Critical Regionalism," *Perspecta* 20 (1983): 148.

[27] Ibid., 156.

[28] Ibid., 159.

[29] Ibid., 162.

[30] The five Spanish churches were not studied for this thesis, but these include Iglesia Sagrada Familia in Torrejón de Ardoz (Madrid, 1998), Iglesia de San Juan de Ávila in Alcalá de Henares (Madrid, 1998), Iglesia Nuestra Señora de Belén, Alcalá de Henares (Madrid, 1999), Iglesia Madre del Rosario, Mejorada del Campo (Madrid, 1996), and Iglesia de la Santa Cruz, Coslada (Madrid, 2000).

[31] Mary Méndez. *Divinas Piedras: Arquitectura Y Catolicismo En Uruguay, 1950-1965* (Montevideo, Uruguay: Universidad De La República Uruguay, 2016), 90.

[32] Eladio Dieste. Interview by Jorge Nudelman, July 20, 1978. Entrevistas. *Edición especial, libro 2*. (Montevideo: FADU-UdelaR, 2016), 186; Eduardo Dieste, "Reflexiones de Eduardo Dieste sobre la vida de Eladio Dieste y su trayectoria" (ca. 2010), Microsoft Word File, 2; "Distribución de la población por departamentos, 1900-1950" in *Estadísticas Históricas Del Uruguay 1900-1950, Tomo I*, Universidad de la Rebuplica: Montevideo, 2007), http-//cienciassociales.edu.uy/departamentodetrabajosocial/wp-content/uploads/sites/8/2013/archivos/estadisticas%20historicas%201.pdf, 14-15. The population of the department of Artigas was 38,016 in 1917 and by 1936 had risen to 51,707, with generally over half of the population residing in the capital city of Artigas.

[33] Eduardo Dieste, "Reflexiones de Eduardo Dieste sobre la vida de Eladio Dieste y su trayectoria" (ca. 2010), Microsoft Word File, 2; Graciela Silvestri, "Una Biografía Uruguaya," in *Escritos Sobre Arquitectura*, (Montevideo, Uruguay: Irrupciones Grupo Editor, 2011), 123.

[34] Eduardo Dieste, "Reflexiones de Eduardo Dieste sobre la vida de Eladio Dieste y su trayectoria" (ca. 2010), Microsoft Word File, 2.

[35] Ibid.

[36] Eduardo Dieste, "Reflexiones de Eduardo Dieste sobre la vida de Eladio Dieste y su trayectoria" (ca. 2010), Microsoft Word File, 2; Graciela Silvestri, "Una Biografía Uruguaya," in *Escritos Sobre Arquitectura*, (Montevideo, Uruguay: Irrupciones Grupo Editor, 2011), 123.

[37] Eladio Dieste. "Eladio Dieste: en la parte que no se ve," interview by Lucio Muniz, Montevideo, 1992, *Uruguayos de memoria* (Montevideo: Ed. Fin de Siglo, 1998), 24; Eladio Dieste. Interview by Jorge Nudelman, July 20, 1978. Entrevistas. *Edición especial, libro 2* (Montevideo: FADU-UdelaR, 2016), 194.

[38] Eladio Dieste and Graciela Silvestri, *Escritos Sobre Arquitectura* (Montevideo, Uruguay: Irrupciones Grupo Editor, 2011), 13; Eladio Dieste, "Some Reflections on Architecture and Construction," *Perspecta 27* (1992): 187.

[39] Juan Pablo Bonta. *Eladio Dieste* (Buenos Aires: Facultad de Arquitectura y Urbanismo: Instituto de Arte Americano e Investigaciones, 1963), 41; Eladio Dieste. Interview by Jorge Nudelman, July 20, 1978. Entrevistas. *Edición especial, libro 2*. (Montevideo: FADU-UdelaR, 2016), 223.

[40] Juan Grompone, "Eladio Dieste, Maestro de la Ingeniería," accessed July 23, 2018, http://www.grompone.org/ineditos/ciencia_y_tecnologia. 4.

[41] Eladio Dieste. Interview by Jorge Nudelman, July 20, 1978. Entrevistas. *Edición especial, libro 2* (Montevideo: FADU-UdelaR, 2016), 194.

[42] Ibid.

[43] Ibid., 195-6.

[44] Ibid., 207.

[45] Augustín Dieste and Eladio Dieste. *La Invención Inevitable* (Montevideo: Cachimba del Piojo, 2009), inside cover; Eladio Dieste. Interview by Jorge Nudelman, July 20, 1978. Entrevistas. *Edición especial, libro 2* (Montevideo: FADU-UdelaR, 2016), 197.

[46] Eladio Dieste. Interview by Jorge Nudelman, July 20, 1978. Entrevistas. *Edición especial, libro 2* (Montevideo: FADU-UdelaR, 2016), 197.

[47] Ibid., 195.

[48] Ibid.

[49] Augustín Dieste and Eladio Dieste. *La Invención Inevitable* (Montevideo: Cachimba del Piojo, 2009), inside cover; *Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, http://www.getty.edu/foundation/initiatives/current/keeping_it_modern/report_library/cristo_obrero_church.html, 49. Dieste worked at Christiane and Nielson from 1945 to 1948.

[50] Eladio Dieste. Interview by Jorge Nudelman, July 20, 1978. Entrevistas. *Edición especial, libro 2* (Montevideo: FADU-UdelaR, 2016), 199-200; "Empresa," Viermond, Inc., accessed February 4, 2019. www.viermond.com; Augustín Dieste and Eladio Dieste. *La Invención Inevitable*. (Montevideo: Cachimba del Piojo, 2009), inside cover.

[51] Eladio Dieste. Interview by Jorge Nudelman, July 20, 1978. *Edición especial, libro 2* (Montevideo: FADU-UdelaR, 2016), 200.

[52] Ibid.

[53] Ibid., 203.

[54] Ibid.

[55] Ibid.

[56] Ibid.

[57] Ibid., 210.

[58] Graciela Silvestri, "Una Biografía Uruguaya," in *Escritos Sobre Arquitectura*, 119-160. (Montevideo, Uruguay: Irrupciones Grupo Editor, 2011), 135; *Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, http://www.getty.edu/foundation/initiatives/current/keeping_it_modern/report_library/cristo_obrero_church.html, 80.

[59] *Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, http://www.getty.edu/foundation/initiatives/current/keeping_it_modern/report_library/cristo_obrero_church.html, 83.

[60] Mary Méndez. *Divinas Piedras: Arquitectura Y Catolicismo En Uruguay, 1950-1965* (Montevideo, Uruguay: Universidad De La República Uruguay, 2016), 27.

[61] Eladio Dieste. Interview by Jorge Nudelman, July 20, 1978. Entrevistas. *Edición especial, libro 2* (Montevideo: FADU-UdelaR, 2016), 200, 217-218; *Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, http://www.getty.edu/foundation/initiatives/current/keeping_it_modern/report_library/cristo_obrero_church.html, 32, 65, 69; Mónica Silva Contreras explained that they worked "almost in the same room," via email, and others have explained similar scenarios, although at some point Dieste y Montañez occupied the third floor and Serralta and Clémot the fifth, but Dieste may have kept a desk up there.

[62] Jorge Nudelman Blejwas, "'Corbusians' in Uruguay; a Contradictory Report," in *Latin American Modern Architectures: Ambiguous Territories*, eds. Del Real, Patricio, and Gyger, Helen (New York: Routledge, 2013), 66; Jorge Nudelman. "*Tres visitantes en París: los colaboradores uruguayos de Le Corbusier*" (Master's Thesis, Madrid: E.T.S. Arquitectura (UPM), 2013), http://oa.upm.es/19877/, 17.

[63] Jorge Nudelman. "*Tres visitantes en París: los colaboradores uruguayos de Le Corbusier*" (Master's Thesis, Madrid: E.T.S. Arquitectura (UPM), 2013), http://oa.upm.es/19877/, 13.

[64] Jorge Nudelman Blejwas, "'Corbusians' in Uruguay; a Contradictory Report," in *Latin American Modern Architectures: Ambiguous Territories*, eds. Del Real, Patricio, and Gyger, Helen (New York: Routledge, 2013), 66-67.

[65] José Maria de Lapuerta, "Casa Dieste, Montevideo," *AV Monografías, Casa de Maestros*, no. 132 (2008): 115.

[66] Jorge Nudelman. "*Tres visitantes en París: los colaboradores uruguayos de Le Corbusier,*" (Master's Thesis, Madrid: E.T.S. Arquitectura (UPM), 2013), http://oa.upm.es/19877/, 307, 311.

[67] Eladio Dieste. Interview by Jorge Nudelman, July 20, 1978. Entrevistas. *Edición especial, libro 2* (Montevideo: FADU-UdelaR, 2016), 218.

[68] Juan Pablo Bonta. *Eladio Dieste* (Buenos Aires: Facultad de Arquitectura y Urbanismo: Instituto de Arte Americano e Investigaciones, 1963), 18; Jorge Nudelman in *Entrevistas. Edición especial, libro 2*. Mariano Arana, Lorenzo Garabelli, José Luis Livni. FADU-UdelaR, SAU. Montevideo, junio de 2016. Producción general: IHA, FADU-UdelaR, 204.

[69] Eladio Dieste. Interview by Jorge Nudelman, July 20, 1978. Entrevistas. *Edición especial, libro 2* (Montevideo: FADU-UdelaR, 2016), 204, 207.

[70] Eladio Dieste and Graciela Silvestri, *Escritos Sobre Arquitectura* (Montevideo, Uruguay: Irrupciones Grupo Editor, 2011), 13.

[71] Ibid.

[72] Juan Pablo Bonta. *Eladio Dieste* (Buenos Aires: Facultad de Arquitectura y Urbanismo: Instituto de Arte Americano e Investigaciones, 1963), 18.

[73] Mariano Arana, "Eladio Dieste: Techniques and Poetics," in *Latin American architecture: six voices*, ed. Malcolm Quantrill (College Station, Texas A & M University Press, 2000).

[74] Juan Pablo Bonta. *Eladio Dieste* (Buenos Aires: Facultad de Arquitectura y Urbanismo: Instituto de Arte Americano e Investigaciones, 1963), 12. The unedited lecture notes of Dieste's from a class taught in Buenos Aires were the source for this part of Bonta's book.

[75] Eladio Dieste, "Some Reflections on Architecture and Construction," *Perspecta 27* (1992): 187.

[76] Juan Pablo Bonta. *Eladio Dieste* (Buenos Aires: Facultad de Arquitectura y Urbanismo: Instituto de Arte Americano e Investigaciones, 1963), 13.

[77] Mary Méndez. *Divinas Piedras: Arquitectura Y Catolicismo En Uruguay, 1950-1965* (Montevideo, Uruguay: Universidad De La República Uruguay, 2016), 21.

[78] Jorge Francisco Liernur, preface to *Divinas Piedras: Arquitectura Y Catolicismo En Uruguay, 1950-1965*, by Mary Méndez (Montevideo, Uruguay: Universidad De La República Uruguay, 2016), 11.

[79] Mary Méndez. *Divinas Piedras: Arquitectura Y Catolicismo En Uruguay, 1950-1965* (Montevideo, Uruguay: Universidad De La República Uruguay, 2016), 19-20, 81.

[80] Ibid., 22-23.

CHAPTER II

TWO BRICK CHURCHES

The Church of Cristo Obrero is located forty kilometers east of Montevideo, in Estación Atlántida. This is not a town, but an abandoned train stop or "station" constructed in 1895 along Uruguay's "Great Eastern Railway" route extending another 90 kilometers east to the popular beach town of Punta del Este.[1] A small service community formed around this train stop four kilometers north of the seaside resort town of Atlántida, which represented its residents' employment opportunities (figure 2.1).[2] Atlántida was developed during the first decade of the twentieth century, when young Catholic doctors started building beach chalets, and in 1923 they constructed a proper chapel.[3] The activity of the Catholic Action was intense in this area. The family of Cristo Obrero's principal donor, Alberto Giudice, held land there since 1914.[4] Giudice married Adela Urisote, who's family was among the earliest pioneers of the beach town, and together they were one of the most active Catholic couples in the country.[5] Giudice and Urisote were also advocates of modern architecture, and the house they constructed in Atlántida shows their allegiance to the leisure style of the 1930s (figure 2.2).[6]

The 1,500 workers of Estación Atlántida built a tiny chapel dedicated to Christ the Worker that consisted of a house with a tacked-on neocolonial façade and narthex.[7] This was blessed in 1946 by the first Uruguayan Cardinal, Antonio María Barbieri, when he came to inaugurate the new Church of The Sacred Heart of Jesus in Atlántida.[8] The chapel is adjacent to the campanile where Cristo Obrero was later built (figure 2.3). When construction of Dieste's church began in 1958, Estación Atlántida's history as a cluster of workers houses lent its name "Cristo Obrero," (Christ the Worker). Then, the

area was much more desolate.[9] Even today, Estación Atlántida is still not a proper village as it lacks a nucleus and any form of urban planning—something Dieste hoped to address through the design of a public plaza around the campanile.[10]

In February 1950, the Commission of Estación Atlántida convened its first meeting, with Giudice at the helm, where they decided a proper parish hall was needed for this interior village.[11] Giudice proposed a well-known house builder in Atlántida, Mario Bonaldi, but before long they resolved to build a new church instead, with ample space for ceremony, and in December 1950 Cardinal Barbieri blessed an image of Cristo Obrero and the cornerstone for this future church.[12] Fundraising was not easy, and Giudice and Urisote subsequently offered to pay for the foundation, but over time they became increasingly committed financially and personally, paying for the bulk of it themselves.[13]

Bonaldi made the preliminary church plans which were presented to the Curia in March 1952, but in 1954 Bonaldi recommended that Giudice contact Dieste as he was a specialist in the construction of vaults and concrete foundations with pilings.[14] While working at Viermond, Dieste went to meet Giudice, to assess the foundation requirements for the poor soils.[15] Giudice was planning to design the church himself, but Dieste advised him to find an architect, and gave him a list of architects he knew were Catholic.[16] For years they argued over the same points, with the donor asking Dieste not to pre-occupy himself with the form of the church.[17] Dieste was provoked by comments from Giudice like, "if the people of this area are ignorant, rude, and stupid, what difference does it make?"[18] Dieste insisted, "the poor deserve beauty," as they too have sensitivity to art and architecture.[19] Dieste shocked himself with the things he said in

these arguments: “I don’t know how I didn’t give this gentleman a heart attack. . . I would start to speak and was dismayed at what came out of my mouth.”[20] In the end he said, “look, I will make you a church, and I will do it for the cost of a warehouse, which is what you want.”[21] Giudice must have had some faith in Dieste’s design skills, and likely assumed hiring an engineer for all services would be thriftier than a team with both an engineer and an architect.[22] Ultimately, Dieste was commissioned to design a church with a vaulted roof. He had the passion to make it a meaningful place of worship—but soon there were additional parties interested in creating an inspired work of modern architecture.[23]

In the late 1940s Dieste was engineering a number of reinforced concrete vaults, primarily for factories and warehouses. He was involved with the preliminary planning for The Parochial Church of Punta Yeguas in Montevideo in 1951 with the architect Luis García Pardo, which included the use of curved walls to create chapels.[24] Dieste also performed the structural engineering for Juan Pablo Terra’s Parish of the Assumption and San Carlos Borromeo, with its parabolic concrete vaults resembling those of Oscar Niemeyer’s 1943 Church of Saint Francis of Assisi in southeastern Brazil (Figure 2.4).[25] Niemeyer’s building was well-known in Uruguay and is a clear influence here—including its interior featuring decorative murals with azulejos.[26] In 1954, when Giudice and Urisote first met with Dieste, Terra’s church was completed and they visited it together. [27] Dieste does not discuss these churches as an inspiration, but the exposure to modern religious architecture must have been helpful to his development, as well as his experience with the parabolic vault shape, which is nearly as structurally effective as the catenary shapes he used for his own roof sections.[28]

The first known sketches of Cristo Obrero are from 1954, apparently by Dieste and possibly an architect collaborator from these early meetings, showing a structure with a 10 meter (61 foot, 8 inch) tall vault of varying footprints (figure 2.5).[29] At this time the building was a continuous vault, and there was much design work to come.[30] By the winter of this year, Dieste was officially designated the designer of Cristo Obrero, and in February 1955, Giudice explained to the Estación Atlántida Commission that Dieste had presented a model, which he was going to revise based on their discussions.[31]

In December 1955 Dieste's company, Dieste y Montañez, presented a budget to the Curia through Giudice for a vaulted warehouse of 476 square meters (5,124 square feet) costing 29,275 pesos.[32] In January 1956 church officials requested this church aspire toward a "completely modern construction" with an "atmosphere of genuine retreat."[33] Giudice became more excited and agreed to finance the project personally so that it could become a magnificent church.[34] The next budget presented in February 1957 doubled to 69,200 pesos, with 2,200 for the baptistry and 4,000 for the campanile, and it was presented with a model that "pleasantly impressed" Giudice and the priest.[35] This well-crafted model was prepared by a young draftsman in the neighboring Serralta and Clémot office (figure 2.6).[36] By March 1958, the budget just before construction was 112,000 pesos, including the 4,000 pesos for the campanile—but this was for the building only and didn't include many items such as doors, glazing, or electrical work.[37] The final invoice for the project would be 228,202 pesos, or 312 pesos per square meter, which was about 30 dollars per square foot and comparable to Uruguayan industrial projects of the time, although this still did not include the sumptuary expenses of around 41,000 pesos.[38] Some of the price increases during construction were due to significant material cost

inflation and others to the experimental nature of the work.[39] Dieste recognized his own role in the cost increases too, noting the many changes he introduced to enhance the aesthetic outcome due to his love for the work of creating a church.[40]

In 1954 there was as much urgency for a new parish house as there was for the new church, because the old house was deficient and uncomfortable.[41] Dieste designed and facilitated the construction of this parish house, begun in 1960, but it was demolished a mere three or four years after its construction (figure 2.7).[42] The demolition is often attributed to the poor quality of brick used, but the nuns who ran the neighboring Catholic school wanted additional space for their operations.[43] Dieste found its demolition for the sake of an ill-planned school scandalous, and was infuriated by the loss of a potential plaza around the campanile which was filled in with these buildings (figure 2.3).[44] In the few photos and plans documenting its existence, the parish house was stylistically similar to a house which Dieste designed with Serralta and Clémot, built for his brother Saúl in Artigas in 1955 (figure 2.8).[45] The parish house featured thin reinforced shell vaults, interior patios, three rooms to sleep four occupants, and a façade that would have faced the back side of the plaza he envisioned once the neocolonial chapel there was demolished (figure 2.9).[46]

Dieste's first use of brick for a thin reinforced shell vault was in 1946, when he proposed it for Antonio Bonet's Casa Berlingieri near Punta Ballena, Uruguay (figure 2.10).[47] Bonet had planned structural concrete vaults for the Berlingieri house which were proving to be absurdly expensive compared to a slab roof. Dieste recalled telling him, "you're going to do something like this? you, a rationalist architect who wants to do things in a rational manner. . . we have to design a vault that is economical."[48] Bonet's

unwillingness to modify his ideas fueled regular arguments between them.[49] Many large reinforced concrete vaults were built in Uruguay from the 1920s onward, and Dieste was familiar with these technologies through his own work experience.[50] His first idea for Berlingieri was to use a slip-form technique, but it occurred to him to try this with brick, as the process could be expedited using a pre-cured material.[51] He suggested to Bonet that a brick vault would look nice, and Bonet agreed, but asked if it would be too heavy.[52] Dieste told him he was thinking of a shell vault, and that he would study the problem."[53]

Dieste looked at the issues this concept presented from the perspective of theoretical physics. He was not yet aware ceramics had been used as a structural material, as in Catalan vaulting techniques, and this ignorance enabled him to conceive a new and distinct technique (figure 2.10).[54] He soon learned about Catalan vaulting methods, calling them "a very interesting solution," but noted the genesis of his solution was from structural concrete.[55] The Catalan method didn't appeal to Dieste for economic reasons; he preferred a single layer of material where possible to minimize labor, and Catalan vaults typically use three layers of thin ceramic material with offset joints.[56] At Berlingieri, Dieste used a single layer of 5.5 centimeter (2-1/8 inch) thick brick with two 4-millimeter (5/32 inch) wires in each joint for the structural portion of the vault.[57] This was capped with an insulative airspace using pavers on edge to support a 3-layer Catalan vault made with 1.5 centimeter (5/8 inch) thick ceramic tiles.[58] The traditional Catalan capping layer on top of Dieste's vaults made for a sophisticated assembly with exceptional thermal isolation.

The structural vaults for Casa Berlingieri represent Dieste's invention of structural ceramics, upon which the rest of his brick architecture and engineering would expand.[59]

He published the details of the innovation promptly in the engineering magazine, *Revista de Ingeniería*.[60] Le Corbusier may well have learned about this technique via his communications with Serralta and Bonet. He utilized a similar approach for the Maisons Jaoul vaults which were designed in the 1930s but not built until after the Berlingieri House in 1952.[61] As a Catalan architect, Bonet knew Catalan vaulting techniques and had some interest in the idea of vaulted spaces as he used these in many of his houses after working in the Le Corbusier atelier.[62] The result at the Berlingieri house however is white plaster surfaces inside and out that hide the materiality of the brick. Bonet used thick end caps for the vaults—although the tension rods taking up their thrust are visible inside (figure 2.11).

By the late 1950s Dieste was designing and constructing a wide variety of structural ceramic vaults with spans up to 35 meters (115 feet), using roofs with double curvature, which are akin to extruded vaults with a corrugated surface.[63] Many of these also featured integrated openings for daylighting to illuminate the factory, warehouse, and gymnasium floors below. All of these vaults utilized bricks of various sizes as a structural filler, set on slip-forms with metal reinforcement in some of the mortar joints, and additional tensioning cables or rods as required.[64] Dieste deemed brick the most suitable construction material for many reasons. These included its hygroscopicity (ability to absorb moisture) and low thermal conductivity, and "the constructive sincerity. . . supported by a long Uruguayan tradition of brick construction, based. . . in the simple constructive techniques and easy layout."[65] He also appreciated its acoustics, reasonable elasticity, and the way it ages, among other technical advantages such as its moderate weight for its high strength in compression.[66] Cost was also a factor, as brick production

was subsidized in Uruguay to help offset the country's dependence on imports, and Dieste was always interested in economical solutions to building problems.[67] Nonetheless, he recognized his generation's aversion toward brick, observing "in many technicians a certain resistance. . . to using brick, which seems to them to be a material linked to crafts and work methods long surpassed."[68]

Dieste's Catholicism facilitated his access to church projects that might have gone to others.[69] His parents however were opposed to religion—especially Catholicism—and he was not baptized or given any religious formation during childhood.[70] He converted to Catholicism in 1944, the same year he married the 23-year-old half-Jewish German immigrant, Elizabeth Friedheim Utke.[71] Eduardo, Dieste's son and long-time manager at Dieste y Montañez, surmises that Dieste found in Catholicism a way to settle his idealist mind on questions of how the world functioned, which enabled him to focus his creative energies on design.[72] Dieste did not discuss his family or his conversion to Catholicism in his extensive writings, focusing instead on artistic, societal, historical, architectural, constructional, and engineering themes. At home, he imposed a strict order over his household, restricting his children's access to popular influences such as magazines, music, or television, and disregarding non-religious holidays—what he called "pagan holidays."[73] Dieste was especially influenced by his "godmother in faith," Esther de Cáceres, a poet romantically involved with his uncle Rafael, who introduced him to the humanistic teachings of Jacques Maritain.[74]

With changes in post-war Europe leading up to the Second Vatican Council in 1962, the Catholic Church did begin to have impact in Uruguay. Lay participation increased, and many new churches were constructed.[75] Local designs had to pass the

review of Cardinal Barbieri, but Barbieri placed great faith in architects' abilities and did not hamper design processes, which led to numerous works of modern religious architecture.[76]

Dieste disliked modern architecture's tendency to separate the skin of buildings from the skeleton, with architectural space largely independent of the structural engineering requirements.[77] For him, true form meant the skeleton becoming the flesh of the building.[78] He was fond of engineers like Eiffel, and of buildings such as the Hagia Sofia and Gothic cathedrals that can best be understood as three-dimensional structural systems.[79] Dieste said that twentieth century builders and engineers such as Félix Candela, Pier Luigi Nervi, or Eduardo Torroja only had limited influence on his work.[80] Nervi, whom he came to know personally, particularly impressed him.[81] A detail such as Nervi's section of the famous Turin Exhibition Building (1948), with reinforcement concealed in the concrete vault, appealed to Dieste and could have inspired the undulating roof sections and daylighting he employed extensively (figure 2.12).[82] Nervi was also an engineer with his own construction company who believed in building as an art form requiring the use of intuition to refine structural details.[83] Dieste was less impressed by the work of Candela and Torroja, finding their architecture less significant than their engineering.[84] His own focus was on the "serious, well-considered, and profound use of materials successfully employed from the aesthetic point of view."[85]

An often-cited precedent for Cristo Obrero is Le Corbusier's Notre-Dame du Haut in Ronchamp, although Dieste did not refer to it himself (figure 2.13). However, Dieste's engineer in charge of daily operations at Cristo Obrero was Marcelo Sasson, who had just returned from a two-year work-study grant in France, where he frequently observed its

construction.[86] This coupled with the influence of Serralta and Clémot helps explain how Ronchamp could have been influential at Cristo Obrero in subtle ways, with many of his collaborators intimately familiar with the famous project.

Building Dieste's First Brick Church

The Bocce ball court on the site of Cristo Obrero was demolished in March 1958, and on the 24th of March, Dieste y Montañez began construction of Cristo Obrero with a revised budget of 108,000 pesos.[87] The first step was the pilings for the foundation, followed by the underground baptistry.[88] The construction drawings for the baptistry are well detailed, showing both key structural information and the pattern the floor brick was to be cut to (figure 2.14). The drawings also include waterproofing specification for a cavity wall and details for the domed brick vault (figure 2.15). The baptistry vault rises 53 centimeters (1 foot, 9 inches) to the base of the circular skylight well, where onyx glazing allows light to filter through gaps in the brick monitor into the dedicated ceremonial space below (figures 2.16 and 1.1).[89]

The crypt's south stair leads up into the nave of the church, directly under the stair to the choir loft (figure 2.17). The section stacked over the plan shows the 1.40 meter (4 foot, 7 inch) tall roof vault sections of the nave aligning with the 1.40 meter radius wall-top curvature, which is superimposed over the straight line of the walls at their base (figure 2.17).[90] The 30 centimeter (1 foot) thick serpentine walls were the first built above grade, starting with two straight courses on top of a 30 centimeter square concrete beam that caps 16 centimeter (6 inch) supporting pilings running 5 meters (16 feet) deep.[91] The wall brick is set in an irregular running bond with solid units of high quality from local

manufacturers, with dimensions of 24.7 centimeters (9-3/4 inches) long by 12.2 centimeters (4-3/4 inches) wide by 5.3 centimeters (2-1/8 inches) thick (figure 2.18).[92] To make the curvature in the walls constructible, serpentine molds were built on the adjacent ground and set 7 meters (23 feet) up in the air on a site-built framework, with wires strung down to the joints in the starter courses at grade (figure 2.19).[93]

The walls are reinforced brick with a moderate amount of vertical doweling and rebar in their central chamber where a waterproofing grout mixture was placed (figure 2.19).[94] There is also a 3 millimeter (1/8 inch) metal reinforcing wire inside each bed joint that was not easy to control in the undulating, canted walls.[95] The slope of the leaning walls made it so bricks could slide out of alignment, and necessitated varying bed joint thickness in a single horizontal run to keep the brick courses level.[96] This is due to the leaning walls, as they are effectively longer measured along their sloping surfaces. To achieve level coursing heights, the bricks were set with bed joints ranging from 0.5 centimeters (3/16 inch) thick at plumb sections, to 1.2 centimeters (1/2 inch) at the inclined outer edges.[97] The lead mason Vittorio Vergalito spent nearly all of his time keeping the walls on layout by marking out this variable coursing for the masons.[98] Dieste did not tell Vittorio how to accomplish this; it is part of the collaboration where employees—many of whom would work with Dieste y Montañez for their entire careers—found ways to accomplish the desired result.[99]

Together, the roof and walls create a self-supporting portal frame. A provocative construction photo shows how these operate as a system, not requiring bracing as a unit, and leaving the ends of the church to be filled in freely (figure 2.20). The finished façade emphasizes this with a 10 centimeter (4 inch) onyx stripe separating it from the perimeter

walls and roof to display its independence—and for a daylighting effect (figures 2.21 and 1.1).[100] This gap is also visible in section in the construction drawings, where the alternating slabs of the upper façade are disconnected from the roof above (2.17). Separating the façade required it to be free-standing, and the upper wall has considerable thickness through the alternation of its slabs to develop this strength, while allowing daylight to pass through the slots created.

The undulating walls were sufficiently complicated, taking a full three months to complete, whereas the roof was built at a much faster pace.[101] During construction Dieste decided to add small groupings of windows that repeat on the north sides of the wall undulations, which he located for additional lighting effect on the altar as the sun moves across the northern sky (figures 2.20 and 2.21).[102] The slow process of constructing these walls was unlike anything the workers or locals had seen before, and it made for lively talk in the town, with jokes about how they would no longer be able to construct plumb walls.[103] The structural system Dieste used for both walls and roof employs surface form, akin to a folded or bent piece of paper, allowing the building to perform as an efficient structural shell through its shape (figure 2.22). Dieste believed these forms are the most rational because they minimize the amount of material necessary: "there is nothing more noble and elegant from an intellectual viewpoint than this: to resist through form."[104]

This three-dimensional system operates in lieu of the ubiquitous series of flat "trussed planes" so common in modern engineering for their ease of calculation—and likely also due to the ease they are drawn.[105] Dieste lamented the loss of accumulated traditional knowledge that came with an "intoxication of certainty" and the "planning mentality" of the modern era.[106] At Cristo Obrero, he was somewhere between the two

extremes, far from traditions and dependent on a mix of intuition and experience to complement the simpler calculations that could be performed by hand.[107] He was not yet able to utilize sophisticated engineering techniques, such as finite element analysis methods, that now facilitate the calculation of complex forms.[108]

The undulating joint where the roof and walls meet could not alone take up the outward thrust of the roof vaults, and there is a reinforced concrete beam of varying width following along the eaves for this (figure 2.23).[109] The eave beams were constructed before the roof vaults and are composed primarily of reinforced concrete with a facing of brick underneath and at the outside edge, used as a form for casting them. This is one of the few places where the brick is not active structurally, but it served as a form that could be left in place for visual consistency below after the falsework was removed (figure 2.24). It took Sassón and Dieste some time to work out the details, especially in the small 12 centimeter (4-3/4 inch) thick section it was designed in (figure 2.25).[110] Originally the eave beam was drawn by Sasson as a straight concrete collector beam, like they were using on other vaults, but the final design varies in width from 83 centimeters (2 feet, 8-5/8 inches) to 1.7 meters (5 feet, 7 inches) to adequately resist the force of the tension rods, and to provide room for them to tie in (figure 2.26).[111] The tension rods are four 2.5 centimeter (1 inch) thick steel bars located in each roof valley.[112] The process for constructing these eave beams was sequential with a parge coat of sand and cement on top of the facing brick, before the tension rods and rebar were placed, and the form could then be completed (figure 2.27).

The undulating roof vault spans 18.8 meters (61 feet, 8 inches) at its widest, and is composed of two layers of structural brick for an 11 centimeter (4-3/8 inches) thick

section (figure 2.28).[113] There is also a cementitious topping coat and a thin tile layer as the finish roofing.[114] The vaults rise a mere 7 centimeters (2-3/4 inches) at their valleys and 1.40 meters (4 feet, 7 inches) at the peaks, and were constructed on top of a six meter (19 foot, 8 inch) wide mobile form fit with screw jacks underneath to raise it.[115] This was a new form with tapered articulating ends extending into the wall troughs, as their previous projects were all vaults on straight walls.[116] These flared form ends were built with hinges so they could be swung up into place after the form was moved (figures 2.29 and 2.30). It was not easy to align the form, and it took Sasson and a team of five or six workers an entire day to coax the first bay into place, using a water level and measured right triangles to square it to the centerline of the undulating walls.[117] The cost of the mobile form was high at 7,794 pesos compared to the execution of the roof itself for 12,500 pesos.[118] The vaults are nearly flat at the troughs, indicating forces in complete tension, and it is not easy to determine where the change to compression occurs as the vault sections rise.[119] Sasson said Dieste analyzed this interface through intuition rather than by calculation.[120] A diagram showing the primary lines of tension and compression helps clarify these forces in two dimensions (figure 2.31).

The form of the building was settled before the construction details, and the roof subsequently underwent significant changes for constructability.[121] During the budgeting and final design phase, Sasson's first task was to calculate the size of brick modules for the vaults—a task complicated by the double curvature across the undulating sections, such that many sections had to be studied to determine what module worked everywhere.[122] There were a variety of standard brick modules used in Uruguay, and Dieste anticipated using the 12 centimeter (4-3/4 inch) thick by 25 centimeter (9-3/4

inches) square “bovedillas” he used for warehouse vaults—which Sasson notes was part of Dieste’s obsession with economy, to use the least number of parts possible.[123] However, Sasson found the curvature too extreme for the “bovedillas” to create a sufficiently smooth exposed face, and instead thinner 3 centimeter (1-3/16 inch) thick “tejuela” bricks were used as the base layer of a multi-layer system—yet another shock to the budget in late 1957 just before the project was to begin.[124]

After the form was placed, this first layer of 3 centimeter (1-3/16 inch) bricks were laid on it with twisted metal wires each way in the joints at 26 centimeters (10-1/4 inches) on center.[125] The joints were filled with a sand and cement mortar (figure 2.28).[126] On top of this were placed 8 centimeter (3-1/8 inch) tall hollow brick “ticholos,” structurally oriented with the voids across the vault, also with twisted metal wires in the joints every 26 centimeters (10-1/4 inches) each way.[127] This got close to the 12 centimeter (4-3/4 inch) structural design section design of the original “bovedillas” Dieste had calculated for the sag with (figure 2.28).[128] To complete the structural section, a 1 centimeter (3/8 inch) coat of sand and cement was laid on top, and this was further capped with lighter and more flexible pavers to serve as the weathering face.[129] An important aspect of Dieste’s slip-form system is the ability to remove it quickly after a section is complete, so the work can carry on the following day; the use of predominantly pre-cured brick material allowed for this. Dieste determined the form could be removed fourteen hours after a vault’s completion, meaning that each workday the form could be stripped first thing.[130] This was fundamental to the expediency of the process, but Sasson notes the fourteen-hour period was not based on an engineering calculation, but on Dieste’s experience and drive for progress and efficiency.[131]

After the walls and roof were built, the church façade and interior walls were generally free from structural requirements and Dieste could focus on the programmatic and artistic objectives addressed in Chapters III and IV. The campanile however was part of a constructive design process similar to the church structure, and it also applied lessons from recent projects to its design. As Montevideo expanded and houses were built outside the city, Dieste designed and constructed numerous brick water tank towers in the late 1950s, which clearly informed the development of Cristo Obrero's campanile (figure 2.32).[132]

The 15 meter (49 feet 2 inch) tall campanile for Cristo Obrero was built upon a direct foundation (instead of pilings like the church), 3 meters (9 feet 10 inches) wide and 30 centimeters (1 foot) thick, set at a depth of 1.20 meters (4 feet).[133] The campanile in the 1955 model is solid and nearly three times taller than the church, but in the 1958 elevation it is only twice as tall as the church, and more significant changes came during construction (figures 2.6 and 2.33).[134] In fact, after being constructed to a height of 5 meters, the campanile was demolished (contributing to more cost overruns) as Dieste didn't like how it was looking, and the final campanile was constructed to its height of less than twice that of the church (figure 1.1).[135]

Without the need for a water tower on top Dieste could design the campanile more freely, and he included a reinforced brick spiral stair using prefabricated steps integrated into the walls, as well as a large upper opening to the north and a smaller one to the south (figures 1.1 and 2.34).[136] In all, 14 posts make up the tower, and treads are cantilevered from each one, with another in the gap between, aligning with the staggered horizontal sections connecting the posts (figure 2.35). The steps were prefabricated on the

ground and inserted into place during construction; where one is damaged, the reinforcement is visible in its joints (figure 2.36).[137] Dieste was proud that the entire tower used less than 200 kilograms (441 pounds) of metal reinforcement, and construction costs were low (for the revised version) as the gaps between the posts received planking used for construction scaffolding.[138] The perforated design also minimized mass and wind resistance loads.

Cristo Obrero was largely complete by July of 1960, although it was still in need of doors, an altar, and similar finishing elements.[139] The pace slowed down at this point, but even before the project could be finished numerous international publications featured it: the Spanish *Informes de la Construcción* in January, 1961, *L'Architecture d'aujourd'hui* in July, *The Architectural Review* in September 1961, and the cover of *Progressive Architecture* in April 1962.[140] It was not until March of 1962 however, that it received local coverage, in the newspaper *El País*.[141] Inside Uruguay, recognition has never been high. Cristo Obrero was granted National Historic Monument status in 1998, but access remains limited to certain hours and days as the church is otherwise locked when a service is not in session. However, Cristo Obrero appears to be on track to UNESCO World Heritage list status, with a recent visit from the International Council on Monuments and Sites in December 2018.[142]

Behind San Pedro's Traditional Façade: Folded Brick Slabs

The Church of San Pedro is located in the center of the small gridded town of Durazno, 180 kilometers due north of Montevideo (figure 2.37). It suffered a fire on the 23rd of May in 1967, and the nave's nineteenth century wooden trusses collapsed.[143] It

was often implied that the side aisles collapsed as well, but post-fire photographs clarify the primary damage was to the nave roof (figure 2.38). Even the paving below didn't suffer damages.[144] A local newspaper surmised the fire started in the destroyed storage areas adjacent to the presbytery, where fabrics and candles were stored (figure 2.39).[145]

The church's gaucho priest, Raúl Silva, had visited the completed Cristo Obrero in Estación Atlántida and approached Dieste directly about the repair.[146] In another newspaper article, nine days after the fire, Silva said Dieste had been chosen to plan the reconstruction as he was a specialist in "roofs."[147] Dieste said a traditional roof vault was not suitable for San Pedro, in part because the workers who knew how to execute the finish details in plaster were no longer available.[148] The existing construction of the church used steel columns to support the wood trusses of the nave, and these were clad with plaster details (figure 2.40).[149] The replacement roof Dieste proposed was actually an entirely new nave with a presbytery tower as a complete reinterpretation of the church in modern form. Dieste's concept with canted walls also eliminated the rooms around the presbytery in favor of a single volume, which tied into the existing narthex at the other end of the nave. This narthex, with its plaza façade and tower, were unscathed by the fire and also kept for their local significance.[150] San Pedro's façade changed shape a few times before the fire (figure 2.41). In the nineteenth century it was oriented alongside the plaza rather than facing it, with a humble façade (figures 2.42 and 2.43). San Pedro was founded at the same time as the village of Durazno, in 1821, and located near the house of the first president of Uruguay, Fructoso Rivera, who served in the 1830s.[151] This original church was reconstructed starting in 1890 and inaugurated in 1898 with its façade turned to face the plaza. The bell tower was added in 1920.[152]

Dieste's concept maintained the 1920 façade, but was a complete interior revision of the nave, although he was not the project architect or engineer; he promptly delegated these responsibilities to his employees, the architect Alberto Castro and engineer Raúl Romero, who worked at Dieste y Montañez for much of their careers.[153] Dieste preferred they take on the project independently as consultants to the church, while he assisted with advice.[154] Previous church projects had been incredibly time consuming for Dieste y Montañez, with very low economic return.[155] Still, it was Dieste's design they drew first, and his concept stuck from the beginning.[156]

After completing Cristo Obrero, Dieste was involved with other church projects which directly informed the solution at San Pedro. He engineered a brick church in Montevideo, completed in 1966 for the architect Luis García Pardo, with a presbytery tower bringing light in over the altar (figure 2.44).[157] Pardo's Iglesia Parroquial de San Juan Bosco, Colón, was constructed by Dieste y Montañez in structural brick, with a parabolic vault similar to Niemeyer's Church of St. Francis of Assisi (figure 2.4).[158] Also in Montevideo, Dieste y Montañez started construction on a church and parish house of Dieste's own design in 1966, the Iglesia de Nuestra Señora de Lourdes (The Church of Our Lady of Lourdes), but the church portion was stopped before it could be completed.[159] Its presbytery tower, planned to top-light the altar, was well along in construction when the work halted (image 2.45). The plan had been to envelop the existing church, then to demolish it from the inside.[160] Dieste said this presbytery tower idea is the same basic concept he adopted for San Pedro.[161]

The familiar forms of twentieth century modernism are clearer at San Pedro; there is a free plan and the structure employs crisp angular slabs (figure 2.46). The design

respects the basilica form, although it eliminates the columns separating the side aisles, so that everyone can participate in large events in one common space.[162] As with Cristo Obrero, the structure at San Pedro is a system: the tall upper nave walls are large beams that support the roof; they also suspend the side aisle ceilings which extend down to brace the perimeter walls (figure 2.47). All surfaces are inclined, as if they were folded out of a sheet of paper, with the seams providing rigidity at the joints. It required more effort to design and construct a structure of such inclined slabs.[163] Dieste had recently designed a small house using a folded slab technique, and he felt this was a system which wouldn't clash with the façade or the existing conditions of the adjacent neighborhood behind (figure 2.48 and 2.49).[164]

As with Cristo Obrero, there is no ornamentation on the walls or the joints between them, but unique to San Pedro is an overall effect of the heavenly above, with the entire roof floating over the walls (figure 2.50).[165] Small steel posts set back from view support the roof, as can be seen in section (figure 2.47). The expansive nave required extensive structural coordination to accomplish its 32-meter (105 foot) span by 23-meter (75 foot, 6 inch) cross-section. The 32-meter span was significant: the project foreman worried about the weight it supported, but Dieste assured him it was accounted for and that he would be there when the forms were stripped.[166] Even today the system is relevant enough to make the whiteboards of the Dieste y Montañez office for discussion of other projects (figure 2.51).

San Pedro's presbytery tower soars over the altar with its north-facing clerestory flooding it with light from above (figure 2.52). In section the scheme is clear, with the tower allowing light to descend onto its walls throughout the day (figure 2.53). This

daylighting feature is counterbalanced at the other end of the nave by a modern rose window taking its shape from the nave's geometry (figure 2.54). The rose window appears to defy gravity above the main entry. It is located at the back wall of the narthex, where the choir loft used to be, but is not visible from the plaza as a diaphanous white fabric is suspended behind the facade (figure 2.55).[167] The rose's angular rings are made with 5 centimeter (2 inch) thick concentric brick slabs, which with the diagonal crossbars are also structural. Dieste explained how the rose window had to maintain six-and-a-half tons of tension in each ring of its irregular hexagonal shape to preserve the integrity of the wall it interrupts—the same wall that supports the nave walls and roof.[168] To pre-tension this opening, the steel cross bars were first heated and then chilled to shorten their length, then the brick rings were installed.[169]

In the nave below, the side aisles are enclosed by a roof of reinforced brick slabs that have reinforced concrete beams integrated on the outside, and span to the lower exterior walls (figure 2.47).[170] The existing perimeter walls were lined on the inside with inclined 12 centimeter (4 3/4 inch) thick brick walls.[171] The higher walls of the principal nave are a mix of prestressed concrete and structurally active brick, with an 8 centimeter (3-1/8 inch) thick roof assembly of pre-stressed brick.[172] The roof vault formwork appears similar to that required for reinforced concrete, although with brick facing the form there is no surface imprint, making it more cost-effective to construct (figure 2.56).

Funding for the project came from the German Catholic foundation Caritas. The first donation of US $20,000 covered the nave construction, and a subsequent donation of US $7,000 paid for the presbytery tower—moderate costs Dieste recalled with pride considering the accomplishment.[173] The project was completed on this budget in 1971,

but there was no money left for the waterproofing coating on the roof, which presumably was paid for through separate fundraising efforts, as were any sumptuary items.[174]

Notes

[1] Mary Méndez. *Divinas Piedras: Arquitectura Y Catolicismo En Uruguay, 1950-1965* (Montevideo, Uruguay: Universidad De La República Uruguay, 2016), 83; *Iglesia de la Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, http://www.getty.edu/foundation/initiatives/current/keeping_it_modern/report_library/cristo_obrero_church.html, 24.

[2] Mary Méndez. *Divinas Piedras: Arquitectura Y Catolicismo En Uruguay, 1950-1965* (Montevideo, Uruguay: Universidad De La República Uruguay, 2016), 83.

[3] Ibid., 84.

[4] Ibid., 84-85.

[5] Ibid., 85.

[6] Ibid., 85.

[7] Ibid., 85.

[8] Ibid., 22, 85. Barbieri was still an archbishop when he came in 1946, but would become the first Uruguyan Cardinal in 1958, and the only one until Daniel Sturla was named Cardinal in 2015; *Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, http://www.getty.edu/foundation/initiatives/current/keeping_it_modern/report_library/cristo_obrero_church.html, 28.

[9] Mary Méndez. *Divinas Piedras: Arquitectura Y Catolicismo En Uruguay, 1950-1965* (Montevideo, Uruguay: Universidad De La República Uruguay, 2016), 85; Marcelo Sassón. Interview by Ciro Caraballo Perichi. August 25, 2016, Dieste y Montañez office, Atlántida, Uruguay, video, 46:17, https://www.youtube.com/watch?v=FJ6XKpBsNAc.

[10] *Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, http://www.getty.edu/foundation/initiatives/current/keeping_it_modern/report_library/cristo_obrero_church.html, 116.

[11] Mary Méndez. *Divinas Piedras: Arquitectura Y Catolicismo En Uruguay, 1950-1965* (Montevideo, Uruguay: Universidad De La República Uruguay, 2016), 88.

[12] Ibid., 88; *Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, http://www.getty.edu/foundation/initiatives/current/keeping_it_modern/report_library/cristo_obrero_church.html, 54.

[13] *Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, http://www.getty.edu/foundation/initiatives/current/keeping_it_modern/report_library/cristo_obrero_church.html, 58.

[14] Mary Méndez. *Divinas Piedras: Arquitectura Y Catolicismo En Uruguay, 1950-1965*. (Montevideo, Uruguay: Universidad De La República Uruguay, 2016), 88.

[15] Eladio Dieste. Interview by Jorge Nudelman, July 20, 1978. Entrevistas. *Edición especial, libro 2* (Montevideo: FADU-UdelaR, 2016), 200.

[16] Ibid.

[17] Juan Grompone, "Eladio Dieste, Maestro de la Ingeniería," accessed July 23, 2018, http://www.grompone.org/ineditos/ciencia_y_tecnologia, 18. Grompone is a Uruguayan engineer and writer, and this paper is identified as an unpublished work on his website, stemming from an effort at the University of the Republic to give Dieste an honorary doctorate.

[18] Eladio Dieste. Interview by Jorge Nudelman, July 20, 1978. Entrevistas. *Edición especial, libro 2* (Montevideo: FADU-UdelaR, 2016), 201.

[19] Remo Pedreschi. *Eladio Dieste: The Engineer's Contribution to Contemporary Architecture* (London: Thomas Telford, 2000), 67.

[20] Eladio Dieste. Interview by Jorge Nudelman, July 20, 1978. Entrevistas. *Edición especial, libro 2* (Montevideo: FADU-UdelaR, 2016), 201.

[21] Ibid.

[22] Martín de Palma, A.M. (2000). Eladio Dieste, "el arte de construir en ladrillo," in Tercer Congreso Nacional de Historia de la Construcción (641-649), Sevilla: Instituto Juan de Herrera, CEHOPU, Universidad de Sevilla, 642.

[23] Esteban Dieste: "Iglesia de Atlántida. Testimonio de su Desprotegida Existencia," in *El Patrimonio moderno en Iberoamérica: protección y coordinación internacional, 1er coloquio internacional,* (UNESCO Office Mexico, 2015), 41. https://unesdoc.unesco.org/ark:/48223/pf0000244102.

[24] *Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, http://www.getty.edu/foundation/initiatives/current/keeping_it_modern/report_library/cristo_obrero_church.html, 32.

[25] Mary Méndez. *Divinas Piedras: Arquitectura Y Catolicismo En Uruguay, 1950-1965* (Montevideo, Uruguay: Universidad De La República Uruguay, 2016), 29, 89.

[26] Ibid., 28-29.

[27] Ibid., 89.

[28] *Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, http://www.getty.edu/foundation/initiatives/current/keeping_it_modern/report_library/cristo_obrero_church.html, 32.

[29] Mary Méndez. *Divinas Piedras: Arquitectura Y Catolicismo En Uruguay, 1950-1965* (Montevideo, Uruguay: Universidad De La República Uruguay, 2016), 90, 93.

[30] Ibid., 93.

[31] Ibid., 90.

[32] Ibid., 93.

[33] Ibid., 93-4.

[34] Ibid., 94.

[35] Ibid., 94.

[36] *Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, http://www.getty.edu/foundation/initiatives/current/keeping_it_modern/report_library/cristo_obrero_church.html, 120.

[37] Ibid., 64.

[38] Mary Méndez. *Divinas Piedras: Arquitectura Y Catolicismo En Uruguay, 1950-1965* (Montevideo, Uruguay: Universidad De La República Uruguay, 2016), 116.

[39] *Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, http://www.getty.edu/foundation/initiatives/current/keeping_it_modern/report_library/cristo_obrero_church.html, 79.

[40] Ibid., 74.

[41] Ibid., 110.

[42] Ibid., 117; Mary Méndez. *Divinas Piedras: Arquitectura Y Catolicismo En Uruguay, 1950-1965* (Montevideo, Uruguay: Universidad De La República Uruguay, 2016), 108. The parish house cost 55,000 pesos to construct not counting the pilings that Dieste paid for personally, or the completion of the construction, which he also assumed responsibility for as it was left incomplete.

[43] Ibid., 117; Mónica Silva. Email to Jesse Elliott, February 14th, 2019. Mónica commented that she learned from interviews of the nuns need for more space becoming a key factor in the removal of the parish house designed by Dieste.

[44] Eladio Dieste, ed., Consejeria de Obras Públicas y Transportes Dirección General de Arquitectura y Vivienda. *Eladio Dieste: 1943-1996,* 4th ed. (Andalucía: Junta de Andalucía, 2001), 162.

[45] A plaque commemorating Eladio Dieste in the sidewalk in front of this house describes the collaboration of Dieste and Montañez with Serralta and Clémot in 1955.

[46] *Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, http://www.getty.edu/foundation/initiatives/current/keeping_it_modern/report_library/cristo_obrero_church.html, 2017, 116.

[47] Ibid., 49.

[48] Ibid., 197.

[49] Ibid., 198.

[50] *Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, http://www.getty.edu/foundation/initiatives/current/keeping_it_modern/report_library/cristo_obrero_church.html, 46.

[51] Eladio Dieste. Interview by Jorge Nudelman, July 20, 1978. Entrevistas. *Edición especial, libro 2* (Montevideo: FADU-UdelaR, 2016), 198.

[52] Ibid.

[53] Ibid.

[54] Ibid; Eladio Dieste. Interview by Damián Bayón. *The Changing Shape of Latin American Architecture: Conversations with Ten Leading Architects.* (Chichester: Wiley, 1979), 205.

[55] *Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, http://www.getty.edu/foundation/initiatives/current/keeping_it_modern/report_library/cristo_obrero_church.html, 48.

[56] Eladio Dieste. Interview by Damián Bayón. *The Changing Shape of Latin American Architecture: Conversations with Ten Leading Architects.* (Chichester: Wiley, 1979), 206.

[57] Mary Méndez. *Divinas Piedras: Arquitectura Y Catolicismo En Uruguay, 1950-1965*. (Montevideo, Uruguay: Universidad De La República Uruguay, 2016), 158.

[58] Ibid.

[59] Jorge Nudelman. "*Tres visitantes en París: los colaboradores uruguayos de Le Corbusier*" (Master's Thesis, Madrid: E.T.S. Arquitectura (UPM), 2013), http://oa.upm.es/19877/, 17.

[60] *Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, http://www.getty.edu/foundation/initiatives/current/keeping_it_modern/report_library/cristo_obrero_church.html, 190, 217.

[61] Jose Maria Cabeza Lainez, Juan Ramon Jimenez Verdejo, Benito Sanchez-Montanes Macias, and Jose Ignacio Perez Calero. "The Key-role of Eladio Dieste, Spain and the Americas in the Evolution from Brickwork to Architectural Form," *Journal of Asian Architecture and Building Engineering* 8, no. 2 (2009): 357; "'Corbusians' in Uruguay; a Contradictory Report," in *Latin American Modern Architectures: Ambiguous Territories*, eds. Del Real, Patricio, and Gyger, Helen. (New York: Routledge, 2013), 68. Jorge Nudelman describes how Le Corbusier may have been influenced by the novelty of Dieste's vaulting technique at Maisons Jaoul, where he asked the Catalan architect Domingo Escorsa Badía to assess the vaulting technique to be used.

[62] Almudena Arnaldos Montaner. "Antonio Bonet Castellana, Le Corbusier Y La Bóveda Catalana: Forma Y Orden," *Dearq*, no. 14 (2014): 124.

[63] *Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, http://www.getty.edu/foundation/initiatives/current/keeping_it_modern/report_library/cristo_obrero_church.html, 50.

[64] Eladio Dieste, "Some Reflections on Architecture and Construction." *Perspecta 27* (1992): 196; Graciela Silvestri, "Una Biografía Uruguaya," in *Escritos Sobre Arquitectura*, 119-160. (Montevideo, Uruguay: Irrupciones Grupo Editor, 2011), 135. Silvestri describes how Dieste used the hollow "bovedillas" in the vast majority of these vaults.

[65] José Maria de Lapuerta, "Casa Dieste, Montevideo" in *AV Monografías, Casa de Maestros* (Madrid: Arquitectura Viva, 2008), 108.

[66] Eladio Dieste, ed. Galaor Carbonell. *Eladio Dieste: La Estructura Ceramica.* (Bogota: ESCALA, 1987), 33-34.

[67] Francisco González De Canales, "Eladio and the Whale," *AA Files*, no. 75 (2017): 158.

[68] José Maria de Lapuerta, “Casa Dieste, Montevideo” in *AV Monografías, Casa de Maestros* (Madrid: Arquitectura Viva, 2008), 109.

[69] Mary Méndez. *Divinas Piedras: Arquitectura Y Catolicismo En Uruguay, 1950-1965*. (Montevideo, Uruguay: Universidad De La República Uruguay, 2016), 24.

[70] *Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, http://www.getty.edu/foundation/initiatives/current/keeping_it_modern/report_library/cristo_obrero_church.html, 36.

[71] Ibid; Eduardo Dieste, “Reflexiones de Eduardo Dieste sobre la vida de Eladio Dieste y su trayectoria” (ca. 2010), Microsoft Word File, 2.

[72] Eduardo Dieste, “Reflexiones de Eduardo Dieste sobre la vida de Eladio Dieste y su trayectoria” (ca. 2010), Microsoft Word File, 3.

[73] Ibid., 3, 9.

[74] Ibid., 39.

[75] Mary Méndez. *Divinas Piedras: Arquitectura Y Catolicismo En Uruguay, 1950-1965*. (Montevideo, Uruguay: Universidad De La República Uruguay, 2016), 21.

[76] Ibid., 23.

[77] Eladio Dieste and Graciela Silvestri, *Escritos Sobre Arquitectura*. (Montevideo, Uruguay: Irrupciones Grupo Editor, 2011), 14.

[78] Eladio Dieste. Interview by Jorge Nudelman, July 20, 1978. Entrevistas. *Edición especial, libro 2*. (Montevideo: FADU-UdelaR, 2016), 217.

[79] Eladio Dieste, "Some Reflections on Architecture and Construction." *Perspecta 27* (1992): 188.

[80] Eladio Dieste. Interview by Jorge Nudelman, July 20, 1978. Entrevistas. *Edición especial, libro 2*. (Montevideo: FADU-UdelaR, 2016), 213.

[81] Ibid., 214.

[82] Tullia Iori and Pier Luigi Nervi. *Pier Luigi Nervi*. (Milano: Motta Architettura, 2009), 42-44.

[83] Ibid., 21, 88.

[84] Eladio Dieste. Interview by Jorge Nudelman, July 20, 1978. Entrevistas. *Edición especial, libro 2*. (Montevideo: FADU-UdelaR, 2016), 214.

[85] Ibid., 213.

[86] Mary Méndez. *Divinas Piedras: Arquitectura Y Catolicismo En Uruguay, 1950-1965*. (Montevideo, Uruguay: Universidad De La República Uruguay, 2016), 94; *Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, http://www.getty.edu/foundation/initiatives/current/keeping_it_modern/report_library/cristo_obrero_church.html, 74, 79. Sasson worked for Campenon Benard Construction in France, specializing in Freyssinet concrete. In September 1957 Sasson joined Dieste y Montañez, and was shown the model for Cristo Obrero. It is Sasson who photographed the construction process extensively at Cristo Obrero.

[87] Mary Méndez. *Divinas Piedras: Arquitectura Y Catolicismo En Uruguay, 1950-1965*. (Montevideo, Uruguay: Universidad De La República Uruguay, 2016), 94. A different company performed the demolition and site clearing.

[88] *Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, http://www.getty.edu/foundation/initiatives/current/keeping_it_modern/report_library/cristo_obrero_church.html, 137.

[89] Ibid., 89.

[90] Mónica Silva-Contreras, "New experiences with reinforced tile for Eladio Dieste when building the Cristo Obrero Church." In *Building knowledge, constructing histories: proceedings of the sixth International Congress on Construction History (6ICCH), eds.* Wouters, Ine, Stephanie Van de Voorde, and Inge Bertels, 1203-1210. (Brussels, Belgium, 2018), 1205.

[91] *Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, http://www.getty.edu/foundation/initiatives/current/keeping_it_modern/report_library/cristo_obrero_church.html, 90; "Brick Shell Construction," *Progressive Architecture,* April 1962, 160.

[92] *Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, http://www.getty.edu/foundation/initiatives/current/keeping_it_modern/report_library/cristo_obrero_church.html, 167.

[93] Ibid., 90.

[94] "Brick Shell Construction," *Progressive Architecture,* April 1962, 160.

[95] Antonio J. Mas Guindal. and Josep Mª Adell. "Eladio Dieste Y La Cerámica Estructural En Uruguay." *Informes De La Construcción* 56, no. 496 (2005): 19; *Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, http://www.getty.edu/foundation/initiatives/current/keeping_it_modern/report_library/cristo_obrero_church.html, 93. The wall construction occurred between August and November 1958.

[96] Vittorio Giuseppe Vergalito Cirese, Interview by Ciro Caraballo Perichi. September 2014, Dieste y Monteñez Office, Montevideo, Uruguay, video, 17:15, https://youtu.be/SqWiZMLB6ak. Vergalito alludes to the inclination of the walls as a problem he and the other masons had to cope with.

[97] "Dieste Ex Machina, Mesa Redonda," Universidad de la Republica, Facultad de Arquitectura, Diseño y Urbanismo, filmed October 20, 2016, Montevideo, Uruguay, video, 1:05:40, https://vimeo.com/189780316.

[98] Ibid.

[99] Ibid.

[100] Juan Pablo Bonta. *Eladio Dieste*. (Buenos Aires: Facultad de Arquitectura y Urbanismo: Instituto de Arte Americano e Investigaciones, 1963), 36; "Brick Shell Construction," *Progressive Architecture*, April 1962, 162; Esteban Dieste also pointed out the way this onyx-filled joint functions to highlight the separation when we visited the church.

[101] "Dieste Ex Machina, Mesa Redonda," Universidad de la Republica, Facultad de Arquitectura, Diseño y Urbanismo, filmed October 20, 2016, Montevideo, Uruguay, video, 1:22:10, https://vimeo.com/189780316.

[102] *Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, http://www.getty.edu/foundation/initiatives/current/keeping_it_modern/report_library/cristo_obrero_church.html, 93.

[103] Miguel Angel Díaz and Miguel Castang. Interview by Ciro Caraballo Perichi. October 2016, Iglesia de Cristo Obrero, Atlántida, Uruguay, video, 12:20, https://www.youtube.com/watch?v=As3oCQlUXaM&list=PLa1wuwT-T1OgE8kY_Yg1c2DmL9x5qmvpQ&index=1.

[104] Eladio Dieste. Interview by Damián Bayón. *The Changing Shape of Latin American Architecture: Conversations with Ten Leading Architects.* (Chichester: Wiley, 1979), 198; Eladio Dieste, "Some Reflections on Architecture and Construction." *Perspecta 27* (1992): 203.

[105] Eladio Dieste, "Some Reflections on Architecture and Construction." *Perspecta 27* (1992): 188.

[106] Ibid.

[107] "Dieste Ex Machina, Mesa Redonda," Universidad de la Republica, Facultad de Arquitectura, Diseño y Urbanismo, filmed October 20, 2016, Montevideo, Uruguay, video, 31:05, https://vimeo.com/189780316.

[108] Ibid.

[109] Eladio Dieste, ed., Consejeria de Obras Públicas y Transportes Dirección General de Arquitectura y Vivienda. *Eladio Dieste: 1943-1996,* 4th ed. (Andalucía: Junta de Andalucía, 2001), 154-5.

[110] Marcelo Sassón. Interview by Ciro Caraballo Perichi. August 25, 2016, Dieste y Montañez office, Atlántida, Uruguay, video, 46:17, https://www.youtube.com/watch?v=FJ6XKpBsNAc.

[111] *Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, http://www.getty.edu/foundation/initiatives/current/keeping_it_modern/report_library/cristo_obrero_church.html, 93, 145; Eladio Dieste, "Some Reflections on Architecture and Construction." *Perspecta 27* (1992): 190.

[112] *Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, http://www.getty.edu/foundation/initiatives/current/keeping_it_modern/report_library/cristo_obrero_church.html, 145-146.

[113] Juan Pablo Bonta. *Eladio Dieste*. (Buenos Aires: Facultad de Arquitectura y Urbanismo: Instituto de Arte Americano e Investigaciones, 1963), 35.

[114] Ibid.

[115] *Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, http://www.getty.edu/foundation/initiatives/current/keeping_it_modern/report_library/cristo_obrero_church.html, 96, 101, 141.

[116] Ibid.

[117] Ibid., 102.

[118] Ibid., 101.

[119] Marcelo Sassón. Interview by Ciro Caraballo Perichi. August 25, 2016, Dieste y Montañez office, Atlántida, Uruguay, video, 46:17, https://www.youtube.com/watch?v=FJ6XKpBsNAc.

[120] Ibid.

[121] *Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, http://www.getty.edu/foundation/initiatives/current/keeping_it_modern/report_library/cristo_obrero_church.html, 96.

[122] Marcelo Sassón. Interview by Ciro Caraballo Perichi. August 25, 2016, Dieste y Montañez office, Atlántida, Uruguay, video, 46:17, https://www.youtube.com/watch?v=FJ6XKpBsNAc; Sasson's first task on this project is also cited in many additional sources. He began working for Dieste in Septemer of 1967, Marcelo Sasson. Interview by Hugo Ferreira Quirós. November, 2017, Uruguay, video, 1:00:58, https://www.youtube.com/watch?v=sMZOkRU8Lqs.

[123] Marcelo Sassón. Interview by Ciro Caraballo Perichi. August 25, 2016, Dieste y Montañez office, Atlántida, Uruguay, video, 46:17, https://www.youtube.com/watch?v=FJ6XKpBsNAc.

[124] Ibid; *Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, http://www.getty.edu/foundation/initiatives/current/keeping_it_modern/report_library/cristo_obrero_church.html, 64.

[125] Eladio Dieste, "Some Reflections on Architecture and Construction." *Perspecta 27* (1992): 196; *Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, http://www.getty.edu/foundation/initiatives/current/keeping_it_modern/report_library/cristo_obrero_church.html, 146.

[126] Ibid.

[127] *Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, 146, http://www.getty.edu/foundation/initiatives/current/keeping_it_modern/report_library/cristo_obrero_church.html.

[128] Marcelo Sassón. Interview by Ciro Caraballo Perichi. August 25, 2016, Dieste y Montañez office, Atlántida, Uruguay, video, 46:17, https://www.youtube.com/watch?v=FJ6XKpBsNAc.

[129] *Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, http://www.getty.edu/foundation/initiatives/current/keeping_it_modern/report_library/cristo_obrero_church.html, 101.

[130] "Dieste Ex Machina, Mesa Redonda," filmed October 20, 2016, Universidad de la Republica, Facultad de Arquitectura, Diseño y Urbanismo, Montevideo, Uruguay, video, 36:40, https://vimeo.com/189780316.

[131] Ibid.

[132] *Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, 52-53, http://www.getty.edu/foundation/initiatives/current/keeping_it_modern/report_library/cristo_obrero_church.html, 106.

[133] Ibid., 106.

[134] Ibid.

[135] Ibid.

[136] Ibid., 109.

[137] Ibid., 150-153.

[138] Eladio Dieste, ed., Consejeria de Obras Públicas y Transportes Dirección General de Arquitectura y Vivienda. *Eladio Dieste: 1943-1996,* 4th ed. (Andalucía: Junta de Andalucía, 2001), 159.

[139] *Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, 59, http://www.getty.edu/foundation/initiatives/current/keeping_it_modern/report_library/cristo_obrero_church.html.

[140] Mary Méndez. *Divinas Piedras: Arquitectura Y Catolicismo En Uruguay, 1950-1965*. (Montevideo, Uruguay: Universidad De La República Uruguay, 2016), 81.

[141] Ibid.

[142] "Iglesia Cristo Obrero: Gestiones ante UNESCO," Sociedad de Arquitectos del Uruguay, updated December 13, 2018, https://www.sau.org.uy/iglesia-cristo-obrero-gestiones-ante-unesco/.

[143] "Incendio del Templo Parroquial," Museo Casa de Rivera, Durazno, Uruguay. Seen on August 21, 2018; Eladio Dieste, ed., Consejeria de Obras Públicas y Transportes Dirección General de Arquitectura y Vivienda. *Eladio Dieste: 1943-1996,* 4th ed. (Andalucía: Junta de Andalucía, 2001), 157.

[144] Raúl Romero. "Memorias de Reconstrucción de la Iglesia de San Pedro" (2018), Microsoft Word file, 3; "Incendio del Templo Parroquial," Museo Casa de Rivera, Durazno, Uruguay. Seen on August 21, 2018. Many historic records were saved from the fire as well as many pews, dragged out to the plaza before the roof collapsed.

[145] "Un Suceso que Pudo Ser Tragedia," Durazno newspaper, p.8, (Durazno, Uruguay), June 2, 1967. It was widely believed that adolescents smoking cigarettes in the attic caused the fire as discussed in "Los Hechos," published on May 26th.

[146] Eladio Dieste. "Eladio Dieste: en la parte que no se ve," interview by Lucio Muniz, Montevideo, 1992, *Uruguayos de memoria* (Montevideo: Ed. Fin de Siglo, 1998), 34.

[147] "Con el Parroco PBRO. Pedro R. Silva," Durazno newspaper, p.8, (Durazno, Uruguay), June 2, 1967.

[148] Eladio Dieste. "Eladio Dieste: en la parte que no se ve," interview by Lucio Muniz, Montevideo, 1992, *Uruguayos de memoria* (Montevideo: Ed. Fin de Siglo, 1998), 35.

[149] Raúl Romero. "Memorias de Reconstrucción de la Iglesia de San Pedro" (2018), Microsoft Word file, 3.

[150] Eladio Dieste, ed., Consejeria de Obras Públicas y Transportes Dirección General de Arquitectura y Vivienda. *Eladio Dieste: 1943-1996,* 4th ed. (Andalucía: Junta de Andalucía, 2001), 173-174.

[151] Wall text, Museo Casa de Rivera, Durazno, Uruguay. Seen on August 21, 2018; Raúl Romero. "Memorias de Reconstrucción de la Iglesia de San Pedro" (2018), Microsoft Word file, 3.

[152] Image text, "Frente de la Iglesia de San Pedro como lució entre 1898 a 1920," Museo Casa de Rivera, Durazno, Uruguay. Seen on August 21, 2018.

[153] Raúl Romero. "Memorias de Reconstrucción de la Iglesia de San Pedro" (2018), Microsoft Word file, 3; Eduardo Dieste, "Reflexiones de Eduardo Dieste sobre la vida de Eladio Dieste y su trayectoria" (ca. 2010), Microsoft Word File, 9. Castro and Esteban Dieste are the only Architects to have worked at Dieste y Montañez. Castro worked there for 33 years and Romero for 18.

[154] Raúl Romero. "Memorias de Reconstrucción de la Iglesia de San Pedro" (2018), Microsoft Word file, 5.

[155] Ibid., 4.

[156] Ibid.

[157] "Iglesia San Juan Bosco," Architecture department, University of the Republic, Montevideo, accessed March 5, 2019, http://www.fadu.edu.uy/garcia-pardo/obras/iglesia-san-juan-bosco/; Jorge Nudelman. "*Tres visitantes en París: los colaboradores uruguayos de Le Corbusier*." (Master's Thesis, Madrid: E.T.S. Arquitectura (UPM), 2013), http://oa.upm.es/19877/, 319.

[158] Ibid.

[159] Dieste, Eladio, ed., Consejeria de Obras Públicas y Transportes Dirección General de Arquitectura y Vivienda. *Eladio Dieste: 1943-1996,* 4th ed. (Andalucía: Junta de Andalucía, 2001), 170, 305.

[160] Ibid., 170.

[161] Ibid., 175.

[162] Ibid., 174.

[163] Ibid., 176

[164] Ibid., 174.

[165] Martín de Palma, A.M. (2000). Eladio Dieste, "el arte de construir en ladrillo," in Tercer Congreso Nacional de Historia de la Construcción (641-649), Sevilla: Instituto Juan de Herrera, CEHOPU, Universidad de Sevilla, 647.

[166] Eladio Dieste. "Eladio Dieste: en la parte que no se ve," interview by Lucio Muniz, Montevideo, 1992, *Uruguayos de memoria* (Montevideo: Ed. Fin de Siglo, 1998), 35-6. The foreman did not ultimately bother waiting for Dieste to strip the forms.

[167] Eladio Dieste, ed., Consejeria de Obras Públicas y Transportes Dirección General de Arquitectura y Vivienda. *Eladio Dieste: 1943-1996,* 4th ed. (Andalucía: Junta de Andalucía, 2001), 182.

[168] Ibid., 184.

[169] Antonio J., Mas Guindal. and Josep Mª Adell. "Eladio Dieste Y La Cerámica Estructural En Uruguay." *Informes De La Construcción* 56, no. 496 (2005): 22.

[170] Eladio Dieste, ed., Consejeria de Obras Públicas y Transportes Dirección General de Arquitectura y Vivienda. *Eladio Dieste: 1943-1996,* 4th ed. (Andalucía: Junta de Andalucía, 2001), 176.

[171] Ibid., 176.

[172] Ibid.

[173] Ibid., 175.

[174] Ibid.

CHAPTER III

A DEVOUT PROGRAMMER OF SPACE

Dieste found ample opportunity for architectural space programming at both Cristo Obrero and San Pedro. Consulted as an expert in foundations at the beginning of Cristo Obrero, he designed a detailed modernist program for it. At San Pedro, where he was brought in to repair the damaged roof structure, he proposed replacing all but the narthex with a modernist nave and program. Asked if he viewed himself as an architect, Dieste said he lacked the academic training, but that for a "relatively simple program of a church,' whose functions he knew well, he could design with his imagination.[1] By combining his comprehension of Catholicism and interest in architectural space, he developed bold programs, far exceeding the requests of donors and patrons.

Programming the First Church

Cristo Obrero was the first project where Dieste took on the role of architect in addition to that of engineer and contractor.[2] His program for the church made its three primary components—nave, baptistry, and campanile—distinct, perhaps hearkening back to early eleventh and twelfth century Christian churches with this separation.[3] The campanile at Cristo Obrero is set back seven meters from the façade and separated laterally, but its brick color and texture render it a component of the church.[4] Placement was determined by its conception as the vertical element of a plaza that never came to be, where it would have anchored a much-needed public space.[5]

Cristo Obrero's nave, was designed to seat 300 with enough space to accommodate 500 for special occasions.[6] It was conceived as one grand volume with the

building's structure giving it an "essential unity whose proportions were studied so the faithful would be close to the altar, in order that their participation in the Sacred Mysteries could be alive and vivid."[7] The pews are close to the altar in the middle of the nave, with the sacristy, ante-sacristy, and chapel toward the back (figure 2.17). These ancillary spaces have open ceilings behind the half-height presbytery wall, so they are connected through acoustics and daylight with the greater volume (figure 3.1).

The church's entry forces an immediate turn, as the standard entry door opens to the west side of the nave (figure 2.17). As Dieste endeavored to resolve the entry's design, he was not satisfied with much of the advice he received. He worked through it on his own and asked Serralta to review the design; Serralta's approval comforted him greatly.[8] The spatial experience is three-dimensional, as Dieste aimed to produce a "temporal transition," to avoid the flatness of buildings that irked him.[9] He felt the full transition was not entirely accomplished, due in part to a missing lateral chapel that would have been on the right as one entered (at the bottom left corner in plan); this was cut for cost reasons (figure 2.17). However, the void of the would-be chapel does provide the broadest view of the interior from a diagonal stance—a vantage point Dieste recommended.[10] Now the alcove features a plaster sculpture of Jesus, commissioned by Giudice in 1949 for the original chapel.[11] With the exception of this missing chapel, the plan shows how tightly the program elements are nested together, with the confessionals tucked under the choir loft, behind the stacked stairs going both up and down.

Dieste's central concept was for the congregation to feel they had a participatory role in the liturgy. He thus connected the congregants spatially to the altar, with the arms of the presbytery opening up in a welcoming gesture (figure 3.2).[12] To minimize

hierarchy between the clergy and laity, both groups are on nearly the same level.[13] The Church regulation at the time called for the presbytery to be raised 80 centimeters (32 inches), which is about where it was drawn in section, four steps up (figure 2.17).[14] During construction the scheme was changed to include only three steps, and the altar was placed toward the back of the top step, as seen in a photograph of the mocked up altar and cross before completion (figure 3.3). The Second Vatican Council, running from 1962 to December 1965, recommended the altar be moved down and further forward; Dieste's altar was thus lowered to the middle step, but it was difficult for the priest to maneuver around the back side of it there.[15] In 2005, Dieste's son Esteban, implemented a modification to enlarge the second step platform; this allowed the altar to be moved closer to the parishioners per the Second Vatican Council (figure 3.2).[16] In spite of this modification, Dieste did anticipate the Second Vatican Council's change to the altar's orientation and placed it so the priest could face the parishioners.[17] Initially he included a communion rail in the drawings, but this was eliminated as it symbolized a separation from the laity in opposition to the concept of a participatory service (figure 2.17).[18] Its elimination forced the communion procession up around the altar, creating unity with the clergy during the height of the mass.[19]

Intending an inclusive experience for the faithful, Dieste also used the architecture to dictate much about the role—and even the experience of—the priest. He "attempted to make the sacristy itself as little 'sacristy-like' as possible," by connecting it to the larger volume of the nave.[20] The sacristy door was placed to ensure a gradual approach toward the altar, allowing for a process of assimilation, rather than the familiar shock of the priest's "jack-in-the-box" appearance through a side door of the presbytery (figure

2.17).[21] This extended route allows the priest to gather himself and experience the architecture on his way to the altar, and it gives the congregants a moment to prepare.[22] Dieste "endeavored to make the architecture impel, or better, to show and make natural the corresponding behavior."[23]

For daylighting at the presbytery, Dieste included a cluster of circular openings over the altar (figure 3.3). He also arranged clusters of rectangular windows high in the undulating walls that are oriented north to shine light toward the altar throughout the day (figures 3.1 and 2.18).[24] Dieste observed the effect of these, positioning them relative to the altar; he asked for adjustments during the wall construction, until a system was developed to locate them in subsequent bays.[25]

With the façade free to be designed as he saw fit, Dieste broke it into two zones: a higher section focused on the play of light and pattern, with alternating slabs terminating in onyx-glazed openings; and a lower section to welcome the faithful out of the weather and funnel them into the church (figure 1.1).[26] Facing north, this orientation (for the southern hemisphere) provides shade from the high summer sun, and allows the lower angle winter sun to warm the area. This protected alcove offers space to gather before entering the church, and the alternating upper slabs above light the choir through their onyx glazings (figure 3.4). This also creates a daylighting feature to animate the back of the nave in correspondence to the sun's movement. The upper band of slabs are operable and provide an important source of ventilation, as the only other operable windows are a small square in the sacristy and ante-sacristy windows (figures 3.5).[27]

In terms of process, Dieste observed the baptism ritual no longer held meaning for Uruguayan converts, as it lacked spontaneity and basis in local tradition.[28] He believed

rituals like this should be "alive, integrating, enriching, and spontaneous," and designed a unique architectonic journey to suit.[29] As such, a separate, subterranean, baptismal sequence provides an opportunity for participants to be "re-baptized" as members of an intimate group.[30] The journey begins at the baptismal chamber door, which is separated from the front of the church, opposite the campanile (figures 1.1 and 2.17). It proceeds down to the subterranean crypt, where the baptism is performed. Afterward, the procession enters the church through dedicated stairs into the nave, arising in front of the confessionals, producing a new Christian re-born according to the ancient rite.[31] This symbolic act reproduces materially the fall to the infernal underworld and ascension back into the realm of salvation.[32] Dieste said he was driven to "architecturally express the content of the magnificent ritual in effect."[33] In so doing he also anticipated the official change toward a more meaningful, modernized baptism ritual, as his design came well before the Second Vatican Council re-emphasized its importance.[34]

In spite of all the programming and architectural innovation, Cristo Obrero faced disinterest and even abandonment for years after its completion, with the colored glass windows shattered, the chorus railing ruined, and the custom onyx doors broken.[35] Many of these damages were to specialty items with personal stories behind them, such as the colored glass Dieste and an artisan supplier carefully selected.[36] Dieste held a conference during this time of distress ten years after the church's completion. He recalled with disgust how he had once returned to find the building's doors wide open and a cow in the nave, complete with patties as "signs" of its routine passage.[37] He shared why he designed and built the church: "I didn't put forth the effort so tourists would come visit it, neither for it to be published in foreign magazines; I built a temple for other people of

faith like me."[38] Clearly, Dieste saw his mission extending beyond a normal professional obligation to a personal and religious one.

For the primary donors and champions of the church, Giudice and Urisote, it was also personal. They did not have children, and this was an important way for them to pass a valuable gift onto future generations.[39] Their remains rest inside a niche created for them opposite the altar to the Lady of Lourdes (figure 3.6).[40]

A New Program for an Old Church

The purity of an idea about a single connected volume, combined with the power of a visual concept, guided Dieste's design of San Pedro.[41] The single connected volume for the new church is reminiscent of a key design concept at Cristo Obrero. Here he relegated the cluster of existing rooms connected to the sacristy to other areas in an adjacent parish house (figure 2.39). After visiting Europe for the first time in 1960, Dieste was certain he did not want the church to be a place only for religious specialists, as he witnessed a disconnect with parishioners at some of the grand cathedrals.[42] The guiding visual concept for San Pedro was a perspectival effect established by the inclination of all the walls, adding both tension through a focal point and serenity through a cohesive organizational motif (figure 3.7).[43] Dieste said this perspectival effect produces a sensation of serene majesty, and that many visitors have reported such a response.[44]

With this vision, Dieste convinced the priest, Raúl Silva, to completely reconstruct the nave with a modernized program, rather than just building a new roof vault. After the recognition he received for Cristo Obrero, his own brick house in Punta

Ballena, and other industrial projects, Dieste was widely recognized as an important architect. A 1965 survey, by architecture students at the University of the Republic, asked about the most influential Uruguayan architects, and Dieste appeared at the top of the published results, ahead of such important figures as Justino Serralta, Luis García Pardo, and Mario Paysée Reyes.[45] He was clearly accepted as an important architect in both professional and academic circles. If Silva was moved by what he saw at Cristo Obrero, he must have anticipated Dieste's architectural vision, along with his engineering and construction prowess.

The scheme Dieste used at San Pedro is the same in principle as the one Luis García Pardo used at San Juan Bosco, Colón, in Montevideo (figure 2.44).[46] The nave seamlessly unites the presbytery tower and is open to its column-free side aisles, allowing the primary source of light to descend from above the altar. Dieste's floating roof and the rose window are additional maneuvers in both structure and light which enhance the spatial effects inside San Pedro (figure 2.54). The great span of the nave was required to eliminate the columns at the side aisles, and through this Dieste effectively turned the classical basilica plan into a seamless free plan.[47] The plan for San Pedro shows pews under the taller principal nave, reserving the side aisles for other events and informal gatherings (figure 2.46). However, the pews (also designed by Dieste) are mobile and are now stationed in the side aisles too (figure 2.50).[48] Much had changed since Cristo Obrero, and this post-conciliar presbytery was built as a single step platform, free of barriers to circulation around its altar located on a pedestal (figure 2.52).

Notes

[1] Eladio Dieste. Interview by Jorge Nudelman, July, 1978. *Entrevistas. Edición especial, libro 2*. (Montevideo: FADU-UdelaR, 2016), 215.

[2] *Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, http://www.getty.edu/foundation/initiatives/current/keeping_it_modern/report_library/cristo_obrero_church.html, 69.

[3] Ibid., 32.

[4] Mary Méndez. *Divinas Piedras: Arquitectura Y Catolicismo En Uruguay, 1950-1965*. (Montevideo, Uruguay: Universidad De La República Uruguay, 2016), 107; Juan Pablo Bonta. *Eladio Dieste*. (Buenos Aires: Facultad de Arquitectura y Urbanismo: Instituto de Arte Americano e Investigaciones, 1963), 35-6.

[5] Mary Méndez. *Divinas Piedras: Arquitectura Y Catolicismo En Uruguay, 1950-1965*. (Montevideo, Uruguay: Universidad De La República Uruguay, 2016), 107.

[6] "Church at Atlantida, Uruguay." *Architectural Review*, September 1961, 173.

[7] *Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, http://www.getty.edu/foundation/initiatives/current/keeping_it_modern/report_library/cristo_obrero_church.html, 135.

[8] Eladio Dieste. Interview by Jorge Nudelman, July, 1978. *Entrevistas. Edición especial, libro 2*. (Montevideo: FADU-UdelaR, 2016), 202.

[9] Dieste, Eladio, ed., Consejeria de Obras Públicas y Transportes Dirección General de Arquitectura y Vivienda. *Eladio Dieste: 1943-1996*, 4th ed. (Andalucía: Junta de Andalucía, 2001), 157; Eladio Dieste, "Some Reflections on Architecture and Construction." *Perspecta 27* (1992): 188.

[10] Eladio Dieste, ed., Consejeria de Obras Públicas y Transportes Dirección General de Arquitectura y Vivienda. *Eladio Dieste: 1943-1996*, 4th ed. (Andalucía: Junta de Andalucía, 2001), 157.

[11] *Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, http://www.getty.edu/foundation/initiatives/current/keeping_it_modern/report_library/cristo_obrero_church.html, 174-177. Pablo Serrano created this sculpture.

[12] Eladio Dieste, ed., Consejeria de Obras Públicas y Transportes Dirección General de Arquitectura y Vivienda. *Eladio Dieste: 1943-1996*, 4th ed. (Andalucía: Junta de Andalucía, 2001), 153.

[13] Stanford Anderson, and Eladio Dieste. *Eladio Dieste: Innovation in Structural Art*, 1st ed. (New York: Princeton Architectural Press, 2004), 42.

[14] Mary Méndez. *Divinas Piedras: Arquitectura Y Catolicismo En Uruguay, 1950-1965*. (Montevideo, Uruguay: Universidad De La República Uruguay, 2016), 100.

[15] John W. O'Malley. *What Happened at Vatican II*. (Cambridge, Mass.: Belknap Press of Harvard University Press, 2008), 317-319; Esteban Dieste, email to Jesse Elliott, March 11, 2019.

[16] Esteban Dieste, email to Jesse Elliott, March 11, 2019. Esteban is an architect and he worked at Dieste y Montañez for many years.

[17] *Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, http://www.getty.edu/foundation/initiatives/current/keeping_it_modern/report_library/cristo_obrero_church.html, 178.

[18] Eladio Dieste, ed., Consejeria de Obras Públicas y Transportes Dirección General de Arquitectura y Vivienda. *Eladio Dieste: 1943-1996,* 4th ed. (Andalucía: Junta de Andalucía, 2001), 154-5.

[19] Ibid.

[20] Ibid., 159.

[21] Ibid.

[22] Ibid., 160.

[23] Ibid.

[24] Marcelo Sassón. Interview by Ciro Caraballo Perichi. August 25, 2016, Dieste y Montañez office, Atlántida, Uruguay, video, 46:17, https://www.youtube.com/watch?v=FJ6XKpBsNAc.

[25] Ibid.

[26] Martín de Palma, A.M. (2000). Eladio Dieste, "el arte de construir en ladrillo," En Tercer Congreso Nacional de Historia de la Construcción (641-649), Sevilla: Instituto Juan de Herrera, CEHOPU, Universidad de Sevilla, 648.

[27] Mary Méndez. *Divinas Piedras: Arquitectura Y Catolicismo En Uruguay, 1950-1965*. (Montevideo, Uruguay: Universidad De La República Uruguay, 2016), 107.

[28] Eladio Dieste, ed., Consejeria de Obras Públicas y Transportes Dirección General de Arquitectura y Vivienda. *Eladio Dieste: 1943-1996,* 4th ed. (Andalucía: Junta de Andalucía, 2001), 158.

[29] Ibid.

[30] Eladio Dieste, ed. Galaor Carbonell. *Eladio Dieste: La Estructura Ceramica.* (Bogota: ESCALA, 1987), 120-124.

[31] Eladio Dieste, ed., Consejeria de Obras Públicas y Transportes Dirección General de Arquitectura y Vivienda. *Eladio Dieste: 1943-1996,* 4th ed. (Andalucía: Junta de Andalucía, 2001), 158.

[32] Mary Méndez. *Divinas Piedras: Arquitectura Y Catolicismo En Uruguay, 1950-1965*. (Montevideo, Uruguay: Universidad De La República Uruguay, 2016), 104.

[33] Eladio Dieste, ed., Consejeria de Obras Públicas y Transportes Dirección General de Arquitectura y Vivienda. *Eladio Dieste: 1943-1996,* 4th ed. (Andalucía: Junta de Andalucía, 2001), 158.

[34] Remo Pedreschi. Eladio Dieste: The Engineer's Contribution to Contemporary Architecture (London: Thomas Telford, 2000), 72; John W. O'Malley. *What Happened at Vatican II*. (Cambridge, Mass.: Belknap Press of Harvard University Press, 2008), 295.

[35] Esteban Dieste: "Iglesia de Atlántida. Testimonio de su Desprotegida Existencia," in *El Patrimonio moderno en Iberoamérica: protección y coordinación internacional, 1er coloquio internacional,* (UNESCO Office Mexico, 2015), https://unesdoc.unesco.org/ark:/48223/pf0000244102, 43-47.

[36] Ibid., 5. Dieste spent about a month refining selections and testing these individual colors in situ.

[37] Ibid., 6.

[38] Ibid., 5-6.

[39] Marcelo Sassón. Interview by Ciro Caraballo Perichi. August 25, 2016, Dieste y Montañez office, Atlántida, Uruguay, video, 46:17, https://www.youtube.com/watch?v=FJ6XKpBsNAc.

[40] Mary Méndez. *Divinas Piedras: Arquitectura Y Catolicismo En Uruguay, 1950-1965*. (Montevideo, Uruguay: Universidad De La República Uruguay, 2016), 107.

[41] Eladio Dieste, ed., Consejeria de Obras Públicas y Transportes Dirección General de Arquitectura y Vivienda. *Eladio Dieste: 1943-1996,* 4th ed. (Andalucía: Junta de Andalucía, 2001), 174.

[42] Eladio Dieste. Interview by Jorge Nudelman, July 20, 1978. Entrevistas. *Edición especial, libro 2*. Mariano Arana, Lorenzo (Montevideo: FADU-UdelaR, 2016), 206.

[43] Eladio Dieste, ed., Consejeria de Obras Públicas y Transportes Dirección General de Arquitectura y Vivienda. *Eladio Dieste: 1943-1996,* 4th ed. (Andalucía: Junta de Andalucía, 2001), 180.

[44] Ibid.

[45] Jorge Nudelman. "*Tres visitantes en París: los colaboradores uruguayos de Le Corbusier*." (Master's Thesis, Madrid: E.T.S. Arquitectura (UPM), 2013), http://oa.upm.es/19877/, 325-6.

[46] Ibid., 321.

[47] Stanford Anderson, and Dieste, Eladio. *Eladio Dieste : Innovation in Structural Art*. 1st ed. (New York: Princeton Architectural Press, 2004), 73.

[48] *Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, http://www.getty.edu/foundation/initiatives/current/keeping_it_modern/report_library/cristo_obrero_church.html, 181; Mary Méndez. *Divinas Piedras: Arquitectura Y Catolicismo En Uruguay, 1950-1965*. (Montevideo, Uruguay: Universidad De La República Uruguay, 2016), 178. Dieste also designed the pews for Cristo Obrero that were cut from the budget.

CHAPTER IV

DIESTE'S INSISTENCE ON ART

Dieste's architecture has attracted the gaze of many. When the architectural photographer Julius Shulman visited Uruguay in 1967, Cristo Obrero was the only building he asked to photograph, and the architectural historian Stanford Anderson claimed San Pedro as "one of the great works of architecture of the late twentieth century."[1] The construction drawings of Cristo Obrero's walls and eave beam were featured on the inside cover of the Museum of Modern Art's 2015 catalog for the exhibit, *Latin America in Construction: Architecture 1955-1980* (figure 4.1).[2] Nonetheless, Dieste receives little attention for his interest and belief in art, even though art was as important to him as engineering. In 1951, he wrote that, "to develop [artistically], we have to speak well, first clearly, precisely, and plainly; later will come from this the poetry, shown by the unfathomable content of the word."[3] Dieste followed such a trajectory, with mastery of construction and engineering as a foundation for poetic architecture—using bricks in lieu of words.[4]

Dieste found most modern architecture unsatisfactory, with "skeletal" masses that were missing something.[5] There were exceptions, such as the projects of Uruguayan architect Julio Vilamajó (1894-1948), which he admired.[6] Working as an engineer, Dieste ultimately linked himself to architecture, and said his preoccupation with form was instinctive rather than based on training in either field.[7] Even in his early engineering work, Dieste's instinct for form would agitate him if a project was not taking a reassuring or soothing shape.[8] In this way he used form to help determine when projects were ready for engineering calculations.[9] "Structural artist" is a befitting descriptor for Dieste, who

like many before him (e.g., Gustave Eiffel and Robert Malliart) owned their own construction companies and created architecture through an integrated practice.[10]

However, Dieste was also specifically and deeply interested in the arts. In Montevideo, he was engaged with a circle of artists and writers including Esther de Cáceres, his uncles Rafael and Eduardo Dieste, Joaquín Torres-García, and the sculptor Eduardo Yepes.[11] Torres-García returned to Montevideo in 1934, after working in Europe for 43 years, asking what the future of South American art should be, and setting up a constructive art association and workshop that became important centers of the local art world.[12] Dieste shared many of Torres-Garcia's convictions about art and life in Uruguay, especially that society should seek new, modern paths forward without letting the traditions of developed nations dominate their work.[13] They were also in agreement that the scientific basis of modern architecture was proving to be inhumane.[14] While Dieste appreciated the art of Torres-García—unlike colonial art which struck him as cartoonish—he did not agree with his advocacy for murals or the integration of plastic arts with architecture.[15] Dieste found Torres-García's concept of architecture too decorative, saying ideas from painting cannot be simply extended to architecture.[16]

Dieste could however bring himself to complement architecture with sculpture. At Cristo Obrero and San Pedro, he commissioned highly artistic crucifixes, in accord with Torres-Garcia's sentiment that sculpture also be featured with architecture.[17] Furthermore, while more integrated and less decorative, Dieste consciously created artistic spaces through combinations of colors, textures, and sculptural shapes.[18] Dieste said Torres-García appreciated Romanesque and Mediterranean architecture first and that all else was barbarous for him, but Dieste was too much a modernist to follow these

traditions outright.[19] Torres-García related a lot to Dieste about Antoni Gaudí, with whom he had worked.[20] Dieste respected Gaudí's work, but categorized him as a great artist with bad taste.[21] As he saw more of Gaudi's architecture, his admiration grew—not as an example to follow, but as a genius of the expressive arts; Dieste called him an "extraordinary sculptor."[22]

Torres-García's philosophy bolstered Dieste's belief in place, the main topic of Dieste's epilogue in *Testamento Artistico*, commemorating Torres-García's life and work twenty-five years after his death in 1949.[23] Dieste and Torres-García agreed the art of the Americas was a powerful tradition, distinct form the European, and that modern architecture deserved an improved sensibility from its cold technocratic trends.[24] For Dieste, architecture was perhaps the greatest art because it is unavoidable; he compared it to music and poetry, which not everyone can create, but everyone needs.[25] Here too, his ideas coincided with Torres-García's, who believed that collective art should be popular rather than exclusive. For Dieste, architecture was a natural recourse to this universalist instinct.[26]

In his own brick house, built between 1967 to 1968 for his large family, Dieste included only limited space for art.[27] His collection consisted of a painting by Joaquín Torres-García and two sculptures by Eduardo Yepes, as well as two works by one of his sons, and a xylograph salvaged by a Franciscan monk.[28] However, the spaces were created with built-ins, connections to the outdoors, and an integration of life with the art of living as he saw it.[29] For Dieste, form was the final criterion of completeness and coherency; for him the standard posture of the structural engineer disinterested in formal

aesthetics was a mistake.[30] He found the joining of words and sound into poetry a good example of this relationship, with their unity ensuring coherency.[31]

The Art of Design at Cristo Obrero

At a glance, it is easy to assume Cristo Obrero is formally spontaneous, with architectural and spatial experience as the primary inspiration, akin to Le Corbusier's Ronchamp (figure 2.13). While this is not the case, there are other elements of Ronchamp that Dieste included (likely inadvertently) as more direct references: the diaphanous joint between the end and side walls; the tapered chapel of the Lady of Lourdes; and the colored window gangs high in the undulating side walls.[32] Dieste said Le Corbusier and the greater modern movement did not much affect him, but that his arguments with Bonet over Casa Berlingieri, and his discussions with Serralta and Clémot had a significant influence.[33] Dieste knew about Ronchamp from his frequent interactions with Serralta and Clémot, from Sasson who visited the construction site frequently between 1952 and 1954, and from his own library (which included a copy of Jean Petit's 1957 *Le Corbusier).*[34] Still, he didn't recall learning about Ronchamp specifically until later in his career, and he all but dismissed it—along with most modern architecture—saying it produced a "certain dissatisfaction."[35] However, Giudice said that in the winter of 1955 Dieste dedicated a significant amount of time to researching the most notable modern churches of Europe by the most famous architects, and Ronchamp was surely high on the list.[36] Dieste's son, Esteban, surmises that because Ronchamp didn't speak to him with an integrated structural concept, it was probably not important enough for him to be memorable.[37] Nonetheless, his collaborators were a certain source of Corbusian ideas,

and some have noted how both Cristo Obrero and Ronchamp attempt to connect parishioners through a mystical experience with their faith.[38]

Eero Saarinen's MIT Chapel was a more direct precedent for Dieste (though he didn't discuss it), along with Saarinen's Kresge Auditorium—the first large, architecturally sophisticated shell structure in the United States, first published in 1953.[39] The 130-seat MIT chapel possesses many features common to Cristo Obrero: a structural brick form created through its undulating interior walls and structural brick arched exterior walls, complemented by multiple daylighting effects, a central sculpture, and an under-story passage (figure 4.2).[40] Saarinen said, "it seemed right to use a traditional material, such as brick for the chapel. . . but we felt that brick should be used with the same principles of integrity to material as concrete or steel."[41] This aligns well with Dieste's interest in material characteristics, as does Saarinen's concept for the spatial experience of the chapel: "I think we managed to make a place where an individual can contemplate things larger than himself."[42]

There are numerous other projects Dieste could have been inspired by, yet he does not discuss specific precedents for Cristo Obrero. He attempted to include Serralta and Clémot as collaborators in the project, but the lack of funding would not allow it; however, Serralta was consulted as he resolved the façade, as were the architects Luis Basil and Héctor Iglesias when he worked out the presbytery.[43] Serralta was well versed in Corbusian ideas, having worked on the first plaster model for Ronchamp, as well as Modular II designs and other projects.[44] Modular dimensions do appear in Cristo Obrero: the roof vaults are 1.4 meters (4 feet, 7 inches) tall at the peaks; the presbytery base is 53 centimeters (21 inches) tall, and the baptistry vault uses 2.26 meters (7 feet, 5 inches) as

its radius (figures 1.4 and 2.14).[45] Dieste could accept the Modular measurement system as it related directly to human scale and therefore human experience.[46] He brought a sizeable school project to the team—Clémot, Dieste, Montañez, and Serralta—which was designed in 1958, and included windows reminiscent of the south wall of Ronchamp (figures 4.3 and 2.13).[47] He designed a similar window arrangement in the undulating walls at Cristo Obrero (figure 4.4).[48] There was not one official system of proportions used throughout Cristo Obrero (Modulor or otherwise), and Dieste used golden rectangles and squares to design this composition.[49]

The effect of these colored windows is focused on the presbytery, where Dieste said intuition guided him in making the church one volume inside, with a "spiritual density" presiding over it.[50] He found this spatial unity, and especially the finish grades of the presbytery, challenging to achieve—and consultants did not help him resolve these matters as he had hoped.[51] His goal was for the spaces to penetrate each other, and he ultimately felt this was successful architecturally because the grade changes are not too noticeable.[52] Dieste believed one of the most important things about architecture is that it appear completely natural.[53] He avoided the application of ornamental details, making room only for integrated artistic elements, with daylighting playing a primary role.[54] The skylight, centered above the altar, focuses attention on the hierarchy which the crucifix represents over the mass; he kept a small photo of it next to his desk (figures 3.3, 4.4, and 4.5). The openings were created by cutting ceramic planting pots, then glazing them with onyx slabs. This is the same solution used for the skylights in the ceiling of the subterranean baptistry walkway (figures 4.6 and 2.17). In 1957, instead of this simple skylight scheme, drawings showed a sizeable glass dome over the presbytery, but this

was cut in the 1958 drawing (figures 4.7 and 2.33).[55] His concept below was for the solid rock of an altar to be polished only on top, with daylight animating it from above while emphasizing the large crucifix and its contrast with the dull brick of the rear wall (figures 4.8 and 3.3).[56]

The economy of the final skylight solution with ceramic pots resonated with Dieste's drive for economical solutions.[57] A term Dieste coined for this variety of appropriate technology is "cosmic economy." This signifies the "deeply practical" but also "mysteriously expressive" work he aspired to, as opposed to the "apparently practical" modern architecture he rejected.[58] Torres-García also used the word "cosmic" extensively, to describe a fundamental relationship between humans and the universe.[59] For Dieste, "cosmic economy" included respect for resource use, meeting basic human needs without waste, and being in "agreement with the order of the world."[60]

The daylighting elements also serve to interconnect the spaces. The high windows in the undulating side walls become a part of the wall fabric by following its curvilinear plane, providing a sense of continuity.[61] The colors for these windows were painstakingly selected and tested by Dieste, through a lengthy process of trial and error.[62] He found a German supplier who brought the perfect pieces to Uruguay on his emigration voyage, in primary colors and with the desired texture.[63] Dieste also searched the shops around Montevideo for onyx with satisfactory levels of transparency that he used to glaze the windows and skylights, as well as for the original onyx slab doors.[64]

In the façade, Dieste played with light and pattern, unifying the top portion horizontally with three bands of alternating openings that balance out the lower asymmetrical portion (figure 1.1).[65] He called this ensemble of light behind the choir loft

"serene and blazing" (figure 2.21).[66] The main entry doors below were originally designed by Olimpia Torres—the daughter of Joaquín Torres-García and wife of the sculptor Eduardo Yepes—with small lites set into wood frames, reminiscent of the colored window arrangements high in the side walls.[67] These doors were destroyed, as were the original onyx slab doors replaced by metal ones.[68]

Even engineering was considered aesthetically: the main elevation with its portal frame represents a perfect moment diagram (a structural diagram showing the magnitude of bending forces), with the projection of the leaning walls in each direction signifying the value of these forces (figures 4.9, 2.31, and 1.1).[69] This alignment of aesthetics with structural design represents a honing in on the theoretical economy of the structure.

The most overtly artistic feature at Cristo Obrero is the wood crucifix made in 1961 by Eduardo Yepes, a friend of and frequent collaborator of Dieste (figure 4.10).[70] They worked out the details of the crucifix from early on, analyzing its symbolic message and formal relationship to the shape and volume of the nave.[71] This is not a typical image of devotion: the crucifix strives to evoke a personal piety from parishioners as a modern symbol of sacrifice.[72] The 3 meter (9 foot, 10 inch) tall figure of an emaciated Christ directly above the altar highlights the centrality of sacrifice and the eucharist.[73] To Dieste's dismay, the freshly gilt crucifix was varnished over by the nuns, ruining the pure gold leaf, the glimmer of which was critical to his vision.[74] Dieste brought the gold leaf back from Paris with a friend, and applied it leaf by leaf, so it infuriated him not being consulted before it was varnished.[75]

Beyond the crucifix, the light and texture of the back wall is visible where the bricks are turned with their skewed projecting corners (figures 4.8 and 4.10). These

bricks were skewed for visual effect as a pattern, and also to help with acoustics by breaking the wall's flat plane (figures 3.1 and 3.6).[76] The common wall bricks are also set with aesthetic intention. The standard in Uruguay was for tooled mortar joints recessed between bricks, but Dieste preferred the joints be raked smooth and flush, to minimize the modulation of the wall surface.[77] The level of refinement is especially clear where the façade curves near the main entry, and the nosing bricks had to be cut with a saw but are ground to a smooth and consistent finish (figure 4.11).[78] Dieste said, "the materials and the way they are used in this construction are in themselves expressive. These materials are as humble as the congregation for which the church was built, but they have been used with all the care that these people deserve as a tribute to them."[79]

Not all of Dieste's proposals were successful. For example, he said the small chapel of the Lady of Lourdes, was intended to be much different.[80] An artistic perspectival effect was accomplished with cut brick, but it didn't satisfy him.[81] The little chapel features a small figure of the Virgin Mary, centered in a tapered frame of brick, with filtered light from an onyx plate capping its exterior (figures 4.12 and 3.6). When Dieste had negative thoughts, he tended not to explore them in print or during interviews, saying in this case only that his original intentions were more complex.[82] Early construction photos show the tapered tubular frame of this chapel poking through the side wall of the church (figure 2.20). However, the 1957 section drawing shows a much larger tapered portal (figure 4.7). In plan, the benches face the chapel (instead of the rear end wall), with a kink at their midpoint in reaction to the wall undulation, which would have served to center gazes on the chapel and enhance its perspectival effect (figures 3.6 and

2.17). Esteban Dieste speculates it was the similarity to a chapel at Ronchamp that most dissatisfied his father, making it appear he copied a Corbusian idea.[83]

Outside the church, the campanile is an important visual element. It houses a bell and offers a unique spatial experience with its integrated circular stair and the views through its slots and openings. It has long been a favorite subject for photographers, making the cover of numerous publications (figure 4.13).[84] Dieste spoke of it often in both concrete and poetic terms, noting its function as a "musical torch" that could unite the community, but also as a place one could see the infinite and enjoy views of the countryside through its windows.[85] He listed some of its additional potential: "so that young couples can climb it one Sunday to discover the landscape, so that children playing in it can relive stories from long ago that sleep inside each of us, and to contemplate space, especially in spring, when the swallows surround it like live arrows."[86]

The poetry had to stop somewhere, and for Dieste that was at the rear end wall of the church. He noted this was a poor architectural result for the exterior, but without any budget for additional design elements he decided to "saw it off" (figure 3.5).[87] Inside however, he avoided the brusque effect of its termination with the skewed brick background for the crucifix that was illuminated from the window below (figure 3.3).[88] Noting this effect was a great architectural lesson for him, Dieste said it "transformed into a species of a cloud."[89] He was adamant about avoiding "dry rationalism," suggesting that "each action and each event is full of ramifications we only half know."[90] In his openness to poetic possibilities, he approached design with a healthy dose of intuition: "The way to avoid this mistake is not to desire to see the end result but rather to have a good compass."[91] Dieste's architectural talent was not fostered by his formal

education, which focused on physics, mathematics, and material resistance; an "absolutely typical" engineering student, only later did he become conscious of form as an intellectual guide.[92] The practice of building is what finally brought him to link architecture with engineering, seeing they must operate in concert.[93]

Cristo Obrero was the first project where Dieste assumed the role of architect. In his words it was "a difficult apprenticeship" for which he was not paid and donated many items not in the budget.[94] He put about three thousand of his own dollars into it at a time he didn't have a peso to spare—an act he called a variety of "madness."[95] He committed himself to creating a temple for people of faith because architecture was a passion for him. Dieste had "always been concerned about expressive problems and their relationship with construction, and most importantly the relationship between art, society, and life."[96]

Artistic Effect at The Church of Saint Peter

At San Pedro, Dieste again played with light extensively, and with the sculptural form of space, but through an entirely different structural form. The perspectival effect of the nave's extruded section—with all surfaces inclined—is intended to make the nave feel larger, and to give it a tense but serene feel (figure 3.7).[97] The interconnection of spaces here is accomplished through a seamless flow of the nave into the presbytery tower that avoids joints entirely as the long-span upper walls tie into it (figure 2.50). Rising to the clerestory above, the folded slabs of the tower lean into each other with only grout joints between (figure 4.14).

The principal nave's 15-meter (49 foot, 2 inch) height is emphasized by the compression of the lateral naves tying in at a mere 4.5 meters (14 feet, 9 inches). The

hierarchy is further emphasized by the expansive step up at the presbytery tower, rising to 21 meters (68 feet, 11 inches), to flood the altar below with daylight. The north-facing clerestory above brings dramatic light onto the presbytery tower walls with its mullions projecting a running bond pattern in the direct sun (figures 4.15 and 1.2). It is not easy to view this source of light above the presbytery; one has to work to see it by walking behind the altar and looking nearly straight up (figure 4.14).[98]

The other two primary daylighting effects are: the roof which appears to defy the laws of physics with its floating heavy brick slabs (figure 2.50); and the large rose window above the entry, composed of irregular hexagons that also seem to float in their opening (figures 4.16 and 2.54). Similar to Cristo Obrero, Dieste used a daylighting effect here, where the faithful look as they leave after a service.[99] Here the play of light could be read as a symbol of spatial and structural liberation, a celebration of light, and a triumph over its earthly brick materials.[100] The aesthetic value of the rose window was significant, as Dieste explained its structural coordination with the old façade made it difficult stabilize the narthex wall.[101] Knowing this was a "modest repair job," he originally planned to keep the relatively ugly openings of the old choir loft that were separated by cast iron columns, but he noticed the opportunity during construction.[102] An early perspectival drawing of the folded plate scheme looking toward the church entry does not show the rose window here at all, although it does appear later in construction drawings (figure 3.7).

As at Cristo Obrero, the brick surfaces are both aesthetically conceived and structurally active, since here too brick was integral to the whole project, rather than put forth solely as cladding or decoration.[103] Dieste was intentional about the aesthetic

potential of brick specifically as a finish too; he said if concrete was the finish here, the quality of light would have been dead and cold.[104] Structurally, the stack-bond brick joints allowed thin metal reinforcing wires to run vertically and horizontally, a technique he used on many projects (figures 4.17 and 4.14).[105] The joints are raked smooth here too, and a single tone of rustic, "de campo," un-pressed brick is used throughout, from a nearby artisanal manufacturer in the department of Durazno.[106]

The most overtly artistic feature of this church, the crucifix by Claudio Silveira Silva, has unfortunately been removed, and now lies locked from view in a side room of the narthex (figure 4.18). The priest Raúl Silva approached Silveira Silva in 1968 about making a radical crucifix: "they are going to make a modernist, futurist church, and I want a sculpture of a South American crucifix. . . I don't want a deathly, agonizing one."[107] This was soon after the conclusion of the Second Vatican Council in 1965, and expressions of change in the Catholic Church were happening throughout Latin America.[108] Silveira Silva was born in the small town of Rio Branco on the Brazilian border, and after studies at the National School of Fine Arts in Montevideo, was encouraged by a professor to settle in Durazno.[109] He believed his country possessed a vibrant reality that hadn't been studied in depth by its artists.[110] Durazno provided a good base for this outlook due to a local awareness of the indigenous tribes living there before Europeans settled.[111]

To make the crucifix, Silveira Silva needed an adequately large Orange tree. He was told about one on an "indigenous hill" next to an arroyo near his hometown, and for the cross arm he used trunks of local Orange trees.[112] Silveira Silva worked in his home studio to make "Un Cristo en la Cruz," which roughly translates to "a Christ on the

Cross." Its title uses a play of words reflecting a Christ in defiance of tradition, featured here with his hands at his side.[113] Silva first produced a scale model, which was reviewed by Raúl Silva and other priests who all appreciated the reformist sentiment it embodied.[114] The crucifix was inaugurated on June 29, 1971, and met with critical acclaim (figure 4.19).[115]

This was a politically charged era in Uruguayan society, and although Silveira Silva donated the crucifix to the church and city he loved, the creative and collective spirits that brought it into being soon disappeared.[116] A military dictatorship assumed control of Uruguay in 1973, and by 1974 the pressures on Silva intensified. He fled to France and later Barcelona, living just steps away from Gaudí's Sagrada Familia.[117] The controversy has not ended yet however, as this important artistic crucifix was covered with a canvas in 2005 and taken down subsequently, amidst ongoing calls for its restoration to its intended home behind the altar.[118]

Notes

[1] Mary Méndez. *Divinas Piedras: Arquitectura Y Catolicismo En Uruguay, 1950-1965*. (Montevideo, Uruguay: Universidad De La República Uruguay, 2016), 81; Stanford Anderson, "A Principled Builder" in *Seven Structural Engineers: The Felix Candela Lectures*, ed. Guy Nordenson, Félix Candela, and Museum of Modern Art. (New York: Distributed Art Publishers, 2008), 42.

[2] *Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, http://www.getty.edu/foundation/initiatives/current/keeping_it_modern/report_library/cristo_obrero_church.html, 195; Barry Bergdoll, Carlos Eduardo Comas, Jorge Francisco Liernur, Patricio Del Real, and Museum of Modern Art, Host Institution. *Latin America in Construction: Architecture 1955-1980*. New York: Museum of Modern Art, 2015.

[3] Juan Pablo Bonta. *Eladio Dieste*. (Buenos Aires: Facultad de Arquitectura y Urbanismo: Instituto de Arte Americano e Investigaciones, 1963), 9.

[4] Ibid.

[5] Eladio Dieste. Interview by Jorge Nudelman, July 20, 1978. Entrevistas. *Edición especial, libro 2*. (Montevideo: FADU-UdelaR, 2016), 203.

[6] Ibid. Dieste did not know Vilamajó personally.

[7] Ibid., 194, 196.

[8] Ibid., 195-6.

[9] Ibid., 195.

[10] John Ochsendorf, "Eladio Dieste as Structural Artist," in *Eladio Dieste : Innovation in Structural Art*, ed, Stanford Anderson, and Dieste, Eladio. 1st ed. (New York: Princeton Architectural Press, 2004), 104.

[11] Mary Méndez. *Divinas Piedras: Arquitectura Y Catolicismo En Uruguay, 1950-1965*. (Montevideo, Uruguay: Universidad De La República Uruguay, 2016), 27.

[12] Wall text, Museo Torres García, Montevideo, Uruguay. Seen on August 14, 2018; Joaquín Torres García, Juan Fló, Eladio Dieste, and Juan Carlos Onetti. *Testamento Artístico*. (Montevideo, Uruguay: Biblioteca de Marcha, 1974), 86.

[13] Joaquín Torres-García, "Las Artes Plastical y Su Relación Con La Arquitectura," in *Testamento Artístico*. (Montevideo: Biblioteca De Marcha, 1974), 86-7.

[14] Ibid., 91.

[15] Eladio Dieste. "Torres Garcia y Nuestra Tierra," in *Testamento Artístico*. (Montevideo: Biblioteca De Marcha, 1974), 208. Joaquín Torres-García, "Las Artes Plastical y Su Relación Con La Arquitectura," in *Testamento Artístico*. (Montevideo: Biblioteca De Marcha, 1974), 92.

[16] Eladio Dieste. Interview by Jorge Nudelman, July 20, 1978. Entrevistas. *Edición especial, libro 2*. (Montevideo: FADU-UdelaR, 2016), 207, 209.

[17] Joaquín Torres-García, "Las Artes Plastical y Su Relación Con La Arquitectura," in *Testamento Artístico*. (Montevideo: Biblioteca De Marcha, 1974), 91-2.

[18] "Entrevista a Fernando Espinosa de los Monteros – 25 de Abril de 2017," interview for Comisión del Patrimonio Cultural de la Nación. Uruguay (Programa Keeping it Modern, 2106. Getty Fooundation) produced by Javier Villasuso, July 20, 2017, video, 13:15, https://youtu.be/4fHloO_EBOM.

[19] Eladio Dieste. Interview by Jorge Nudelman, July 20, 1978. Entrevistas. *Edición especial, libro 2*. (Montevideo: FADU-UdelaR, 2016), 207.

[20] Ibid., 208.

[21] Ibid., 208.

[22] Ibid., 209; Eladio Dieste. “Eladio Dieste: en la parte que no se ve,” interview by Lucio Muniz, Montevideo, 1992, *Uruguayos de memoria* (Montevideo: Ed. Fin de Siglo, 1998), 29.

[23] Eladio Dieste. “Torres Garcia y Nuestra Tierra,” in *Testamento Artístico*. (Montevideo: Biblioteca De Marcha, 1974) 201-210.

[24] Joaquín Torres-García, “Las Artes Plastical y Su Relación Con La Arquitectura,” in *Testamento Artístico*. (Montevideo: Biblioteca De Marcha, 1974), 92-93. Eladio Dieste. “Torres Garcia y Nuestra Tierra,” in *Testamento Artístico*. (Montevideo: Biblioteca De Marcha, 1974) 207.

[25] Eladio Dieste, "Some Reflections on Architecture and Construction." *Perspecta 27* (1992): 202.

[26] Eladio Dieste. “Torres Garcia y Nuestra Tierra,” in *Testamento Artístico*. (Montevideo: Biblioteca De Marcha, 1974), 209-10.

[27] José Maria de Lapuerta, “Casa Dieste, Montevideo” in *AV Monografías, Casa de Maestros* (Madrid: Arquitectura Viva, 2008), 115. The house is sited with sea views in Punta Gorda, 10 kilometers east of Montevideo’s historic center.

[28] Ibid.

[29] Eladio Dieste, ed. Graciela Silvestri. *Escritos Sobre Arquitectura*. (Montevideo, Uruguay: Irrupciones Grupo Editor, 2011), 98-99.

[30] Eladio Dieste. Interview by Jorge Nudelman, July 20, 1978. Entrevistas. *Edición especial, libro 2*. (Montevideo: FADU-UdelaR, 2016), 215-6.

[31] Ibid., 216-17. Dieste used the music of a Francisco de Quevedo sonnet as an example.

[32] Mary Méndez. *Divinas Piedras: Arquitectura Y Catolicismo En Uruguay, 1950-1965*. (Montevideo, Uruguay: Universidad De La República Uruguay, 2016), 100.

[33] Eladio Dieste. Interview by Jorge Nudelman, July 20, 1978. Entrevistas. *Edición especial, libro 2*. (Montevideo: FADU-UdelaR, 2016), 203-4.

[34] Mary Méndez. *Divinas Piedras: Arquitectura Y Catolicismo En Uruguay, 1950-1965*. (Montevideo, Uruguay: Universidad De La República Uruguay, 2016), 100-101.

[35] Eladio Dieste. Interview by Jorge Nudelman, July 20, 1978. Entrevistas. *Edición especial, libro 2*. (Montevideo: FADU-UdelaR, 2016), 203.

[36] Mary Méndez. *Divinas Piedras: Arquitectura Y Catolicismo En Uruguay, 1950-1965*. (Montevideo, Uruguay: Universidad De La República Uruguay, 2016), 100-101.

[37] Esteban Dieste, email to Jesse Elliott, February 24, 2019. This discussion began with Esteban Dieste during visits to Dieste projects in Uruguay. Esteban also shared how Dieste would not allow any music aside from classical to be played in the house, and his brother Eduardo's unpublished "Reflexiones de Eduardo Dieste sobre la vida de Eladio Dieste y su trayectoria" corroborates the stern and orthodox tone Eladio Dieste set at home.

[38] Mary Méndez. *Divinas Piedras: Arquitectura Y Catolicismo En Uruguay, 1950-1965*. (Montevideo, Uruguay: Universidad De La República Uruguay, 2016), 103.

[39] Jayne Merkel, and Eero Saarinen. *Eero Saarinen*. (London: Phaidon, 2005), 115, 118. The official name for "MIT Chapel" is the Kresge Chapel. Architectural Review published the plans in January 1953, and the completed project again in July 1955. They were also covered during this era by *Time, L'Architettura, Construction Moderne,* and *L'architecture d'aujourd'hui,* etc.

[40] Jayne Merkel, and Eero Saarinen. *Eero Saarinen*. (London: Phaidon, 2005), 114-115.

[41] David M. Foxe, "Saarinen's Shell Game: Tensions, Structures, and Sounds at MIT." *Nexus Network Journal* 12, no. 2 (2010): 205.

[42] Ibid.

[43] Mary Méndez. *Divinas Piedras: Arquitectura Y Catolicismo En Uruguay, 1950-1965*. (Montevideo, Uruguay: Universidad De La República Uruguay, 2016), 101.

[44] Jorge Nudelman. "*Tres visitantes en París: los colaboradores uruguayos de Le Corbusier*." (Master's Thesis, Madrid: E.T.S. Arquitectura (UPM), 2013), http://oa.upm.es/19877/, 331.

[45] Marcelo Sassón. Interview by Ciro Caraballo Perichi. August 25, 2016, Dieste y Montañez office, Atlántida, Uruguay, video, 46:17, https://www.youtube.com/watch?v=FJ6XKpBsNAc; Esteban Dieste also related this in person, saying that studies have been done of it at the architecture school of the University of the Republic as well.

[46] "Dieste Ex Machina, Mesa Redonda," filmed October 20, 2016, Universidad de la Republica, Facultad de Arquitectura, Diseño y Urbanismo, Montevideo, Uruguay, video, 45:02, https://vimeo.com/189780316; Eladio Dieste. "Torres Garcia y Nuestra Tierra," in *Testamento Artístico*. (Montevideo: Biblioteca De Marcha, 1974), 206.

[47] Jorge Nudelman. "*Tres visitantes en París: los colaboradores uruguayos de Le Corbusier*." (Master's Thesis, Madrid: E.T.S. Arquitectura (UPM), 2013), http://oa.upm.es/19877/, 331.

[48] Ibid.

[49] Mary Méndez. *Divinas Piedras: Arquitectura Y Catolicismo En Uruguay, 1950-1965*. (Montevideo, Uruguay: Universidad De La República Uruguay, 2016), 102.

[50] Eladio Dieste. Interview by Jorge Nudelman, July 20, 1978. Entrevistas. *Edición especial, libro 2*. (Montevideo: FADU-UdelaR, 2016), 202.

[51] Ibid.

[52] Ibid.

[53] Ibid.

[54] Mary Méndez. *Divinas Piedras: Arquitectura Y Catolicismo En Uruguay, 1950-1965*. (Montevideo, Uruguay: Universidad De La República Uruguay, 2016), 104.

[55] *Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, http://www.getty.edu/foundation/initiatives/current/keeping_it_modern/report_library/cristo_obrero_church.html, 71. Dieste's uncle Rafael found the domed skylight concept to be in conflict with the scheme.

[56] Ibid., 178.

[57] Eladio Dieste, ed., Consejeria de Obras Públicas y Transportes Dirección General de Arquitectura y Vivienda. *Eladio Dieste: 1943-1996,* 4th ed. (Andalucía: Junta de Andalucía, 2001), 153.

[58] Juan Pablo Bonta. *Eladio Dieste* (Buenos Aires: Facultad de Arquitectura y Urbanismo: Instituto de Arte Americano e Investigaciones, 1963), 16.

[59] Eladio Dieste and Graciela Silvestri, *Escritos Sobre Arquitectura*. (Montevideo, Uruguay: Irrupciones Grupo Editor, 2011), 149.

[60] "Dieste Ex Machina, Mesa Redonda," filmed October 20, 2016, Universidad de la Republica, Facultad de Arquitectura, Diseño y Urbanismo, Montevideo, Uruguay, video, 38:30, https://vimeo.com/189780316; Juan Pablo Bonta. *Eladio Dieste* (Buenos Aires: Facultad de Arquitectura y Urbanismo: Instituto de Arte Americano e Investigaciones, 1963), 16-17.

[61] Eladio Dieste, ed., Consejeria de Obras Públicas y Transportes Dirección General de Arquitectura y Vivienda. *Eladio Dieste: 1943-1996,* 4th ed. (Andalucía: Junta de Andalucía, 2001), 157.

[62] Esteben Dieste, "Iglesia de Atlántida: Testimonio de su desprotegida existencia" accessed online April 12, 2018, www.fadu.edu.uy/eladio-dieste/escritos/ 5-6.

[63] Marcelo Sassón. Interview by Ciro Caraballo Perichi. August 25, 2016, Dieste y Montañez office, Atlántida, Uruguay, video, 46:17, https://www.youtube.com/watch?v=FJ6XKpBsNAc.

[64] Ibid.

[65] Juan Pablo Bonta. *Eladio Dieste*. (Buenos Aires: Facultad de Arquitectura y Urbanismo: Instituto de Arte Americano e Investigaciones, 1963), 36.

[66] *Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, http://www.getty.edu/foundation/initiatives/current/keeping_it_modern/report_library/cristo_obrero_church.html, 173.

[67] Esteban Dieste: "Iglesia de Atlántida. Testimonio de su Desprotegida Existencia," in *El Patrimonio moderno en Iberoamérica: protección y coordinación internacional, 1er coloquio internacional,* (UNESCO Office Mexico, 2015), https://unesdoc.unesco.org/ark:/48223/pf0000244102, 46-47.

[68] Ibid.

[69] "Dieste Ex Machina, Mesa Redonda," filmed October 20, 2016, Universidad de la Republica, Facultad de Arquitectura, Diseño y Urbanismo, Montevideo, Uruguay, video, 44:30, https://vimeo.com/189780316.

[70] *Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, http://www.getty.edu/foundation/initiatives/current/keeping_it_modern/report_library/cristo_obrero_church.html, 177.; Esteban Dieste: "Iglesia de Atlántida. Testimonio de su Desprotegida Existencia," in *El Patrimonio moderno en Iberoamérica: protección y coordinación internacional, 1er coloquio internacional,* (UNESCO Office Mexico, 2015), 47. https://unesdoc.unesco.org/ark:/48223/pf0000244102.

[71] Eladio Dieste and Graciela Silvestri, *Escritos Sobre Arquitectura*. (Montevideo, Uruguay: Irrupciones Grupo Editor, 2011), 151.

[72] *Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, http://www.getty.edu/foundation/initiatives/current/keeping_it_modern/report_library/cristo_obrero_church.html, 177.

[73] Ibid.

[74] Esteban Dieste: "Iglesia de Atlántida. Testimonio de su Desprotegida Existencia," in *El Patrimonio moderno en Iberoamérica: protección y coordinación internacional, 1er coloquio internacional,* (UNESCO Office Mexico, 2015), https://unesdoc.unesco.org/ark:/48223/pf0000244102, 47.

[75] https://unesdoc.unesco.org/ark:/48223/pf0000244102.

[76] Esteben Dieste, the architect son of Eladio, confirmed this assumption about these skewed bricks at the back of the church during my research visit with him to the church, August, 2018.

[77] "'Tradición e Innovación,' un documental sobre el Ingeniero Eladio Dieste." Patrimonio Uruguay, published on January 21, 2016, Uruguay, Video, 22:06, https://youtu.be/NyDUuRZdSu0. Esteban Dieste is the one who discusses his father's like for the flat mortar joints at Cristo Obrero, and they are clearly flat at San Pedro as well.

[78] Juan Pablo Bonta. *Eladio Dieste*. (Buenos Aires: Facultad de Arquitectura y Urbanismo: Instituto de Arte Americano e Investigaciones, 1963), 37.

[79] "Brick Shell Construction," *Progressive Architecture*, April 1962, 165.

[80] *Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, http://www.getty.edu/foundation/initiatives/current/keeping_it_modern/report_library/cristo_obrero_church.html, 177.

[81] Eladio Dieste, ed. Galaor Carbonell. *Eladio Dieste: La Estructura Ceramica.* (Bogota: ESCALA, 1987), 120.

[82] Eladio Dieste, ed., Consejeria de Obras Públicas y Transportes Dirección General de Arquitectura y Vivienda. *Eladio Dieste: 1943-1996,* 4th ed. (Andalucía: Junta de Andalucía, 2001), 156-7.

[83] Esteban Dieste, email to Jesse Elliott, February 24, 2019.

[84]*Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, http://www.getty.edu/foundation/initiatives/current/keeping_it_modern/report_library/cristo_obrero_church.html, 192.

[85] Ibid., 152.

[86] Eladio Dieste, ed., Consejeria de Obras Públicas y Transportes Dirección General de Arquitectura y Vivienda. *Eladio Dieste: 1943-1996,* 4th ed. (Andalucía: Junta de Andalucía, 2001), 160.

[87] Ibid., 203.

[88] Ibid.

[89] Ibid.

[90] Ibid.

[91] Ibid.

[92] Eladio Dieste. Interview by Jorge Nudelman, July 20, 1978. Entrevistas. *Edición especial, libro 2*. (Montevideo: FADU-UdelaR, 2016), 194.

[93] Ibid.

[94] Eladio Dieste, 1998. *Eladio Dieste: 1943-1996*, 150; Eladio Dieste. Interview by Jorge Nudelman, July 20, 1978. Entrevistas. *Edición especial, libro 2*. (Montevideo: FADU-UdelaR, 2016), 201.

[95] Eladio Dieste. Interview by Jorge Nudelman, July 20, 1978. Entrevistas. *Edición especial, libro 2*. (Montevideo: FADU-UdelaR, 2016), 201.

[96] Eladio Dieste, ed., Consejeria de Obras Públicas y Transportes Dirección General de Arquitectura y Vivienda. *Eladio Dieste: 1943-1996,* 4th ed. (Andalucía: Junta de Andalucía, 2001), 153.

[97] Ibid., 180.

[98] Martín de Palma, A.M. (2000). Eladio Dieste, "el arte de construir en ladrillo, in Tercer Congreso Nacional de Historia de la Construcción (641-649), Sevilla: Instituto Juan de Herrera, CEHOPU, Universidad de Sevilla, 648.

[99] Eladio Dieste, ed., Consejeria de Obras Públicas y Transportes Dirección General de Arquitectura y Vivienda. *Eladio Dieste: 1943-1996,* 4th ed. (Andalucía: Junta de Andalucía, 2001), 180.

[100] Martín de Palma, A.M. (2000). Eladio Dieste, "el arte de construir en ladrillo," in Tercer Congreso Nacional de Historia de la Construcción (641-649), Sevilla: Instituto Juan de Herrera, CEHOPU, Universidad de Sevilla, 648.

[101] Eladio Dieste, ed., Consejeria de Obras Públicas y Transportes Dirección General de Arquitectura y Vivienda. *Eladio Dieste: 1943-1996,* 4th ed. (Andalucía: Junta de Andalucía, 2001), 184.

[102] Ibid., 182-184.

[103] Kenneth Frampton, *Modern Architecture: A Critical History*. 4th ed. World of Art. London; New York: Thames & Hudson, 2007, 370-371.

[104] Eladio Dieste, ed. Graciela Silvestri. *Escritos Sobre Arquitectura*. (Montevideo, Uruguay: Irrupciones Grupo Editor, 2011), 148.

[105] Dieste does not discuss this technique at San Pedro in particular, but it is one he developed on many other projects and which was shown to me by both Esteban Dieste and Hugo Ferreira Quirós during site visits to various projects.

[106] Raúl Romero. "Memorias de Reconstrucción de la Iglesia de San Pedro" (2018), Microsoft Word file, 9; Eladio Dieste; "Eladio Dieste: en la parte que no se ve," interview by Lucio Muniz, Montevideo, 1992, *Uruguayos de memoria* (Montevideo: Ed. Fin de Siglo, 1998), 35.

[107] Oscar Padrón Favre, "Claudio Silveira Silva y Durazno." In *Arte de Frontera: Claudio Silveira Silva*. (Montevideo: Museo Nacional de Artes Visuales, 2012), Exhibition Catalog, 15.

[108] John W. O'Malley. *What Happened at Vatican II* (Cambridge, Mass.: Belknap Press of Harvard University Press, 2008), 317-319; Esteban Dieste, email to Jesse Elliott, March 11, 2019; Oscar Padrón Favre, "Claudio Silveira Silva y Durazno." In *Arte de Frontera: Claudio Silveira Silva*. (Montevideo: Museo Nacional de Artes Visuales, 2012), Exhibition Catalog, 15.

[109] Oscar Padrón Favre, "Claudio Silveira Silva y Durazno." In *Arte de Frontera: Claudio Silveira Silva*. (Montevideo: Museo Nacional de Artes Visuales, 2012), Exhibition Catalog, 13.

[110] Ibid., 15.

[111] Wall display. Museo Casa de Rivera, Durazno, Uruguay. Seen on August 21, 2018.

[112] Oscar Padrón Favre, "Claudio Silveira Silva y Durazno." In *Arte de Frontera: Claudio Silveira Silva*. (Montevideo: Museo Nacional de Artes Visuales, 2012), Exhibition Catalog, 15.

[113] Ibid., 15-16.

[114] Ibid.

[115] Ibid., 16.

[116] Ibid.; Raúl Romero. "Memorias de Reconstrucción de la Iglesia de San Pedro" (2018), Microsoft Word file, 6.

[117] Oscar Padrón Favre, "Claudio Silveira Silva y Durazno." In *Arte de Frontera: Claudio Silveira Silva*. (Montevideo: Museo Nacional de Artes Visuales, 2012), Exhibition Catalog, 16; Barry Bergdoll, Carlos Eduardo Comas, Jorge Francisco Liernur, Patricio Del Real, and Museum of Modern Art, Host Institution. *Latin America in Construction: Architecture 1955-1980*. (New York: Museum of Modern Art, 2015), 311.

[118] Oscar Padrón Favre, "Claudio Silveira Silva y Durazno." In *Arte de Frontera: Claudio Silveira Silva*. (Montevideo: Museo Nacional de Artes Visuales, 2012), Exhibition Catalog, 20.

CHAPTER V

CONCLUSION

Separating Dieste's construction techniques from his programmatic and artistic goals, as this thesis has done, allows adequate space for investigating each of these realms. However, Dieste endeavored to combine all three facets, ever aware "there can be no architecture without construction."[1] Nor can there be architecture without teamwork, which he also espoused from the earliest projects with Serralta, Clémot, and Montañez, through his writings that recognized the efforts of team members like Sasson, Romero, and Castro—and as he notes, even collaborating "with society itself."[2] He customarily used the first-person plural, "we," when referring to what he accomplished in cooperation with design teams and allied workers.[3] Nonetheless, there was little doubt of his leadership, as his son, Esteban Dieste attests.[4]

Although not formally trained as an architect, Dieste was passionate about architecture. He believed there was "a sort of vacuum when it comes to an awareness of the importance that architecture has in human life."[5] An innovator for most of his career, he kept current through connections to higher education, and participation in all stages of the design and construction processes. His way of thinking was integrative, and it fostered mutually agreeable solutions.[6] From the earliest design phases, Dieste began with the architectural conception, which came through intuition before calculations were performed; then after calculations, he verified the design's completeness through his architectural vision.[7] Working this way, he brought a unique body of modern architecture into being, as exemplified by Cristo Obrero and San Pedro. When Dieste retired in 1996, his company had covered over 1,000,000 square meters (10,764,000 square feet) with the

structural ceramic technologies he pioneered.[8] Dieste said, "more than once I have surprised myself—between disbelief and shock—that we have constructed such large composite brick structures. . ."[9]

Dieste was an idealist who possessed a unique talent and drive, but he was also influenced by many figures and movements in Uruguayan society. Operating in a small country, where he associated himself with artists, engineers, architects, and religious figures, his career was filled with important connections. It was his uncle Eduardo, along with fellow Uruguayan writer Alvaro Armando Vasseur, who urged Joaquín Torres-García, leaving Europe in 1934, to return to Uruguay rather than emigrate to Mexico.[10] Later that year, Torres-García did return and dedicated himself to the promotion of modern art, also becoming a professor in the architecture department at the University of the Republic.[11] Upon seeing Torres-García's famously inverted maps of South America at the artist's house, Dieste enquired as to the reason for the inversion. The answer that it was important "to pay attention to our own world, more than Europe," is a sentiment Dieste embraced (figure 5.1).[12]

The influence of his uncle Rafael was also large. He was exposed to Rafael's mystic vision and poetic prose from an impressionable age, and they exchanged poetry and letters whenever they could not meet in person, including the many years Rafael lived in Buenos Aires.[13] He said talking to "Uncle Rafa" was like "thinking with two heads," and he consulted him often between the years of 1948 and 1974.[14] Rafael's interest in mathematical and geometrical discovery resonated with Dieste, and many of his specific poetic ideas from correspondence were adopted almost verbatim by Dieste to

describe his architecture.[15] Similarly Rafael's estimation of the simple life, of peasants and fishing villages, imbued Dieste's own philosophy.[16]

As a sincere and talented person, whose presence "radiated a personal empathy," Dieste was able to convince clients about new design ideas.[17] His appreciation for long-term employees—such as mason and foreman Vittorio Vergalito, who the architects and engineers of Dieste y Montañez fondly acknowledge—was also sincere.[18] Dieste believed architects and engineers needed to get dirt on their shoes by visiting the jobsites daily.[19] Workers on these sites also held him in high regard, and respected his abilities, guidance, and interaction.[20] Dieste had faith in the local artisanal community and locally available means, but he feared the inhumanity of industrial society. [21] He described workers so skilled it seemed bricks ran in their blood, and that they desired to accomplish stunning projects.[22] Many of the workers Dieste hired were first-generation immigrants from Europe, such as Vergalito, who worked nearly his entire career with Dieste after emigrating in 1955.[23] For Dieste it was "rational, economical, and truly utilitarian" to harness this artisanal capacity, efficiency, and enthusiasm for brick construction.[24] He worked with many unskilled laborers too, such as at Cristo Obrero, where much of the crew consisted of locals, in part to control costs.[25]

Dieste worked hard throughout his career, like a "pack donkey" he said, driven to innovate, but also suffering the aftermath of complicated projects like Cristo Obrero, where he expended great effort and much of his own money.[26] In spite of this, given the chance to propose a simple and traditional repair at San Pedro, he opted for a comprehensive modernist scheme he saw great architectural potential in. A rational modernist, Dieste criticized modern architecture for not accomplishing its theoretical

goals, and he was frustrated by its tendency to prioritize pathways for automobiles and luxurious bathrooms.[27] Instead, he advocated a balanced approach to design, with an understanding of history *and* an openness to new ideas—accepting modern solutions after scrutiny and modification for the local setting.[28] He admired traditional European architecture, where humanistic urban design nurtured local populations.[29] There he found what the "empty" modern architecture lacked, with integrated public and private spaces, where a patio could also be a plaza.[30] The inspiration of such lively yet functional spaces, developed through intuition, bolstered his faith in simple people and places, where villagers created their own architecture over thousands of years.[31] Above all, he believed in creating dignified spaces for the happiness of all people, and did not see this necessitating a high level of mechanization.[32]

Cristo Obrero's egalitarian scheme represents this dignity, with one basic building material employed to exceed the aseptic warehouse scope proposed by Giudice. Dieste felt the greatest failure of Cristo Obrero was the lack of urban context created around the project.[33] He had hoped to foster a village, with a vibrant plaza centered on the campanile, to bring a vital urban form to a place in need of proper public space.[34]

In 1958, with Cristo Obrero under way, Dieste gave a series of courses to the Architecture department at the University of Buenos Aires, and did a teaching tour around Argentina, making connections with architects and engineers along the way.[35] With the frequent publication of his buildings and ideas during this era came a number of similar opportunities.[36] In 1962, he taught a few classes at MIT in Cambridge, Massachusetts, and was offered a professorship in a new program for "Structural Architecture."[37] He ultimately declined the position, saying that tying himself to the

institution felt akin to self-incarceration in a gold prison.[38] Being well-educated gave Dieste the confidence to innovate.[39] He often referred to a quote from his mathematics professor: ". . . the theoretical that fails in reality fails because it is not theoretical enough."[40] This is an unusually poetic outlook for an engineer, as failure is a serious matter for the design of structures.

Cristo Obrero and San Pedro each represented a different structural and visual approach: the curvilinearity of the former versus the rectilinearity of the latter. But each was based on the same type of thinking about program, aesthetics, and affordability. Dieste said, "it is certain that the two objectives—technical rationalism and aesthetic values—are in fact aspects of the same moral and creative attitude. And for this it pleases me that architects have interested themselves in our work."[41] His control of all project aspects, with his lofty ideals and work ethic (including a willingness to donate his time for a good cause), enabled the integration of architecture with the structure at a very early stage. He believed "it was important that the architecture respond to what the people who moved through it should feel and to do this with a vital, rather than a dull and lifeless functionalism."[42]

Dieste's architecture transcends the dichotomy of Le Corbusier's "engineer's aesthetic," as for Dieste architecture and engineering were in a fluid relationship, where engineering prowess supported his architectural vision, and structural forms were generated in the service of architecture.[43] While Dieste was inspired by the technical beauty of mechanical equipment, he did not apply the forms of ocean liners, airplanes, and automobiles to architecture, nor did he espouse mass-production; however, he proved himself as an architect *and* an artist, rather than a "mere engineer."[44] His sense of

architecture aligned better with Frank Lloyd Wright's concept for modern "organic architecture," not to "'box up' contents but [to] imaginatively express space," although for Dieste expression of space was perpetually linked to structure, program, social responsibility, and budget.[45]

Dieste took special pride in his aesthetic achievements when they were also cost-effective, and particularly so when they pertained to "artistic" projects such as the churches.[46] He proudly claimed the cost of materials and labor for San Pedro's rose window was a mere one hundred US dollars, including the welding.[47] Similarly, Cristo Obrero was generally cost-effective, although with less attention to aesthetic considerations it would have been thriftier yet. Dieste drew attention to this low-cost structural ceramic technology, pointing to its great possibilities for future work in architecture and engineering—although while he innovated fluidly with it, the technique has not been adopted by many since.[48] There are numerous buildings built by his company in Brazil, and some by other architects and engineers, but even inside Uruguay the practice gave way almost entirely to structural concrete. His company, Dieste y Montañez, still builds reinforced brick projects today, but not many of them, nor with the same level of innovation. Dieste did not actually urge anyone to follow his ideas; instead, he suggested questioning the status quo and innovating with what makes sense in a given region, or for a particular situation.[49] However, the embodied energy in thin-shell brick construction is extraordinarily low, and the technologies he developed hold great potential for sustainability-based efforts, minimizing as they do the impact of development on global warming and resource depletion.

All of Dieste's projects display a high level of innovation, but he attributed his extra effort on the church projects to what he might gain "on the other side." Understanding Dieste's faith and professional growth renders intelligible how structural engineering feats were almost entirely absent from his listed sources of inspirations; instead, he favored the artists, thinkers, and ideas dearest to him, with the holiest on top (figure 5.2).

Notes

[1] Antonio J., Mas Guindal. and Josep Mª Adell. "Eladio Dieste Y La Cerámica Estructural En Uruguay." *Informes De La Construcción* 56, no. 496 (2005): 14.

[2] Eladio Dieste, ed. Galaor Carbonell. *Eladio Dieste: La Estructura Ceramica.* (Bogota: ESCALA, 1987), 130.

[3] Eladio Dieste. Interview by Jorge Nudelman, July 20, 1978. Entrevistas. *Edición especial, libro 2*. (Montevideo: FADU-UdelaR, 2016), 186.

[4] This detail came directly from Esteban Dieste during our talks between visits to sites around Montevideo in August of 2018. Esteban has a deep respect for his father's work and personality, but he was also able to share how his father's ideals were mixed with a practical and authoritarian character, so while Dieste aspired to teamwork, he could not allow the work results to average out to a low common denominator, and "nobody doubted who the boss was."

[5] Eladio Dieste. Interview by Damián Bayón. *The Changing Shape of Latin American Architecture: Conversations with Ten Leading Architects.* (Chichester: Wiley, 1979), 192.

[6] Eladio Dieste. Interview by Jorge Nudelman, July 20, 1978. Entrevistas. *Edición especial, libro 2*. (Montevideo: FADU-UdelaR, 2016), 196-197.

[7] Marcelo Sassón. Interview by Ciro Caraballo Perichi. August 25, 2016, Dieste y Montañez office, Atlántida, Uruguay, video, 46:17, https://www.youtube.com/watch?v=FJ6XKpBsNAc.

[8] Augustín Dieste and Eladio Dieste. *La Invención Inevitable*. (Montevideo: Cachimba del Piojo, 2009), inside cover; During my research trip in Uruguay, I was able to visit 40 of Dieste's project sites around the country, and each one presented a unique approach to building and design. Many of these sites still have employees or residents who recall the process of working with Dieste and discuss their pride and collaborative experiences working both with him and Dieste y Montañez.

[9] *Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, http://www.getty.edu/foundation/initiatives/current/keeping_it_modern/report_library/cristo_obrero_church.html, 165.

[10] Luis Pérez Oramas, Alexander Alberro, Sergio Chejfec, Estrella de Diego, Geaninne Gutiérrez-Guimarães, Joaquín Torres-García, and Museum of Modern Art, Host Institution. *Joaquín Torres-García: the Arcadian modern*. (New York: Museum of Modern Art, 2015), Exhibition Catalog, 203.

[11] Ibid.

[12] Eladio Dieste. "Torres Garcia y Nuestra Tierra," in *Testamento Artístico*. (Montevideo: Biblioteca De Marcha, 1974), 201.

[13] Mary Méndez. *Divinas Piedras: Arquitectura Y Catolicismo En Uruguay, 1950-1965*. (Montevideo, Uruguay: Universidad De La República Uruguay, 2016), 112.

[14] Ibid.,115; While visiting project sites in Uruguay with Esteban Dieste, Esteban said Eladio would say this about talking through issues with uncle "Rafa."

[15] Mary Méndez. *Divinas Piedras: Arquitectura Y Catolicismo En Uruguay, 1950-1965*. (Montevideo, Uruguay: Universidad De La República Uruguay, 2016), 112-113.

[16] Ibid., 114.

[17] Marcelo Sassón. Interview by Ciro Caraballo Perichi. August 25, 2016, Dieste y Montañez office, Atlántida, Uruguay, video, 46:17, https://www.youtube.com/watch?v=FJ6XKpBsNAc.

[18] "Dieste Ex Machina, Mesa Redonda," Universidad de la Republica, Facultad de Arquitectura, Diseño y Urbanismo, filmed October 20, 2016, Montevideo, Uruguay, video, 12:05, https://vimeo.com/189780316. The long-time collaborators of the Dieste y Montañez office, architects Esteban Dieste and Marcelo Sassón, and engineer Gonzalo Larrambebere, all discussed this role Vittorio played as a collaborator and creator of the work, and as their teacher too.

[19] Gonzalo Larrambebere explained this philosophy of Dieste's during a visit to the Dieste y Montañez office.

[20] Miguel Angel Díaz and Miguel Castang. Interview by Ciro Caraballo Perichi. October 2016, Iglesia de Cristo Obrero, Atlántida, Uruguay, video, 12:20, https://www.youtube.com/watch?v=As3oCQlUXaM&list=PLa1wuwT-T1OgE8kY_Yg1c2DmL9x5qmvpQ&index=1

[21] Juan Pablo Bonta. *Eladio Dieste*. (Buenos Aires: Facultad de Arquitectura y Urbanismo: Instituto de Arte Americano e Investigaciones, 1963), 14.

[22] Ibid.; Dieste is specifically talking about Uruguay, but the lecture was given to the architecture department in Buenos Aires, Argentina, and he added a note that this is certainly true in that country as well.

[23] Vittorio Giuseppe Vergalito Cirese, Interview by Ciro Caraballo Perichi. September 2014, Dieste y Monteñez Office, Montevideo, Uruguay, video, 17:15, https://youtu.be/SqWiZMLB6ak. Vergalito is cited in this video as an inspiration to Dieste for his straight, simple opinions, and he is cited as an inspiration to many at the design-build company elsewhere.

[24] Juan Pablo Bonta. *Eladio Dieste*. (Buenos Aires: Facultad de Arquitectura y Urbanismo: Instituto de Arte Americano e Investigaciones, 1963), 14.

[25] *Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, http://www.getty.edu/foundation/initiatives/current/keeping_it_modern/report_library/cristo_obrero_church.html, 123. The locals were not available in the summer months when their primary work occupied them in Atlántida.

[26] Eladio Dieste. Interview by Jorge Nudelman, July 20, 1978. Entrevistas. *Edición especial, libro 2*. (Montevideo: FADU-UdelaR, 2016), 220; Eladio Dieste. "Eladio Dieste: en la parte que no se ve," interview by Lucio Muniz, Montevideo, 1992, *Uruguayos de memoria* (Montevideo: Ed. Fin de Siglo, 1998), 40. Only the raw cost of the physical work was paid for.

[27] Eladio Dieste. Interview by Jorge Nudelman, July 20, 1978. Entrevistas. *Edición especial, libro 2*. (Montevideo: FADU-UdelaR, 2016), 209.

[28] Stanford Anderson, "A Principled Builder" in *Seven Structural Engineers: The Felix Candela Lectures*, ed. Guy Nordenson, Félix Candela, and Museum of Modern Art. (New York: Distributed Art Publishers, 2008), 32.

[29] Eladio Dieste. Interview by Jorge Nudelman, July 20, 1978. Entrevistas. *Edición especial, libro 2*. (Montevideo: FADU-UdelaR, 2016), 204.

[30] Ibid., 204-5.

[31] Ibid., 204-6.

[32] Ibid.; Martín de Palma, A.M. (2000). Eladio Dieste, "el arte de construir en ladrillo," in Tercer Congreso Nacional de Historia de la Construcción (641-649), Sevilla: Instituto Juan de Herrera, CEHOPU, Universidad de Sevilla, 642.

[33] Eladio Dieste, ed., Consejeria de Obras Públicas y Transportes Dirección General de Arquitectura y Vivienda. *Eladio Dieste: 1943-1996*, 4th ed. (Andalucía: Junta de Andalucía, 2001), 150.

[34] Ibid.

[35] Eladio Dieste. Interview by Jorge Nudelman, July 20, 1978. Entrevistas. *Edición especial, libro 2*. (Montevideo: FADU-UdelaR, 2016), 220.

[36] Ibid., 221.

[37] Ibid.

[38] Ibid.

[39] Stanford Anderson, "A Principled Builder" in *Seven Structural Engineers: The Felix Candela Lectures*, ed. Guy Nordenson, Félix Candela, and Museum of Modern Art. (New York: Distributed Art Publishers, 2008), 32.

[40] Eladio Dieste, ed., Consejeria de Obras Públicas y Transportes Dirección General de Arquitectura y Vivienda. *Eladio Dieste: 1943-1996*, 4th ed. (Andalucía: Junta de Andalucía, 2001), 160. Eduardo García de Zuñiga is the mathematics professor Dieste is quoting.

[41] Luis J. Grossman, "El ingeniero Eladio Dieste y la noble humildad del ladrillo," *La Nacion*, August 9, 2000.

[42] Eladio Dieste, ed., Consejeria de Obras Públicas y Transportes Dirección General de Arquitectura y Vivienda. *Eladio Dieste: 1943-1996*, 4th ed. (Andalucía: Junta de Andalucía, 2001), 159.

[43] Le Corbusier, "Towards a New Architecture: Guiding Principles," in *Programs and Manifestoes on 20th-century Architecture*, ed. Ulrich Conrads. (Cambridge, Mass.: MIT, 1970), 59-60.

[44] Le Corbusier, "Towards a New Architecture: Guiding Principles," in *Programs and Manifestoes on 20th-century Architecture*, ed. Ulrich Conrads. (Cambridge, Mass.: MIT, 1970), 61.

[45] Frank Lloyd Wright, "Young Architecture (excerpt)," in *Programs and Manifestoes on 20th-century Architecture*, ed. Ulrich Conrads. (Cambridge, Mass.: MIT, 1970), 125.

[46] Eladio Dieste, ed. Galaor Carbonell. *Eladio Dieste: La Estructura Ceramica*. (Bogota: ESCALA, 1987), 152.

[47] Ibid., 140.

[48] John Ochsendorf, "Eladio Dieste as Structural Artist," in *Eladio Dieste: Innovation in Structural Art*, ed, Stanford Anderson, and Dieste, Eladio. 1st ed. (New York: Princeton Architectural Press, 2004), 103.

[49] Stanford Anderson, “A Principled Builder” in *Seven Structural Engineers: The Felix Candela Lectures,* ed. Guy Nordenson, Félix Candela, and Museum of Modern Art. (New York: Distributed Art Publishers, 2008), 32.

APPENDIX
FIGURES

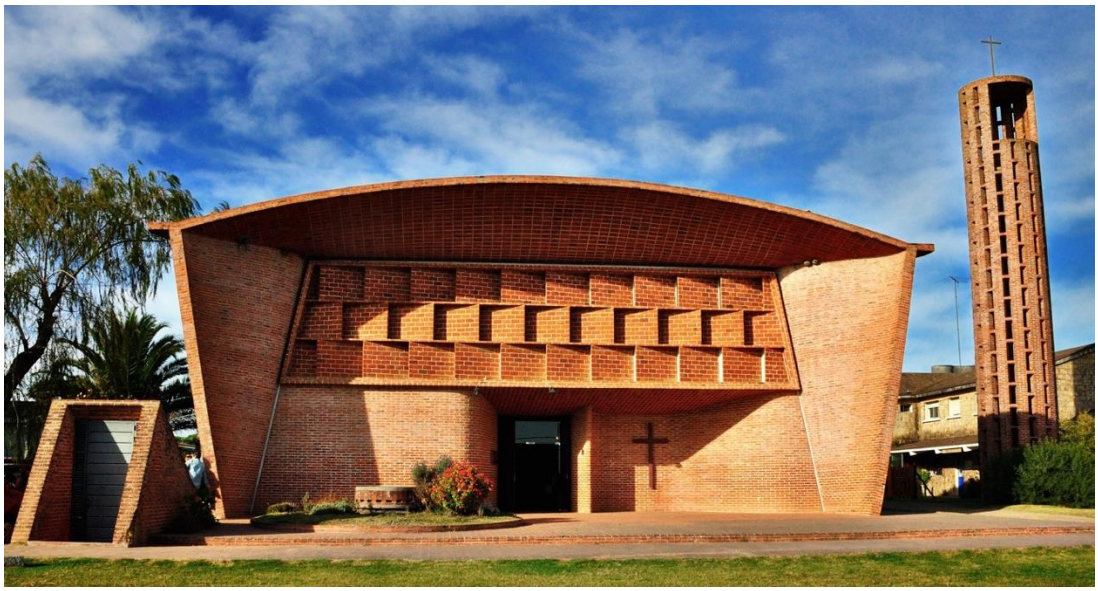


Photo by Javier Villasuso, March, 2015.

Figure 1.1 – North façade of the Church of Christ the Worker and the Lady of Lourdes (Cristo Obrero), Estación Atlántida, Uruguay.

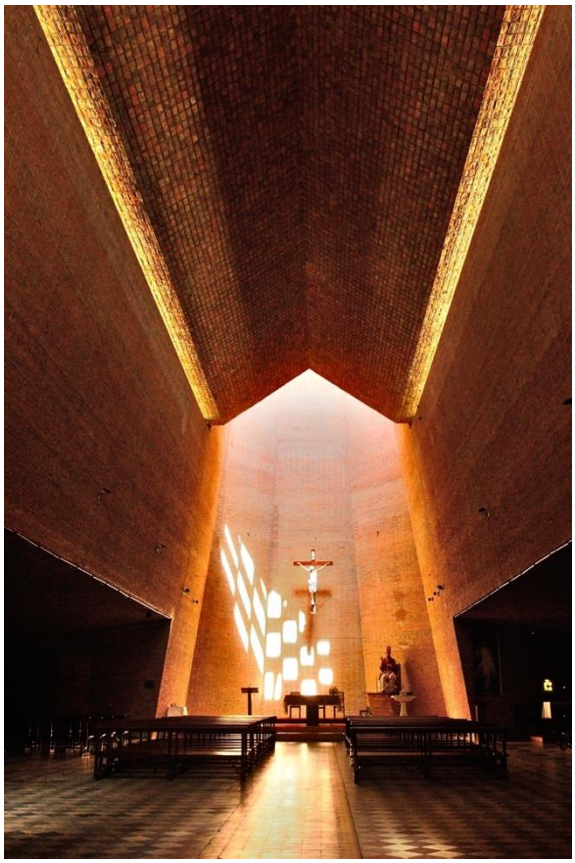
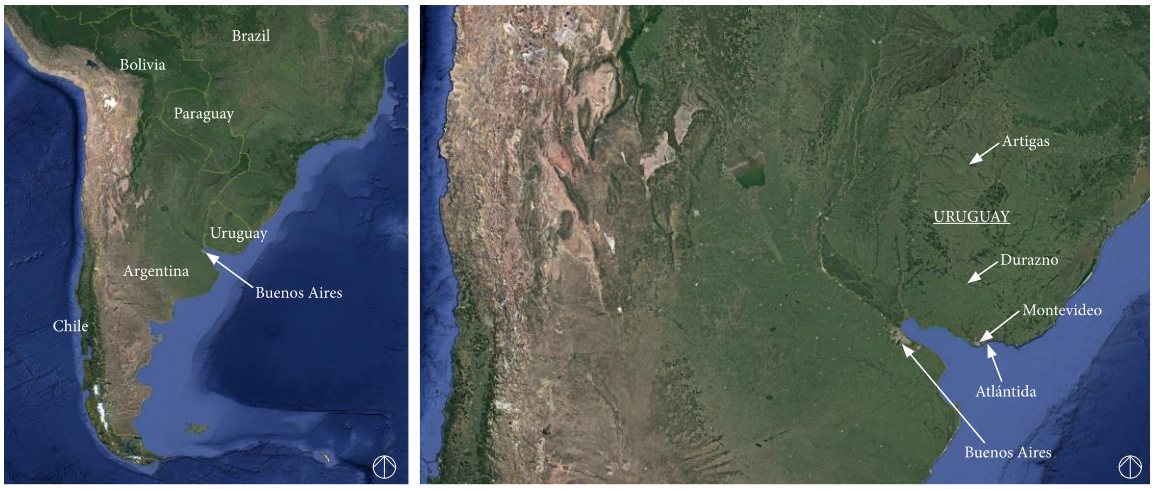


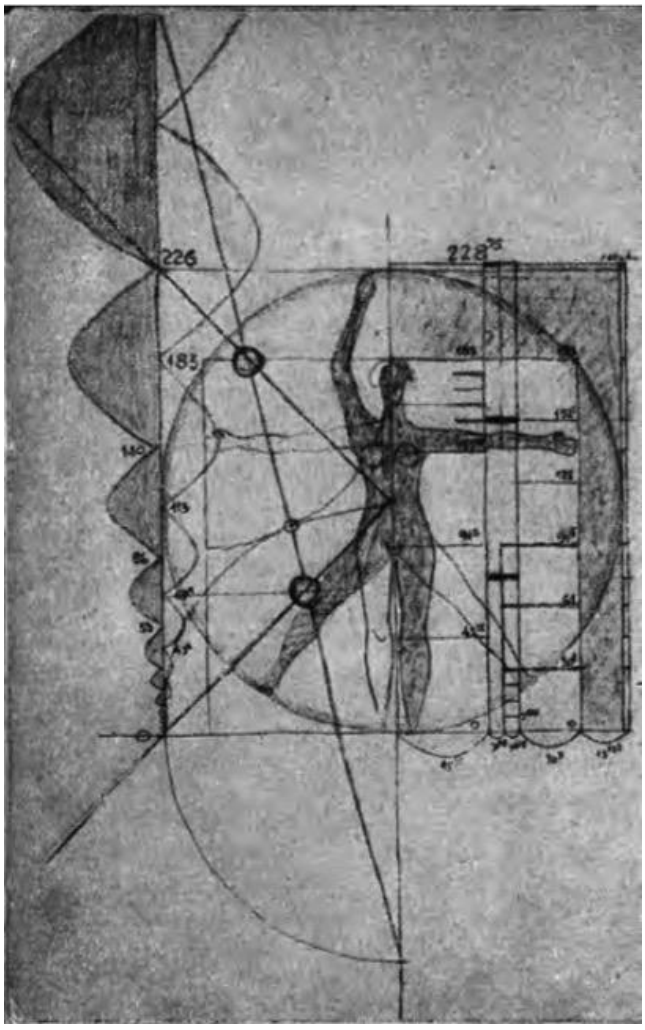
Photo by Javier Villasuso, 2015.

Figure 1.2 – The nave and presbytery of the Church of Saint Peter (San Pedro), Durazno, Uruguay.



Map from Google Earth, March 22, 2018, with text overlay by Jesse Elliott.

Figure 1.3 - Vicinity maps. Left: southern portion of South America; Right: Uruguayan cities (right).



Jorge Nudelman Blejwas, "'Corbusians' in Uruguay; a Contradictory Report," in *Latin American Modern Architectures : Ambiguous Territories*., eds. Del Real, Patricio, and Gyger, Helen. (New York: Routledge, 2013), 67.

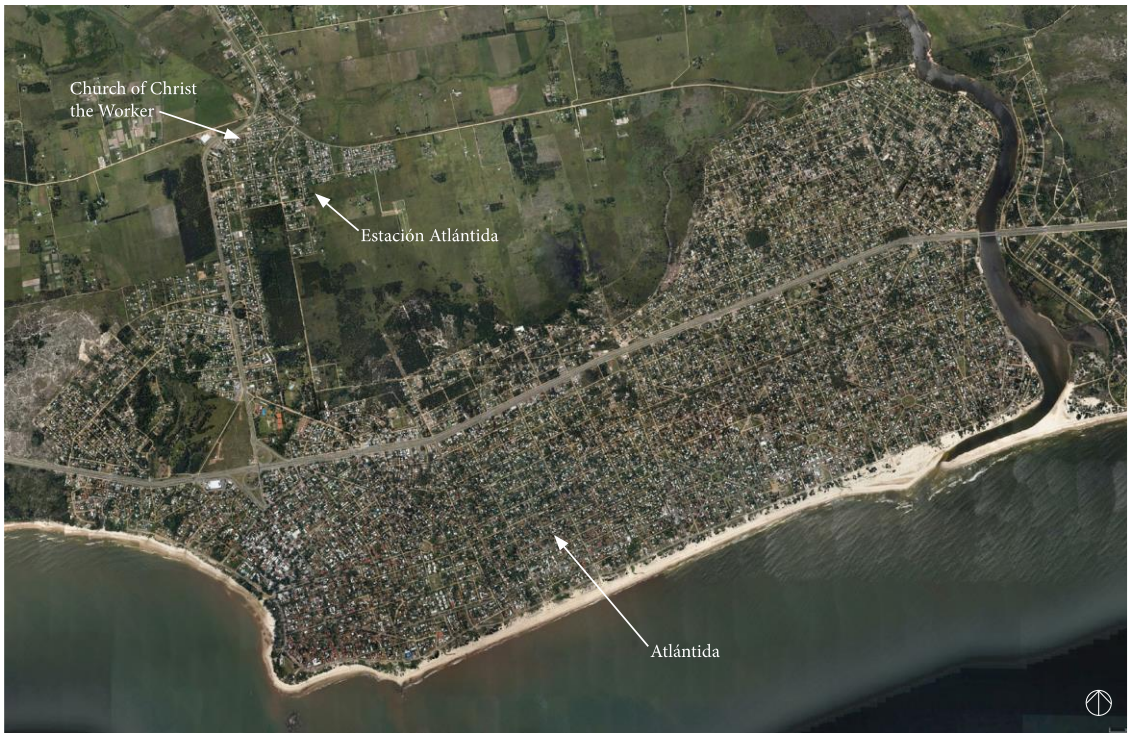
Figure 1.4 – One of Justino Serralta's drawings for Le Corbusier's "Modular 2."

Jorge Nudelman. "*Tres visitantes en París: los colaboradores uruguayos de Le Corbusier*." Master's Thesis, Madrid: E.T.S. Arquitectura (UPM), 2013, http://oa.upm.es/19877/, 306.

Figure 1.5. A title block from 1955 for a Caterpillar heavy equipment company office.

(photo author/date unknown, provided by the architect Hugo Ferreira Quirós).

Figure 1.6. The architect and engineer collaborators sharing a meal, from left: Justino Serralta, Eugenio Montañez, Eladio Dieste, and Carlos Clémot, with their wives at the far end of the table.



Map from Google Earth, March 22, 2018, with text overlay by Jesse Elliott.

Figure 2.1 - Atlántida and Estación Atlántida, Uruguay.

Photo by Mary Méndez. *Divinas Piedras: Arquitectura Y Catolicismo En Uruguay, 1950-1965*. (Montevideo, Uruguay: Universidad De La República Uruguay, 2016), 87.

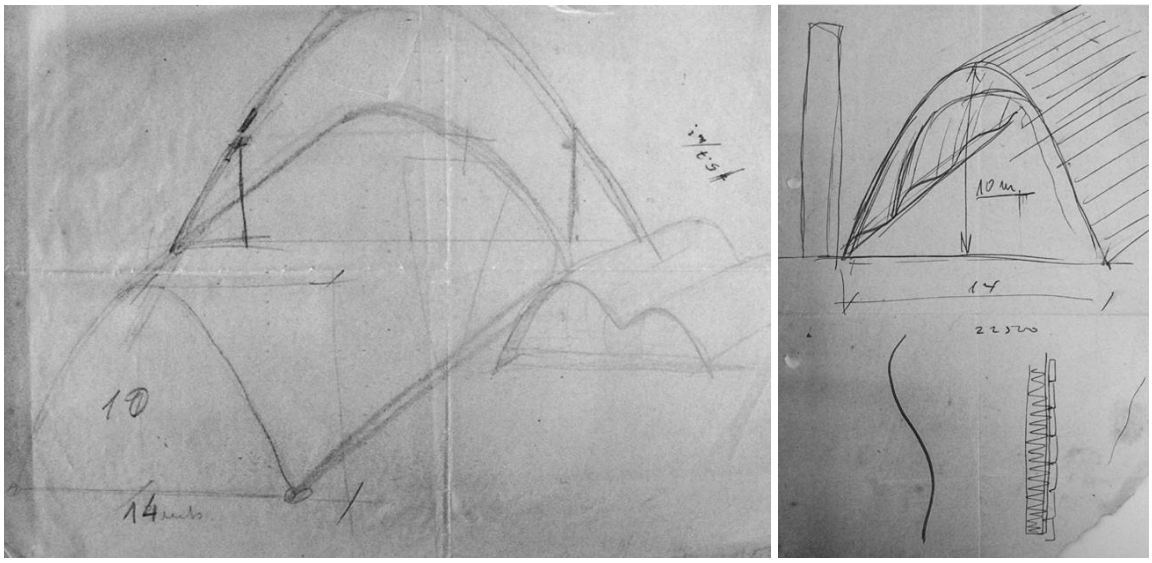
Figure 2.2 – The House of Alberto Giudice and Adela Urisote in Atlántida, Uruguay.

Photo by FADU, Department of Applied Information and Applied Design, in p.295.

Figure 2.3. An aerial view of Cristo Obrero looking south, with campanile behind the white neo-colonial chapel façade and narthex which was added to an existing house in 1946. The extension behind the house adjacent to the campanile was added per the nuns in the early 1960s for their school, which Dieste found scandalous as the campanile could no longer anchor a plaza framed by the parish house he designed.

Left: Google maps street view, downloaded February 26, 2019; Right: Niemeyer, Oscar. Pampulha architectural complex. https://library-artstor-org.libproxy.uoregon.edu/asset/AWSS35953_35953_34650810.

Figure 2.4. Left: Parish of the Assumption and San Carlos Borromeo, Montevideo, Uruguay. Engineered by Eladio Dieste in 1954 for the architect Juan Pablo Terra. Right: Lake façade of Oscar Niemeyer's Chapel of Saint Francis of Assisi at Pampulha, 1943.



Mary Méndez. *Divinas Piedras: Arquitectura Y Catolicismo En Uruguay, 1950-1965*. (Montevideo, Uruguay: Universidad De La República Uruguay, 2016), 92-3.

Figure 2.5. The first known concept sketches of Cristo Obrero from 1954 by Dieste (and possibly an architect collaborator, especially where the double vault akin to Niemeyer's Saint Francis of Assisi is in the left figure).

Iglesia de la Parroquia de Cristo Obrero: Plan de Conservación y Manejo, Getty Foundation Keeping it Modern Report Library, 2017, 72. (date unknown)

Figure 2.6 – A model of Cristo Obrero, made by a draftsman in the neighboring office of Justino Serralta and Carlos Clémot.

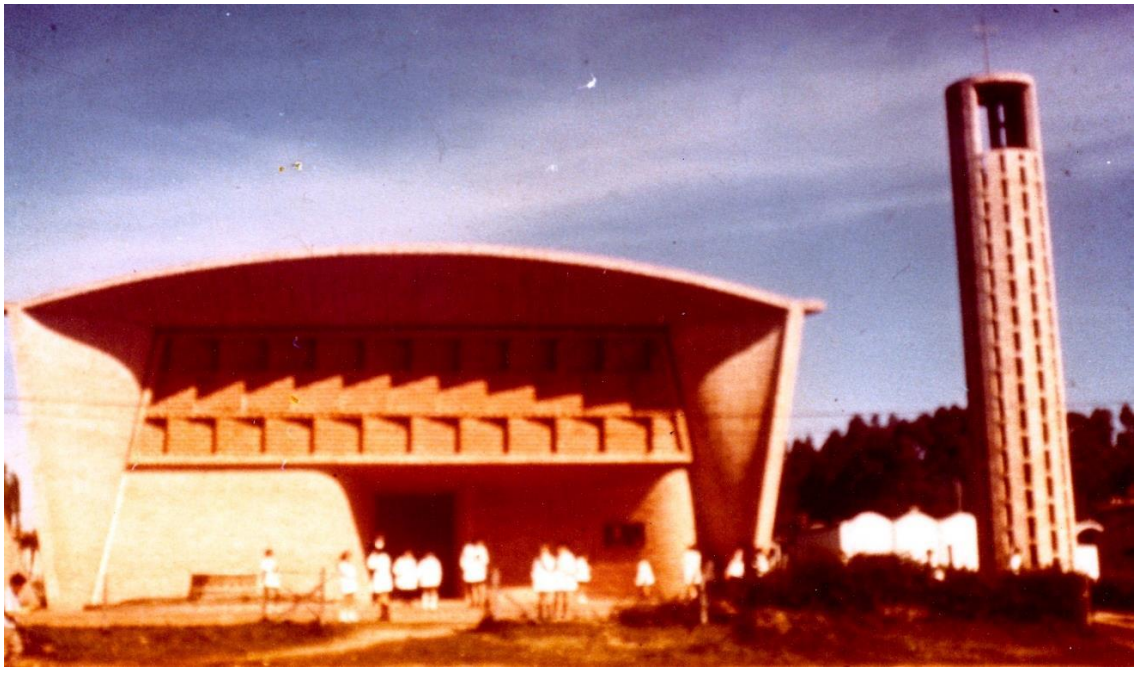


image from Dieste y Montañez archive (date unknown), printed in *Iglesia de la Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, 118.

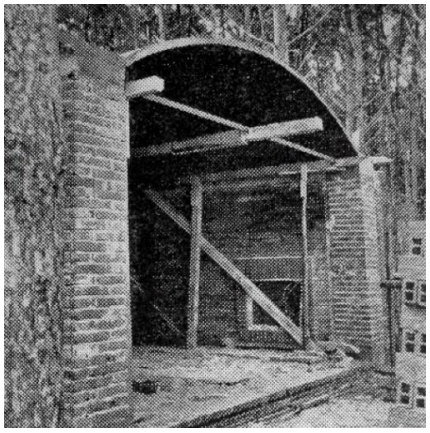
Figure 2.7. The parish house is visible behind the campanile of Cristo Obrero. It was demolished a few years after construction.

Drone photo by Javier Villasuso, August 20, 2018.

Figure 2.8. House of Saúl Dieste, built in 1955 in Artigas through design collaboration with Dieste, Montañez, Serralta, and Clémot.

Photo from the archives of the Institute of the History of Architecture at the University of the Republic, Montevideo.

Figure 2.9. The parish house façade just after construction was completed in 1961.

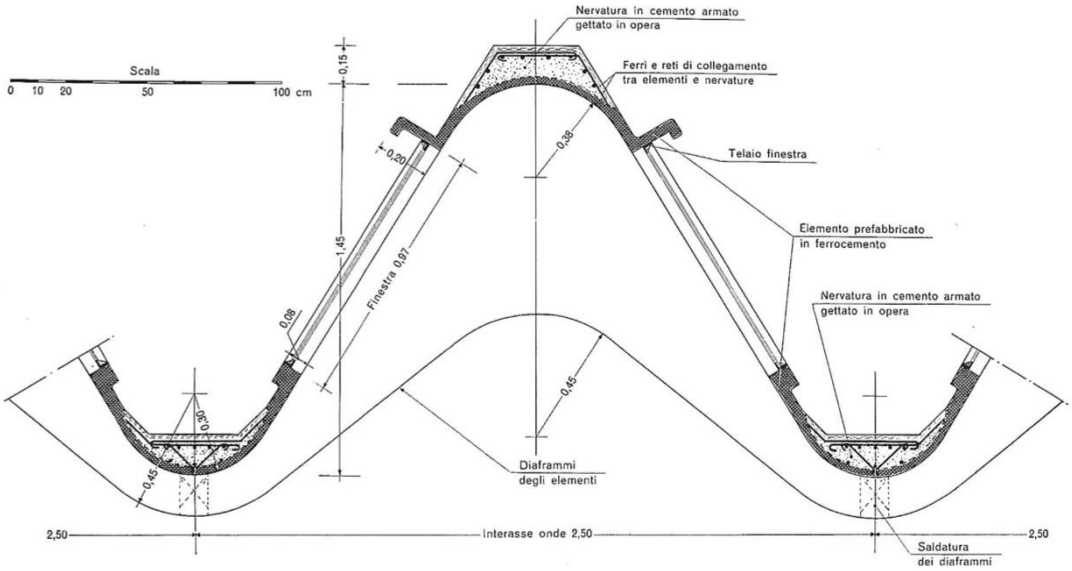


Left: photo by Jesse Elliott, August 23, 2018; Right, image from *Iglesia de la Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, 48.

Figure 2.10. Casa Berlingieri by Antonio Bonet from the beach side (left), and one of its single-layer brick vaults under construction (right).

photo by Jesse Elliott, August 23, 2018.

Figure 2.11. Casa Berlingieri dining room, with plastered vault and exposed tension rod.

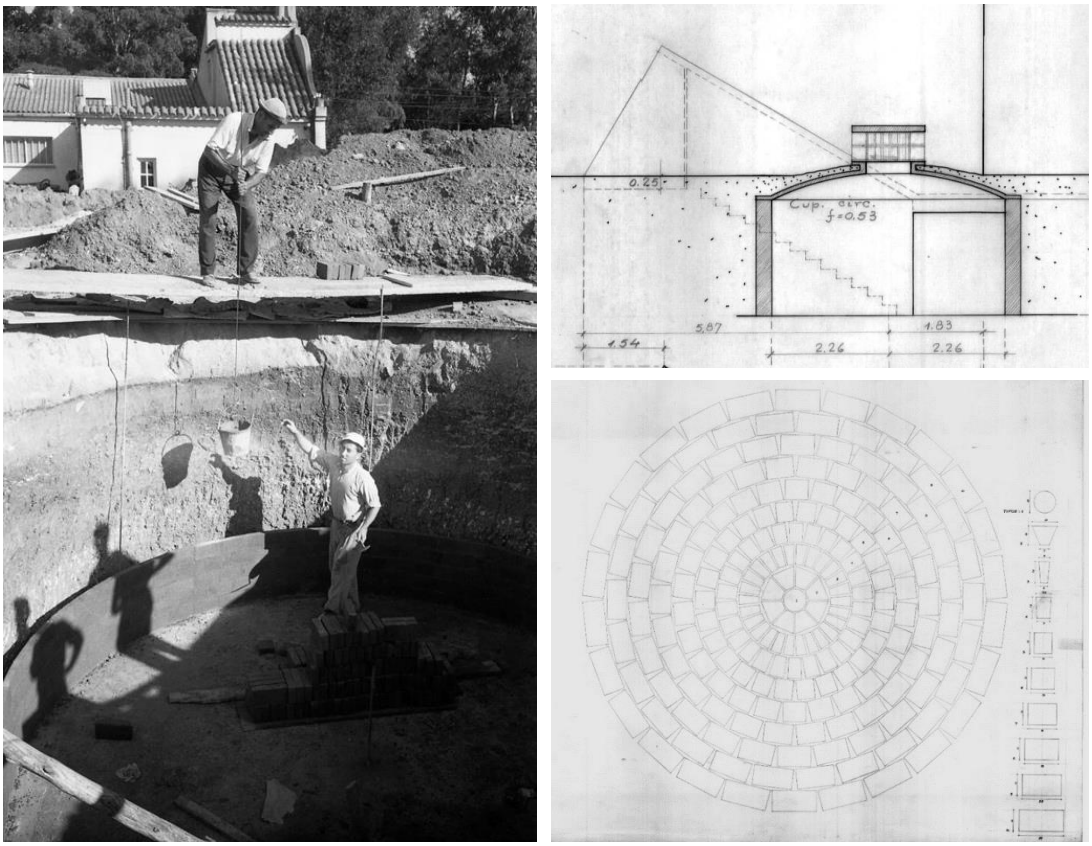


Tullia Iori and Pier Luigi Nervi. *Pier Luigi Nervi*. 1.st ed. Minimum. (Milano: Motta Architettura, 2009), 44.

Figure 2.12 – A section of Nervi's undulating Turin Exposition Hall roof.

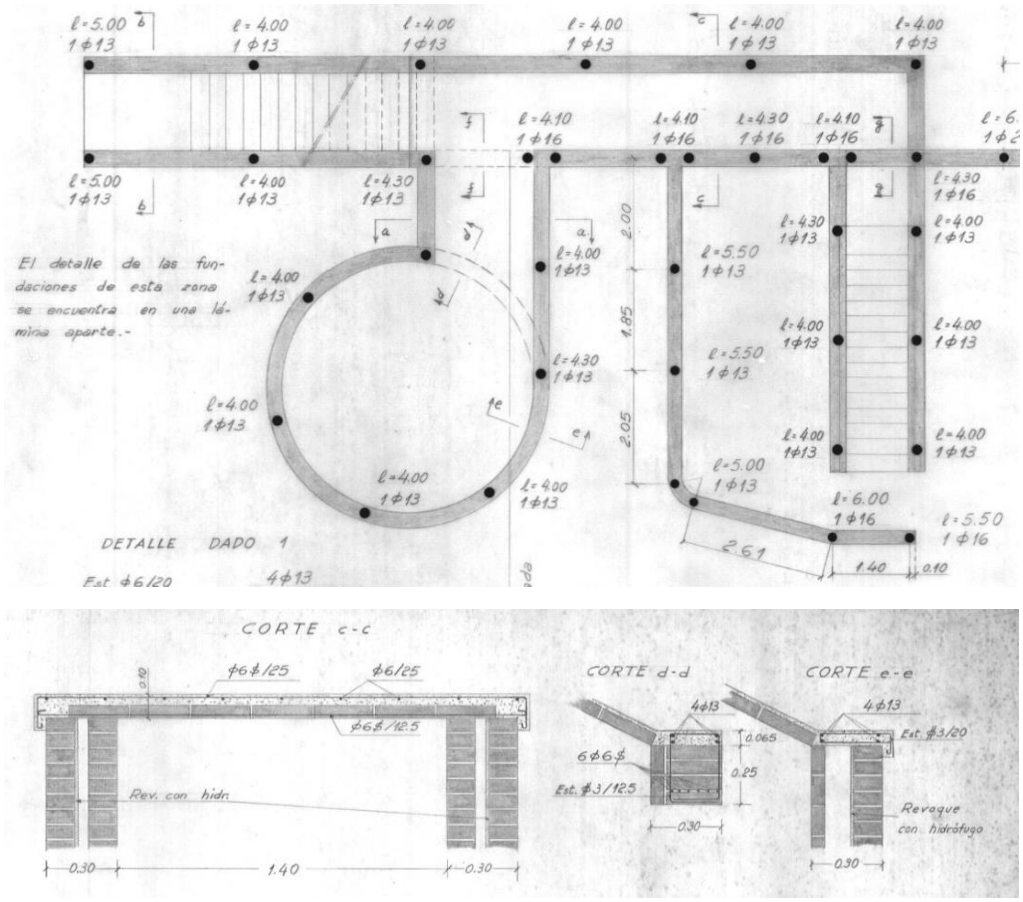
Le Corbusier (1887-1965). 1950-1954. Notre-Dame du Haut, exterior. architecture. http://library.artstor.org.libproxy.uoregon.edu/asset/LESSING_ART_10310752557.

Figure 2.13 - Notre-Dame du Haut, Ronchamp, France. Completed in 1954, the south wall is on the left with its array of juxtaposed tapered openings on the left side.



Dieste y Montañez archive, *Iglesia de la Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, 86, 88.

Figure 2.14 – Left: Baptistry wall construction in 1958, with 1946 chapel addition in background. Right top: baptistry section, with radius width of 2.26 from the Modulor. Right bottom: Floor paving design.



Dieste y Montañez archive, *Iglesia de la Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, 85.

Figure 2.15 – Top: Plan of baptistry foundation pilings and reinforcement. Bottom: sections of baptistry plan, including waterproofing coating callout ("rev. con hidr.").

Left: photo by Javier Villasuso in *Igl*esia *de la Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, 136; Right: photo by Jesse Elliott,

Figure 2.16 – Left: looking toward exterior entrance and baptistry well. Right: baptistry skylight in front of church entry (see figure 1.1 for exterior context of skylight).

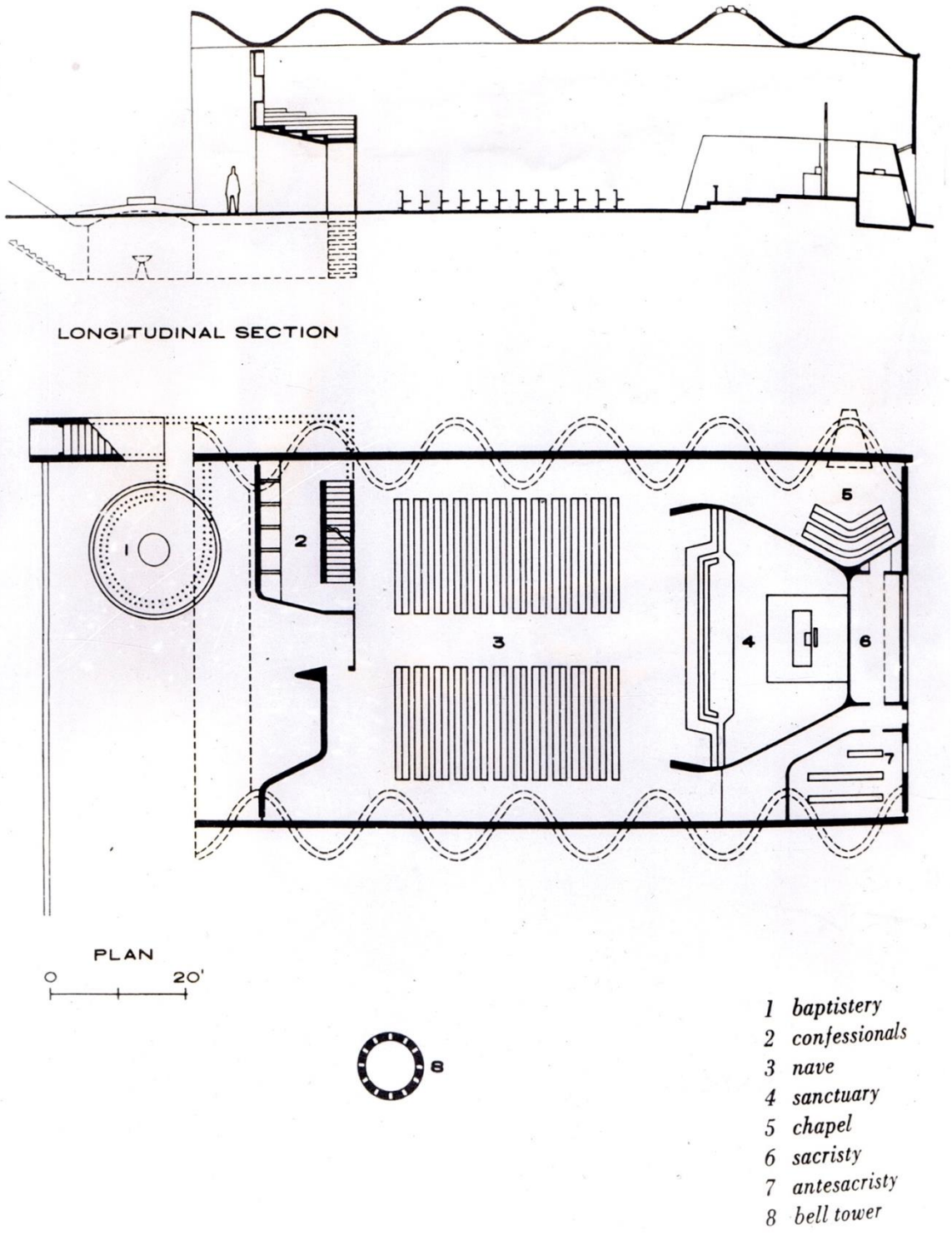


Image from the archives of the Institute of the History of Architecture at the University of the Republic, Montevideo.

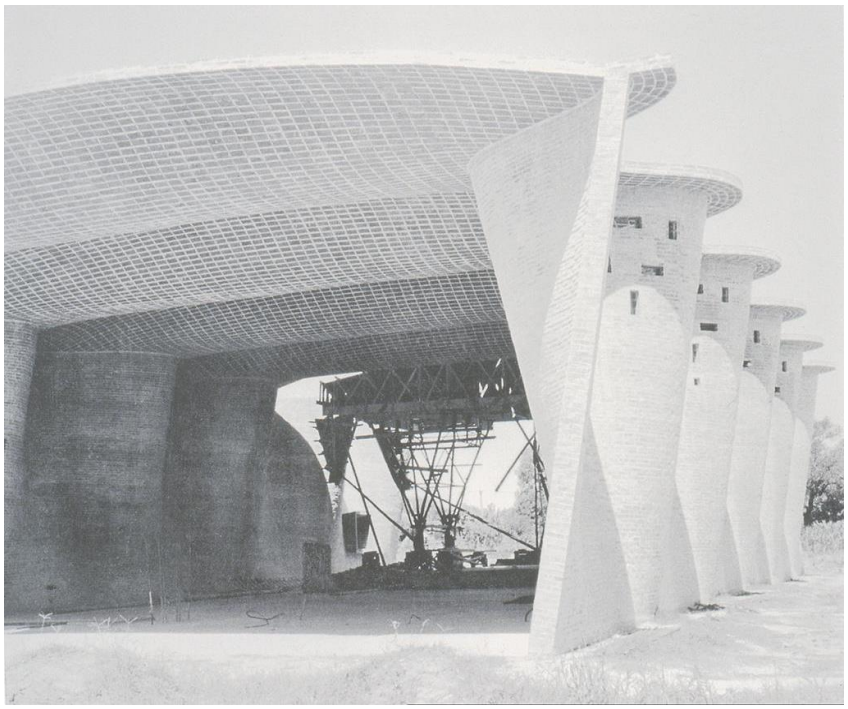
Figure 2.17. Plan (north is to the left) and section of Cristo Obrero aligned above. These were likely created for early international publications, circa 1961.

Photo by Jesse Elliott, August 16th, 2018.

Figure 2.18 – Looking south along the east side wall of the nave, toward the Chapel of the Lady of Lourdes, projecting to the east with its onyx plate capping its end.

Left: Dieste y Montañez archive, *Iglesia de la Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, 92.
Right: Photo from: http://onlybook.es/blog/category/de-arquitectos-y-arquitectura-y-otros/.

Figure 2.19. Left: A side wall about 20 courses up, below the site-built scaffolding supporting the final curve at top. Right: the forms for the wall curvature which were mounted at the top of the scaffold.



Dieste, Eladio, 1917-. 1958-60. Atlántida: Church of Christ the Worker: http://library.artstor.org/asset/ARTSTOR_103_41822003773346.

Figure 2.20 – The roof of Cristo Obrero nearing completion, showing the wall and roof system acting together as a portal frame before its end walls were filled in.

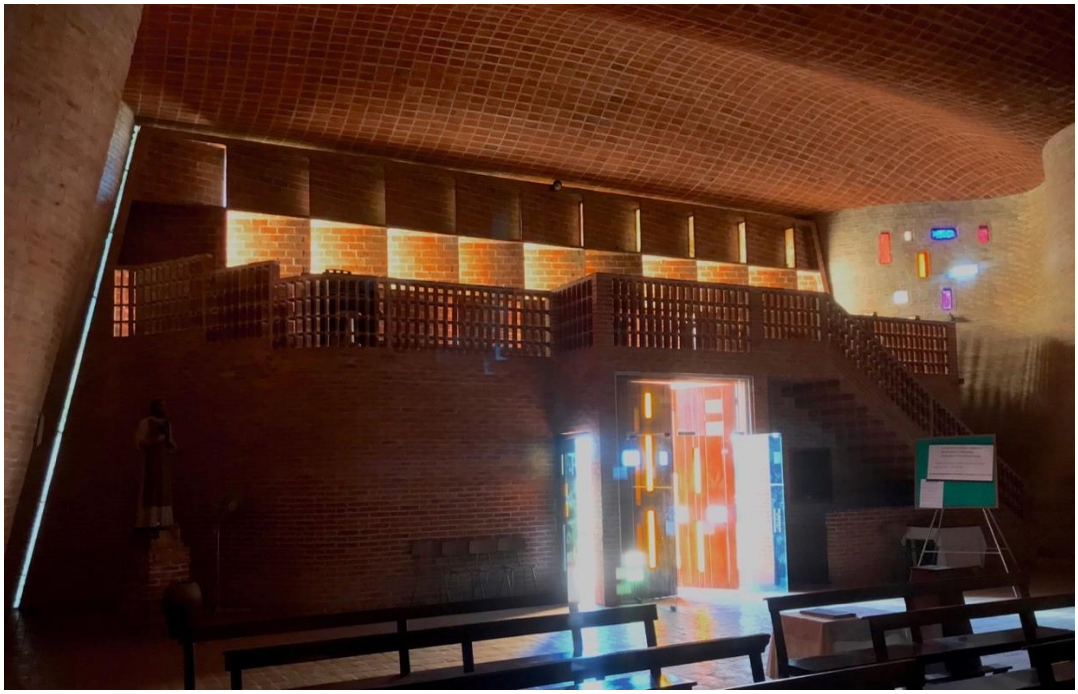
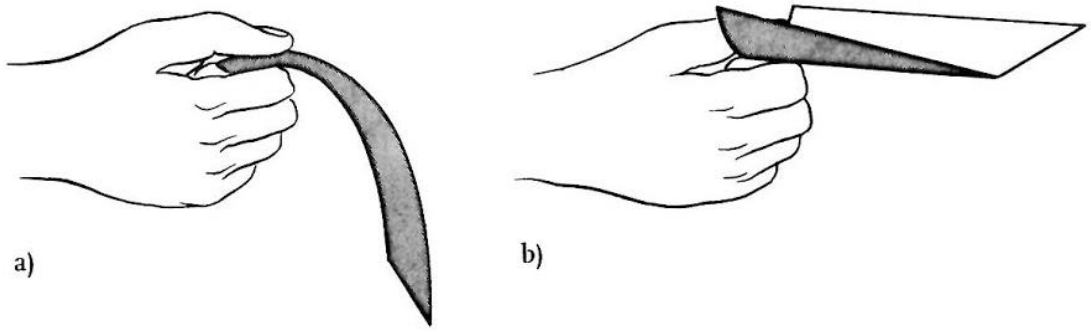


Photo by Jesse Elliott, August 16th, 2018.

Figure 2.21 – Looking back at the main entry with choir above, the onyx slot is apparent as it allows light to shine through the gap between the end wall and the roof and walls.

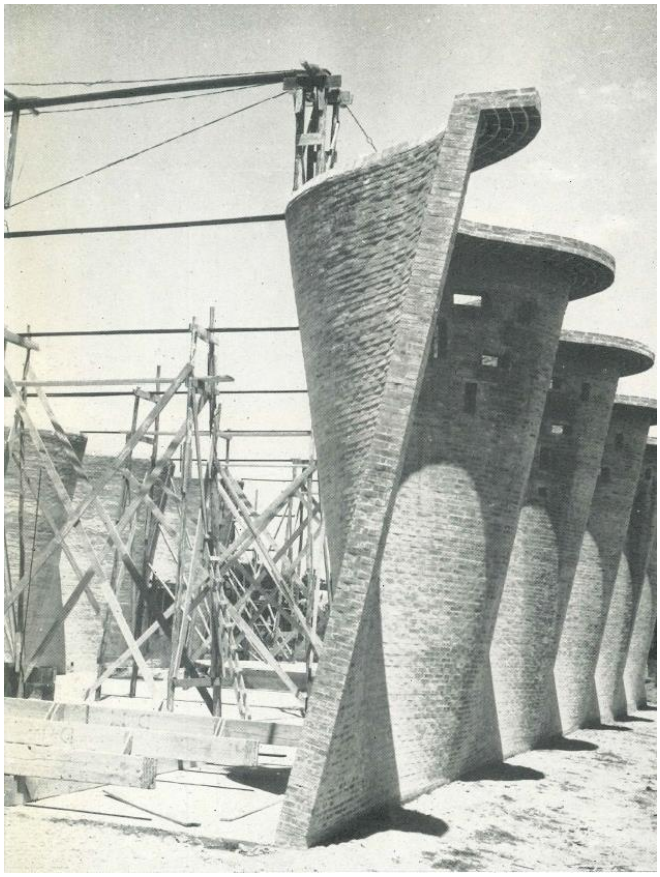


John Ochsendorf, "Eladio Dieste as Structural Artist," in *Eladio Dieste : Innovation in Structural Art*, ed, Stanford Anderson, and Dieste, Eladio. 1st ed. (New York: Princeton Architectural Press, 2004), 95.

Figure 2.22 - Paper Curved or Folded to make a structural form.

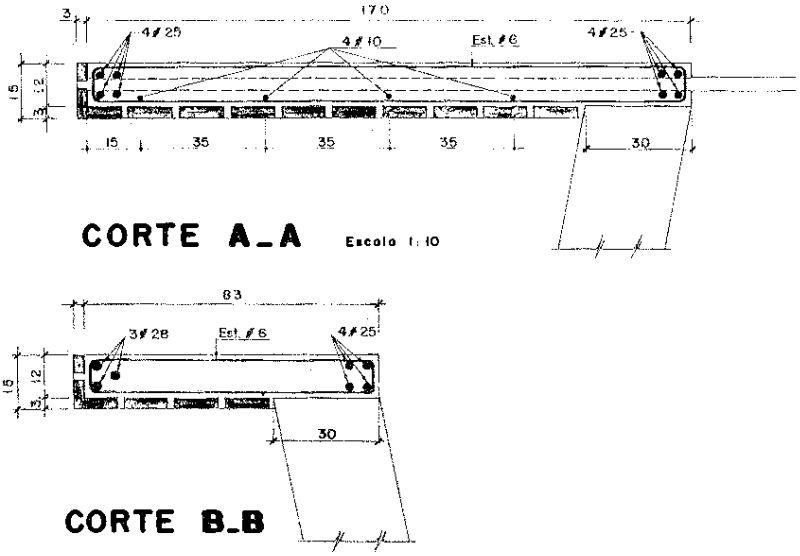
Dieste y Montañez archive, *Iglesia de la Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, 95.

Figure 2.23 – Looking north at the undulating Eave beam after its first lift was poured, with wood falsework projecting to support its first layer of brick fascia. The rebar dowels of the wall can be seen projecting upward at each peak and trough. The walls are still braced at this point. Larger wire reinforcement projects from the wall cavity plane, and very small wire reinforcement is visible in the field, likely worked into the facing brick below to ensure adhesion. This photo was taken before the tension rods were installed, and before campanile construction started, as that would be visible behind the chapel shown on the west.



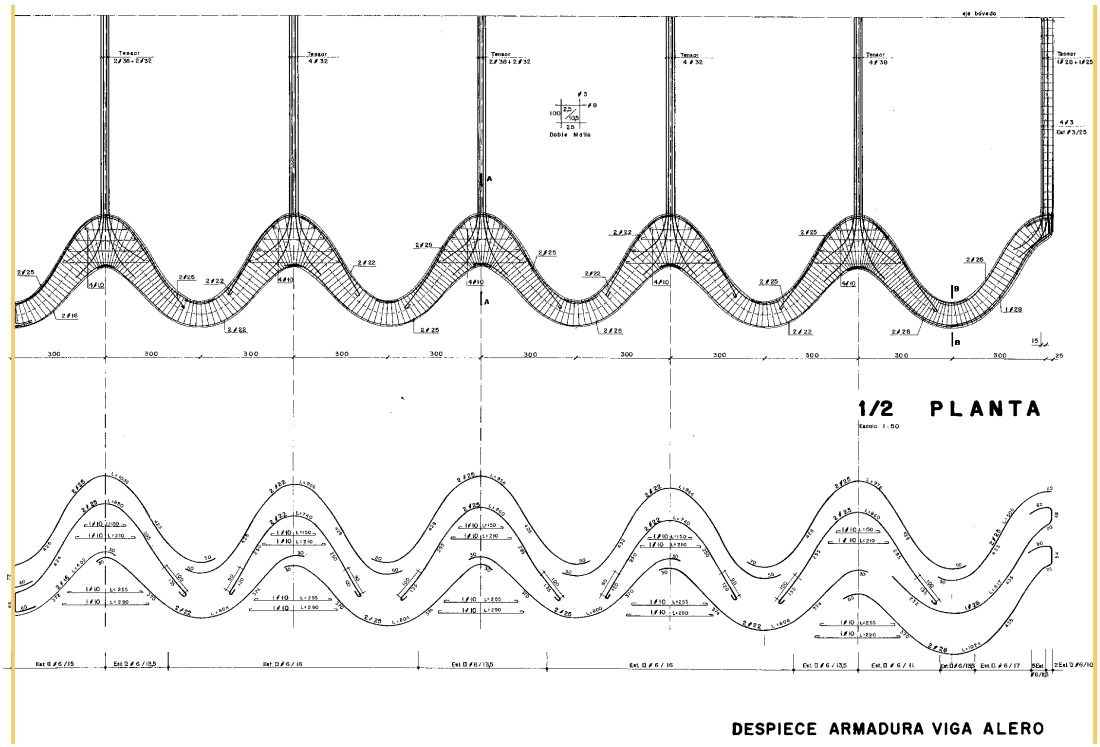
"Church at Atlantida, Uruguay." *Architectural Review*, September 1961, 174.

Figure 2.24 – Preparing for roof vault construction. The tension bars nearest the façade are being supported from above so that the roof form can be placed below them.



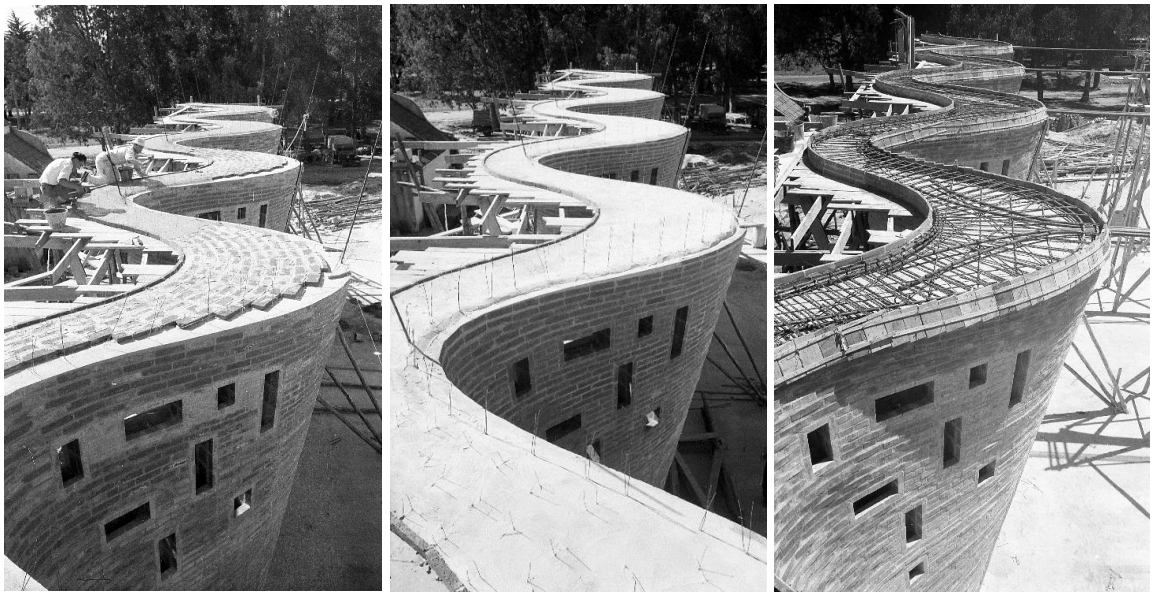
Eladio Dieste, "Some Reflections on Architecture and Construction." *Perspecta 27* (1992): 190.

Figure 2.25 – Eave beam sections with cut locations A_A and B_B per figure 2.26 below.



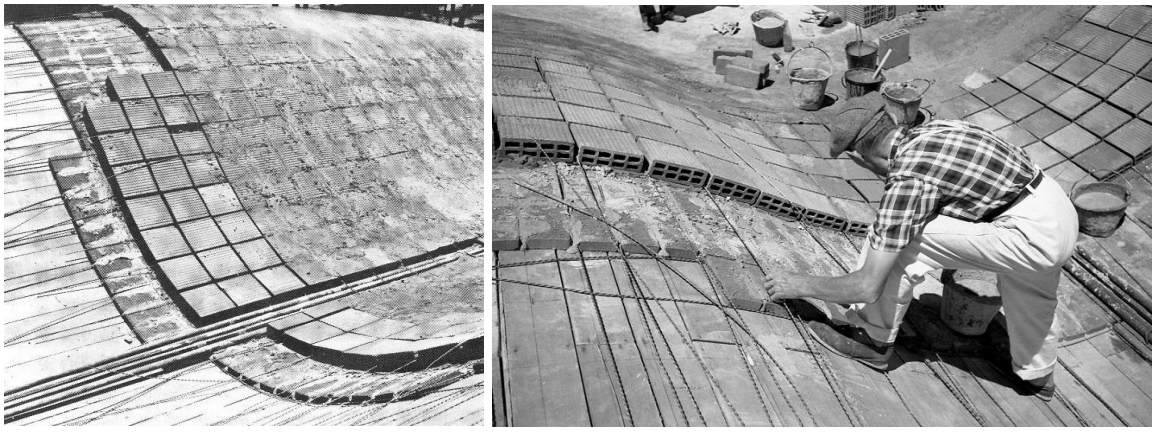
Dieste, Eladio. "Some Reflections on Architecture and Construction." Perspecta 27 (1992): 191.

Figure 2.26 – Top: Plan of the undulating eave beam, showing tension rods of roof vault valleys distributed within. Bottom: Distribution of the eave beam reinforcement.



Dieste y Montañez archive, *Iglesia de la Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, 147.

Figure 2.27 – Looking north at the undulating Eave beam through its three steps. Left: placing and grouting the brick facing as a form. Middle: after capping the brick facing coat. Right: The rebar is placed with tension bars of the roof vaults tied in, and ready for pouring.



Left Image: Informes de la Construction, Vol. 56, #496, March-April 2005, 16; Right Image: *Iglesia de la Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, 103.

Figure 2.28 – Roof vault construction. Left: tension rods lie in a trough as the bricks are installed and grouted with reinforcement wires laid each way between joints in both layers every 26 centimeters. Right: the "ticholo" bricks' hollow section is clearly visible.

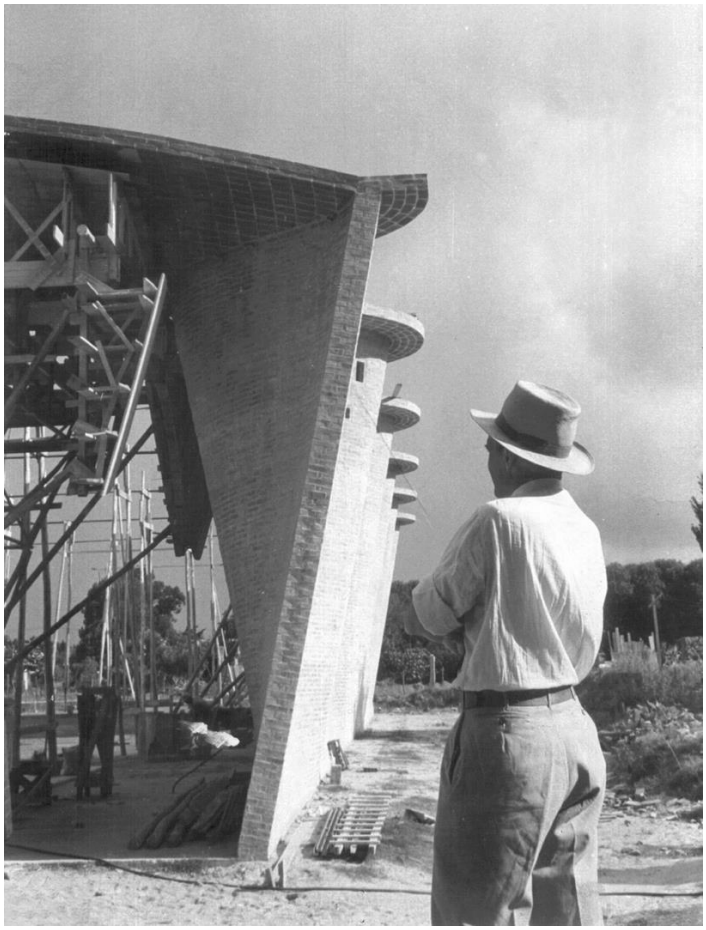


Photo by Marcelo Sassón (Dieste y Montañez archive), Mary Méndez. *Divinas Piedras: Arquitectura Y Catolicismo En Uruguay, 1950-1965*. (Montevideo, Uruguay: Universidad De La República Uruguay, 2016), 82.

Figure 2.29 – The scaffolding for the first bay of the roof is in the process of being lowered, with Eladio Dieste observing.

Dieste y Montañez archive, *Iglesia de la Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, 102.

Figure 2.30 – The completed walls and roof beam, with the roof form placed for the first vault section above the main entry. The far wing of the form is being extended to the wall with a series of trusses, following the forms curvature, and it was hinged for removal and replacement as a complete section (see figure 2.29). The tension rods are visible in the valley of the form. The rim beam is battered at the inside edge, and the facing at its outside edge is proud in anticipation of the finish layer of brick "tijolos" to come.

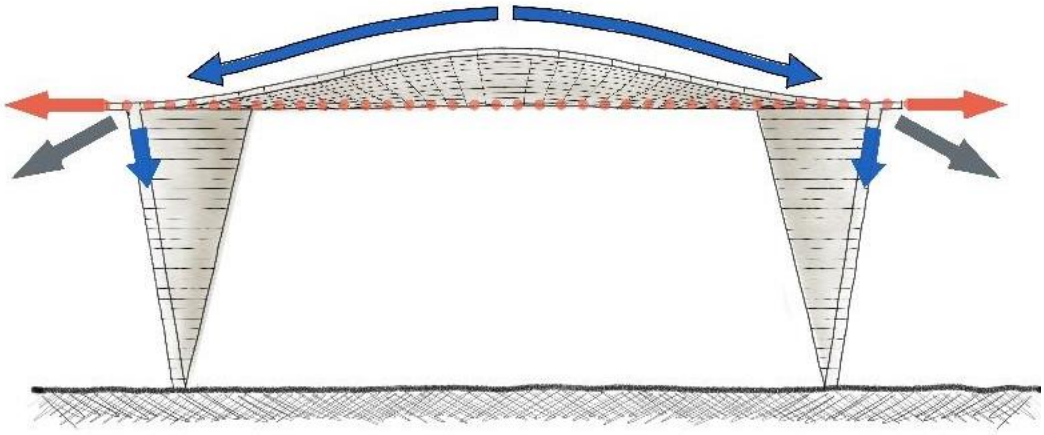
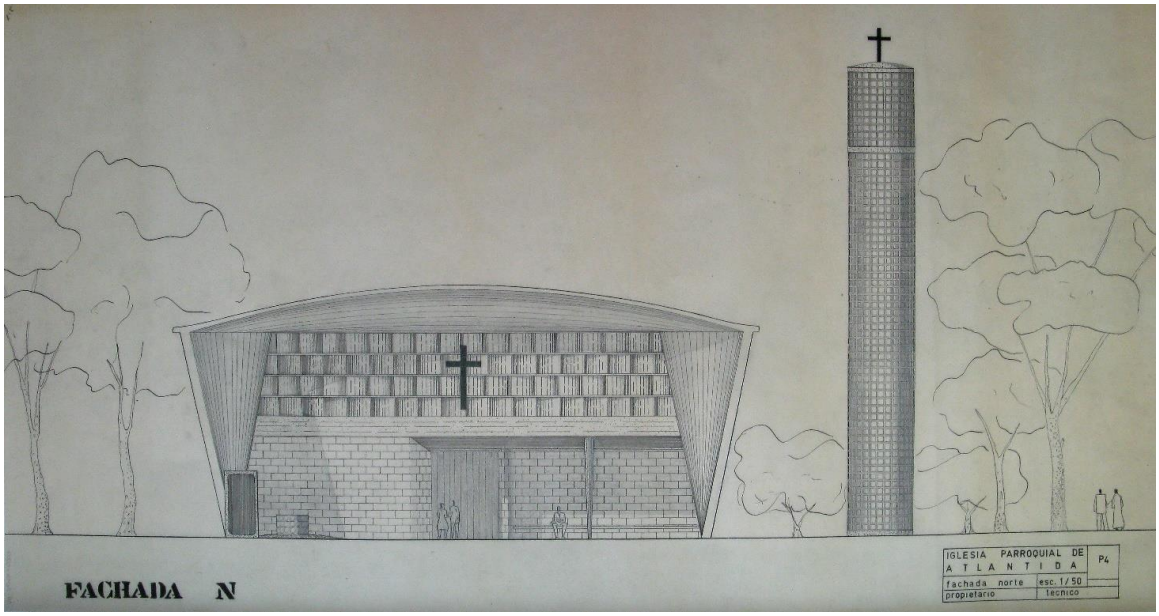


Image from *Iglesia de la Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, 143.

Figure 2.31 – A section showing the lines of force across the vault: Gray represents the outward thrust of the vault, red represents the tension that takes up the horizontal portion of the thrust and blue represents the areas in compression, across the top of the vault, and down the walls.

Left: Mónica Silva; center and right: Ciro Caraballo in *Iglesia de la Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, 52.

Figure 2.32 – Water tanks by Dieste Y Montañez in the Department of Canelones (Canelones is one of 19 departments that make up the country of Uruguay, and it is to the east and north of Montevideo, and includes Atlántida). Left: at San Román, City Golf (date unknown); Middle: in Carrasco (constructed 1958); at right: San Francisco de Las Piedras, (constructed 1957).



Iglesia de la Parroquia de Cristo Obrero: Plan de Conservación y Manejo, Getty Foundation Keeping it Modern Report Library, 2017, 74.

Figure 2.33 – 1958 drawing of Cristo Obrero's front elevation.

Photo by Jesse Elliott, August 16th, 2018.

Figure 2.34 – Looking north along the west side of the church, with campanile at left.

Photos by Jesse Elliott, August 16th, 2018.

Figure 2.35 – Left: campanile base and its access door. Right: the steps from inside.

Photo by Jesse Elliott, August 16th, 2018.

Figure 2.36 – Looking up the campanile, where a damaged tread reveals its metal reinforcement.

Photo by Jesse Elliott, August 21st, 2018.

Figure 2.37 – The façade of Iglesia de San Pedro facing the Plaza Independencia.

photo of display print by Jesse Elliott, Museo Casa de Rivera, Durazno, August 21, 2018.

Figure 2.38. – San Pedro's interior just after the May 23, 2967 fire.

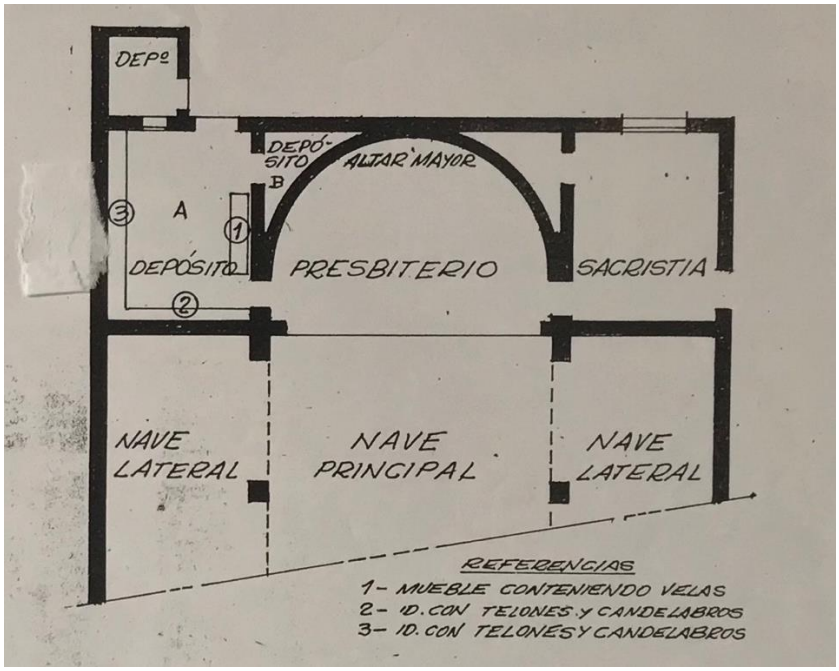


Photo of Durazno newspaper archive, June 2, 1967 by Jesse Elliott, Museo Casa de Rivera, Durazno, August 21, 2018.

Figure 2.39. A plan of San Pedro's presbytery and adjacent storage rooms, with attention drawn to the storage area with candles (A) and storage (B) that were entirely destroyed in the fire, as was most of the presbytery and about half of the nave, according to the article.

photo of display print by Jesse Elliott, Museo Casa de Rivera, Durazno, August 21, 2018.

Figure 2.40. – The interior of San Pedro before the fire, circa 1910.

photo of display print by Jesse Elliott, Museo Casa de Rivera, Durazno, August 21, 2018.

Figure 2.41. – San Pedro façade looking across the plaza as it was from 1898 to 1920.

photo by Jesse Elliott, Durazno, August 21, 2018.

Figure 2.42. A plaque displayed on the front of the church, next to the sidewalk, showing the façade of San Pedro as it was in 1839. This was its form from 1821 to 1890.

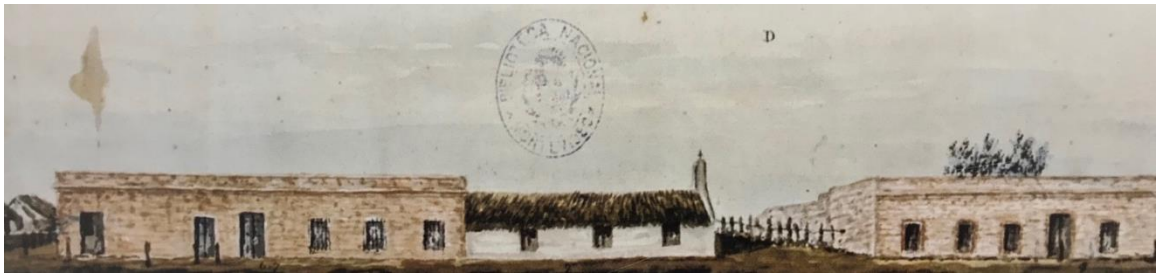
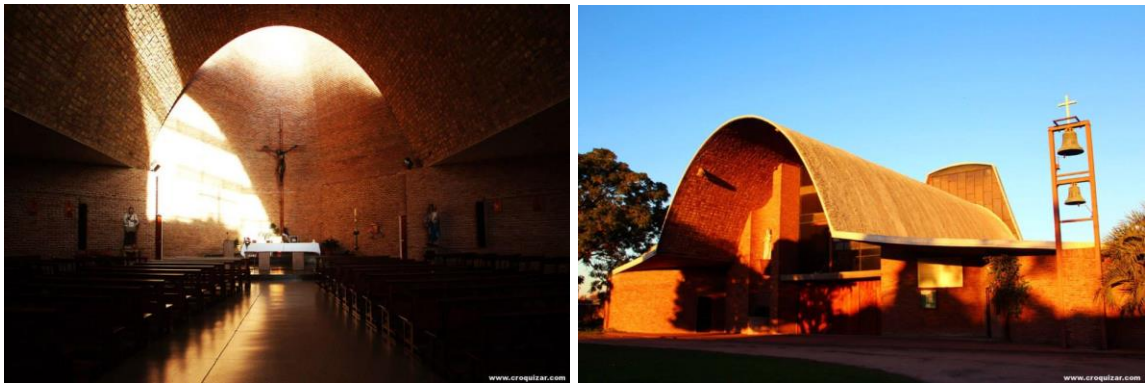


photo of display print by Jesse Elliott, Museo Casa de Rivera, Durazno, August 21, 2018.

Figure 2.43. The north side of San Pedro as it was recorded on the 26th of March 1839.



Images from Croquizar. 2019. “Iglesia Parroquial San Juan Bosco (Colón) – Luis García Pardo.” www.facebook.com/pg/Croquizar/photos/?tab=album&album_id=280261962117894.

Figure 2.44 – Architect Luis García Pardo’s Iglesia Parroquial San Juan Bosco (Colón), constructed and engineered by Dieste, and completed in 1966 in Montevideo. The Bell tower at right is a recent addition (http://www.fadu.edu.uy/garcia-pardo/obras/iglesia-san-juan-bosco/).

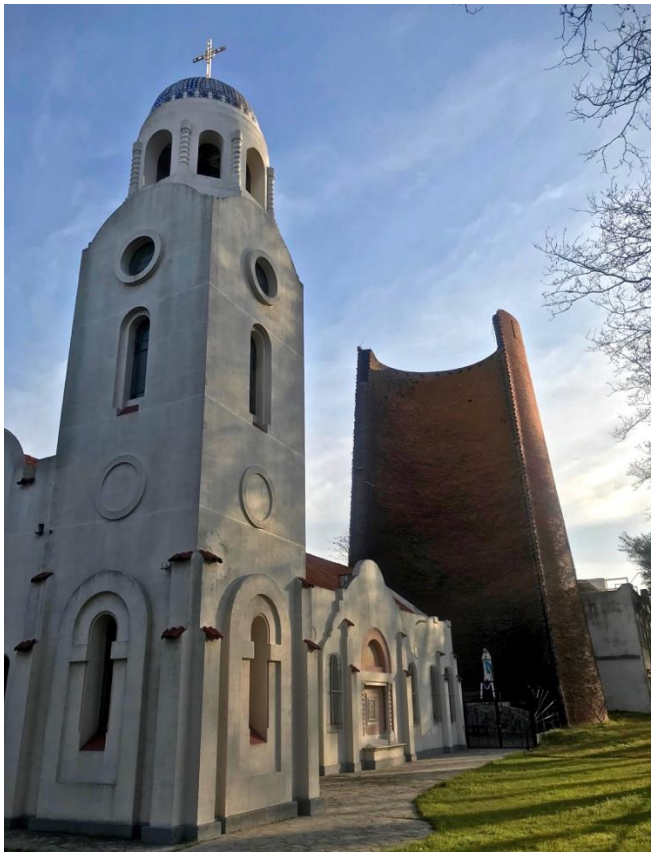
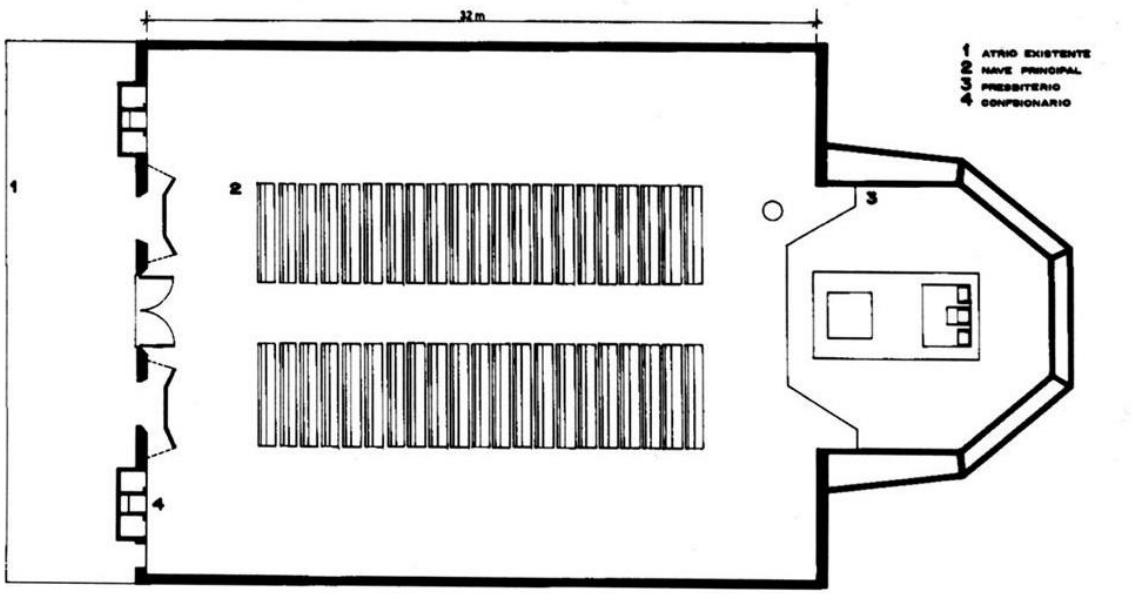


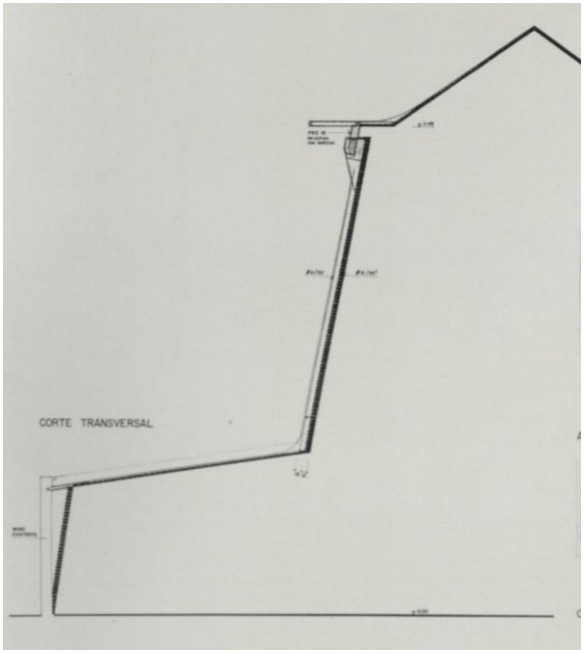
Photo by Jesse Elliott, August 17th, 2018.

Figure 2.45 – The partially completed presbytery tower of the Church of Nuestra Señora de Lourdes, Montevideo.



Dieste, Eladio. 1967. Iglesia de San Pedro. http://library.artstor.org.libproxy.uoregon.edu/asset/AWSS35953_35953_34639753.

Figure 2.46 – San Pedro Floor Plan: 1. Existing Atrium, 2. Principal Nave, 3.Presbytery, 4. Confessionary (The narthex is the open rectangle at left that is not detailed).



Dieste, Eladio, Mercedes Daguerre, M. A Chiorino, and Graciela Silvestri. 2003. Eladio Dieste : 1917-2000. (Milano: Electa), 135.

Figure 2.47 – Partial section of the nave at San Pedro showing primary structure's "folded" slabs.

Photo by Jesse Elliott, August 21st, 2018.

Figure 2.48 – The presbytery tower from the courtyard behind San Pedro that is part of the larger complex including a parish house and school.

Photo by Jesse Elliott, August 18th, 2018.

Figure 2.49 – Looking south at the presbytery tower from the bell tower of San Pedro.

Photo by Marcos Guiponi, included in “Latin America in Construction: Architecture 1955-80” Exhibition Catalog http://marcosguiponi.com/index.php/foto/san-pedro-de-durazno/.

Figure 2.50 – Looking across the nave toward the presbytery tower of San Pedro.

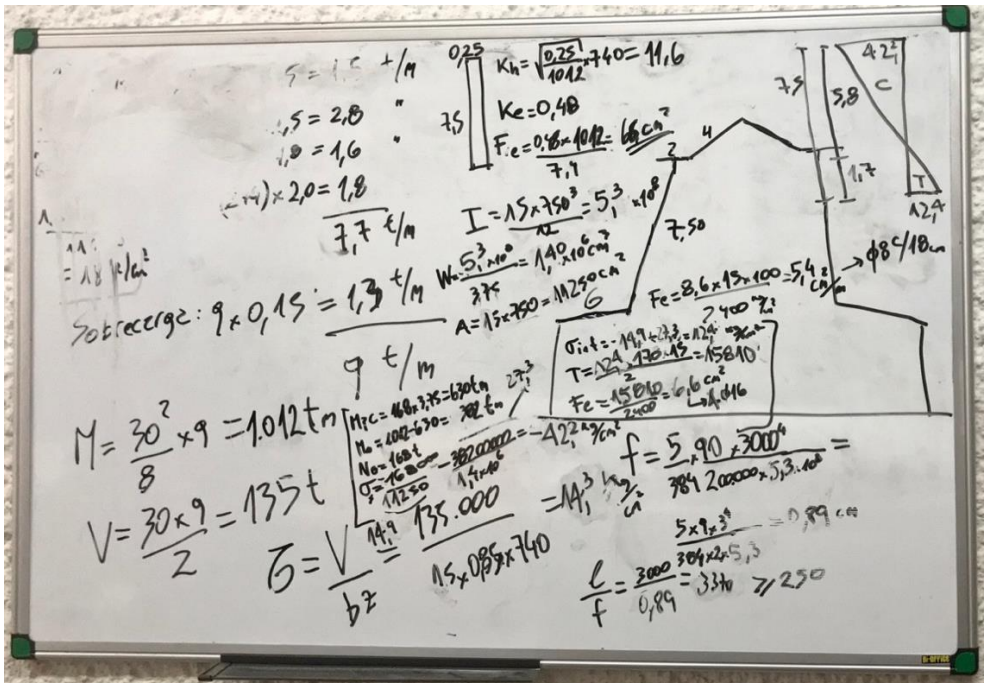


Photo by Jesse Elliott, August 13th, 2018.

Figure 2.51. A whiteboard recently filled with notes about the section of San Pedro from the Dieste y Montañez office, used for reference to a new project’s design.

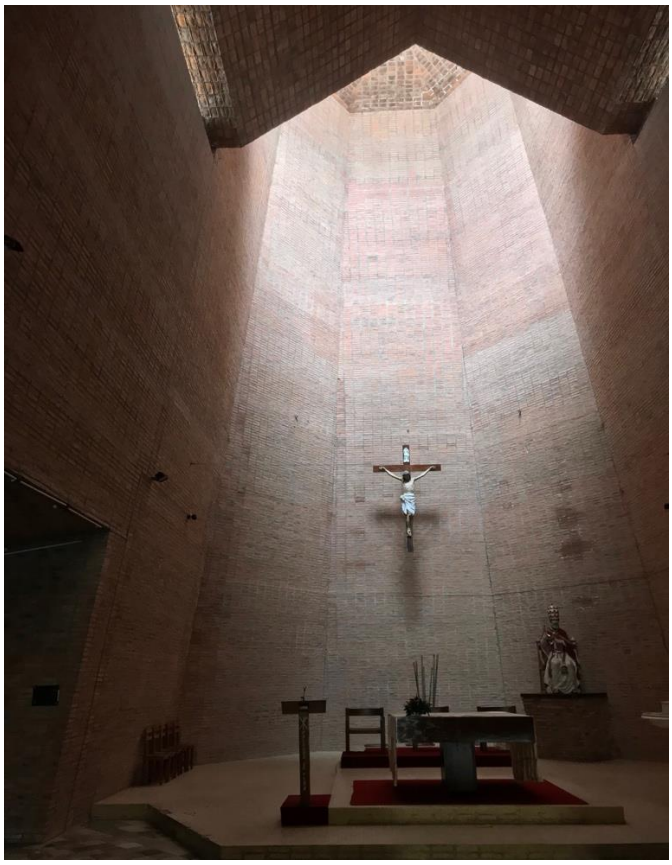
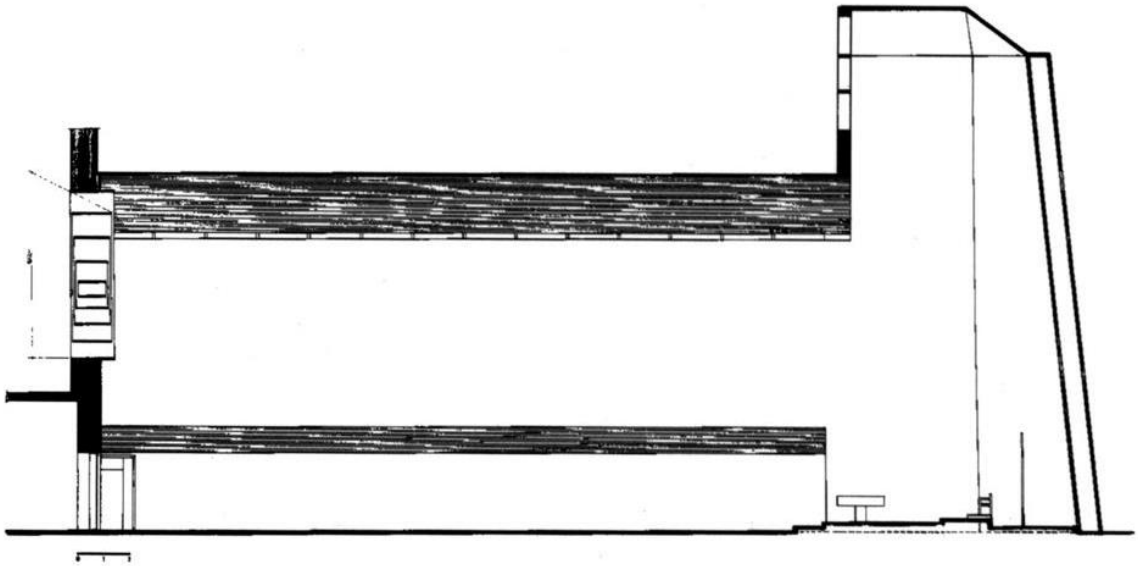


Photo by Jesse Elliott, August 18th, 2018.

Figure 2.52 – The altar of San Pedro with presbytery tower daylight form above.



Dieste, Eladio. 1967. St. Peter's Church
 Iglesia de San Pedro.
http://library.artstor.org.libproxy.uoregon.edu/asset/AWSS35953_35953_34639783.

Figure 2.53 - Longitudinal Section of San Pedro (narthex not shown at left).

Photo by Javier Villasuso, 2017.

Figure 2.54 – The nave of San Pedro with its rose window above the main entrance.

Photo by Jesse Elliott, August 18th, 2018.

Figure 2.55 – Behind the rose window. Left, the rose window is aligned with the church façade windows, but a white fabric is suspended between them. Right: looking at the outer rays of the rose window with diagonal reinforcement bar.

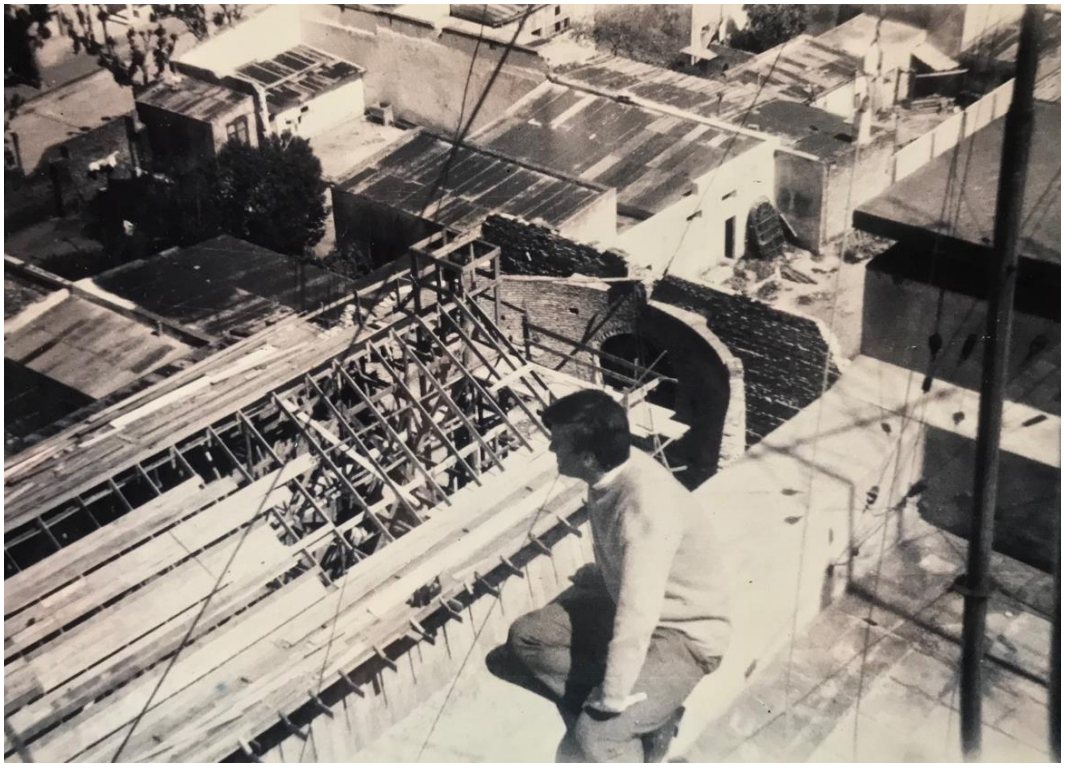


photo of display print by Jesse Elliott, Museo Casa de Rivera, Durazno, August 21, 2018.

Figure 2.56. – Formwork for the roof San Pedro, before the presbytery tower was built.

Photos by Jesse Elliott, August 16th, 2018.

Figure 3.1 – Looking over the Sacristy at the back of the crucifix.

Photos by Jesse Elliott, August 16th, 2018.

Figure 3.2 – Looking toward the altar from the choir loft stairs.

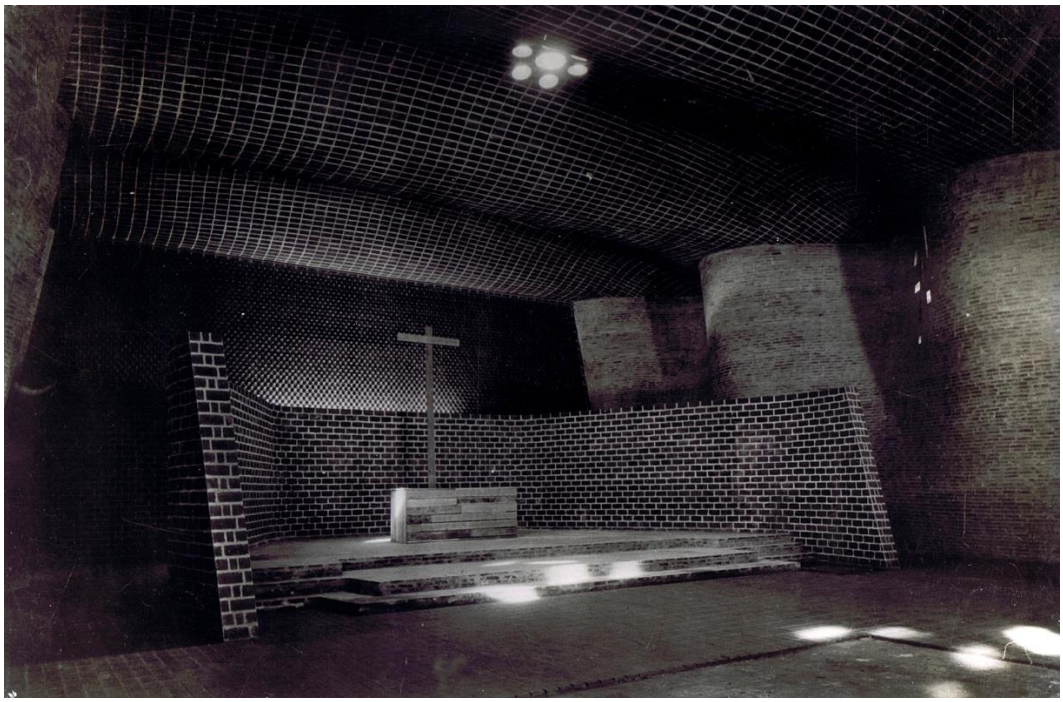


Photo from the archives of the Institute of the History of Architecture at the University of the Republic, Montevideo.

Figure 3.3. The altar mocked up at Cristo Obrero when the project was largely complete. Paving of the floor is still in progress.

photo by Jesse Elliott, August 16, 2018.

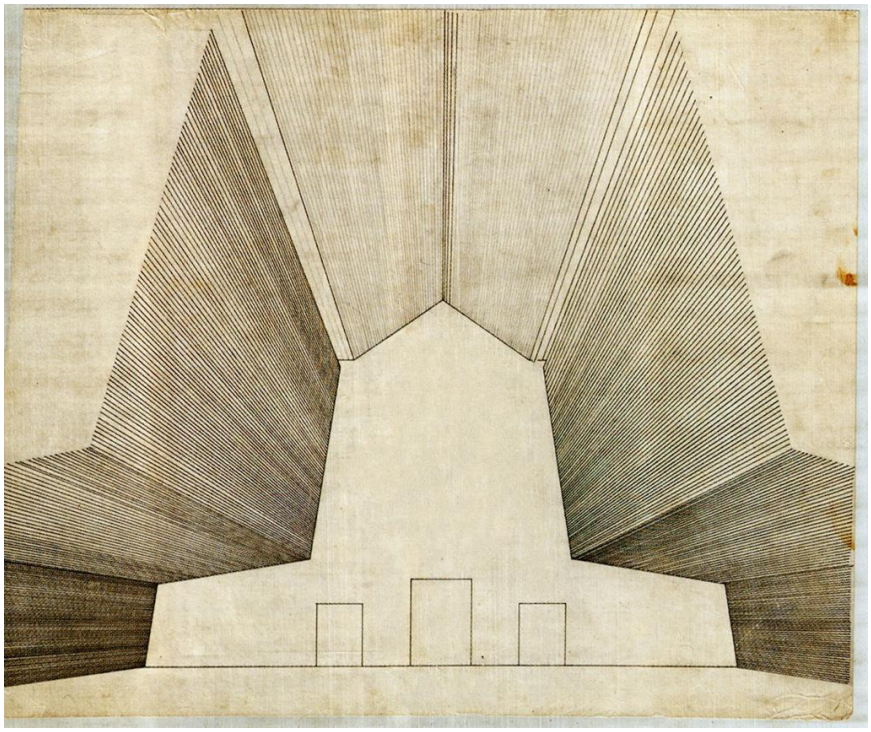
Figure 3.4. The choir loft looking toward stair, with onyx slabs for light and ventilation.

photo by Jesse Elliott, August 16, 2018.

Figure 3.5. The rear end wall of Cristo Obrero with its small operable windows set into Onyx slabs inside the sacristy and antesacristy. The sloped wall under the cross has an onyx plate in the opening that lets light rise up the rear wall with raked bricks inside.

photos by Jesse Elliott, August 16, 2018.

Figure 3.6. The chapel of the Virgin (left) and a plaque to the Giudices in the wall across facing it, commemorating their remains with a prayer, resting in the church they built for god. The skewed bricks of the end wall are visible extending to this corner.



Dieste, Eladio. 1967. St. Peter's Church
 Iglesia de San Pedro. http://library.artstor.org.libproxy.uoregon.edu/asset/AWSS35953_35953_34639749.

Figure 3.7. Perspectival drawing of folded plate scheme with canted walls for San Pedro.

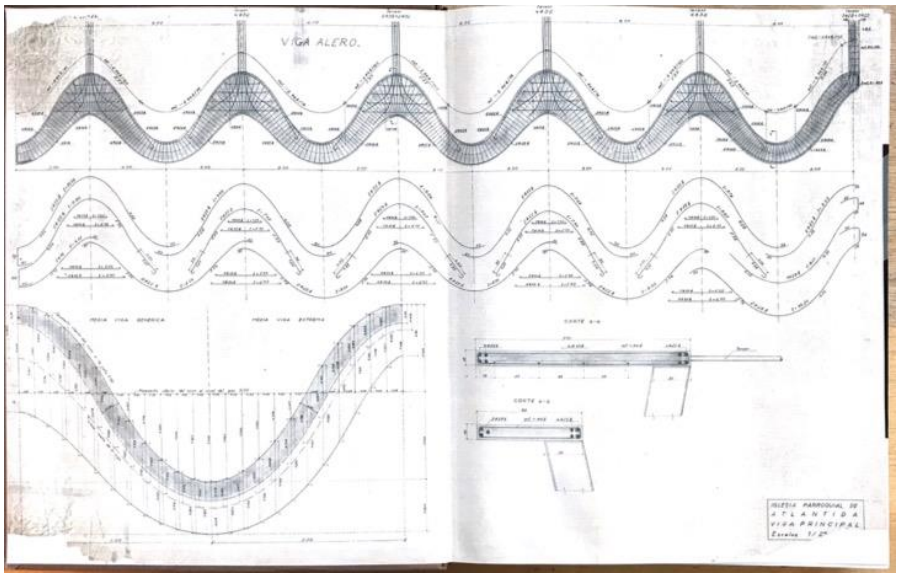
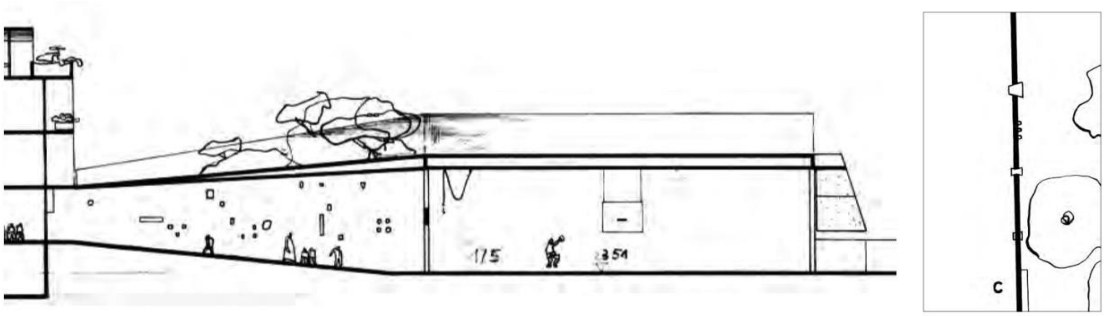


Photo by Jesse Elliott of front inside cover of the exhibition catalog for *Latin America in Construction: Architecture 1955-1980*. New York: Museum of Modern Art, 2015.

Figure 4.1. The front inside cover of *Latin America in Construction: Architecture 1955-1980*, featuring Dieste's construction drawings of the walls and eave beam at Cristo Obrero. The back inside cover features Niemeyer's plan for Brasilia.

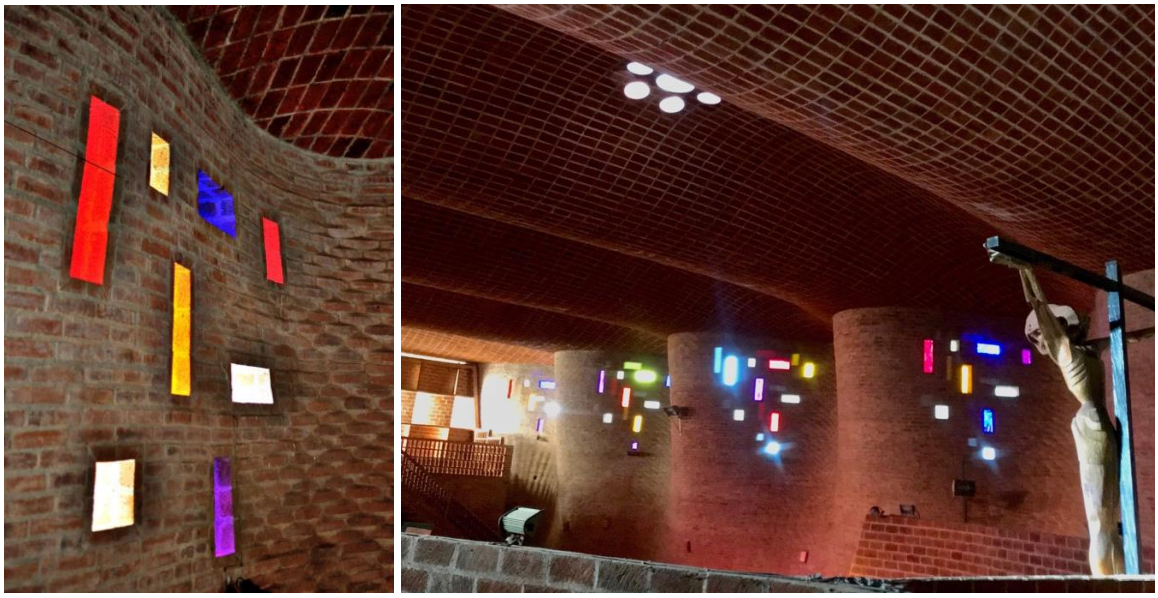
Left: Photo by Jesse Elliott; Right: image from *Eero Saarinen.* (London: Phaidon, 2005), 114.

Figure 4.2– Left: MIT Chapel interior, with daylight slot at exterior walls and daylighting above altar. Right: Exterior view with Kresge Auditorium in background.



Jorge Nudelman. "*Tres visitantes en París: los colaboradores uruguayos de Le Corbusier*." (Master's Thesis, Madrid: E.T.S. Arquitectura (UPM), 2013), http://oa.upm.es/19877/, 332.

Figure 4.3 – Early drawings of Le Mannais school designed by Clémot, Dieste, Montañez, and Serralta in 1958. Left: Section of Le Mennais school. Right: Plan view of ground floor wall with window niches.



Left: Photo by Javier Villasuso in *Igl*esia *de la Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, 172; Right: photo by Jesse Elliott August 16, 2018.

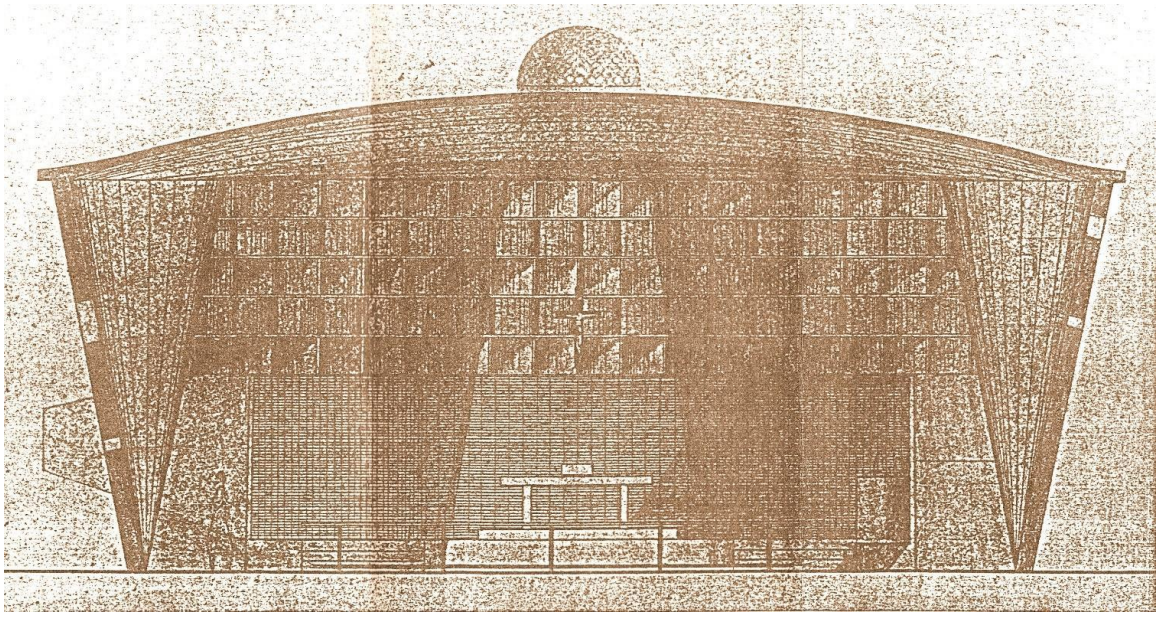
Figure 4.4 – Left: a single grouping of north-facing colored windows in the upper wall. Right: looking across the crucifix toward the east wall with its repeating window gangs.

Left: photo of an archive print by Jesse Elliott, August 13, 2018; Right, photo from Dieste y Montañez archive, *Iglesia de la Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, 14, 171.

Figure 4.5. The ceramic pots used to create the skylight over the altar. The photo at left shows the underside of the vault, and is one Dieste kept near his desk among a small special collection. The photo at right is from the archives and shows the pots as they are being integrated from the top side during this phase of construction.

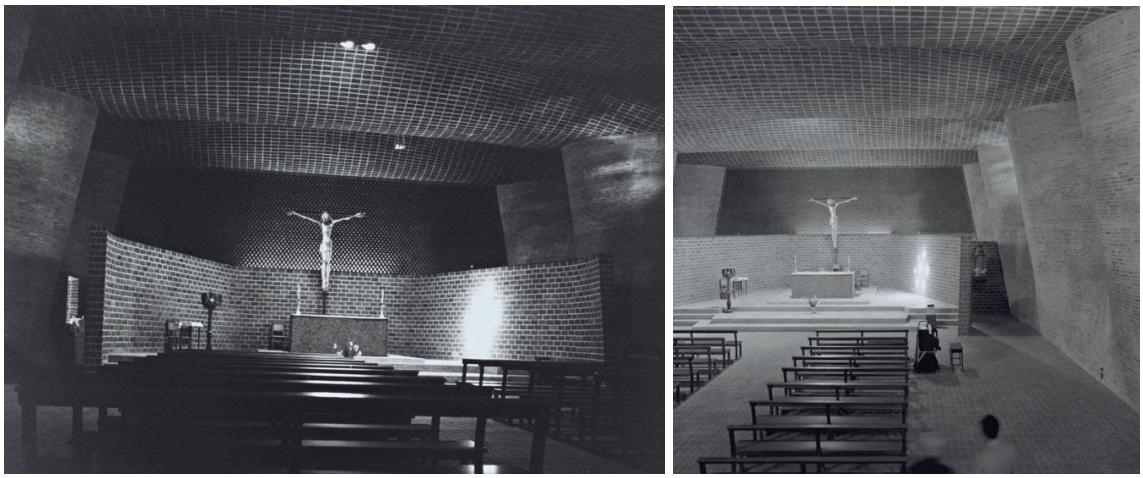
photo by Jesse Elliott, August 16, 2018

Figure 4.6. Round onyx slabs set into clay pot forms as skylights along the path from the underground baptistry.



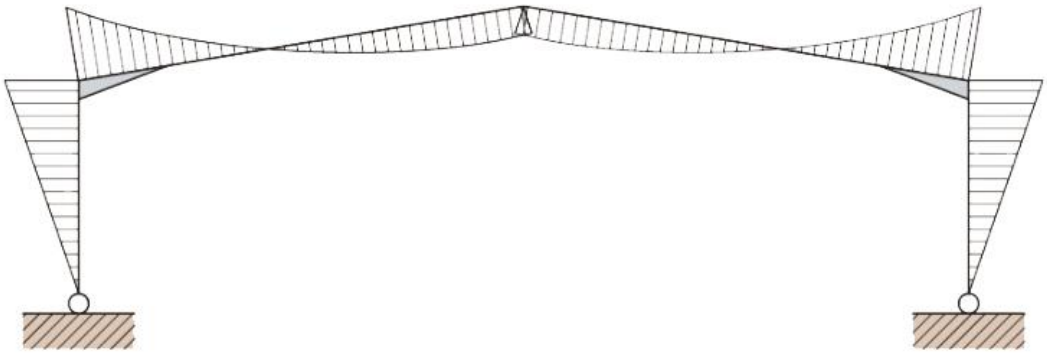
Iglesia de la Parroquia de Cristo Obrero: Plan de Conservación y Manejo, Getty Foundation Keeping it Modern Report Library, 2017, 71.

Figure 4.7 – A 1957 section of the nave showing many differences from what was constructed: a similar treatment as the façade (but in 5 strips) on the back wall, a large dome skylight over the altar, a much larger chapel protruding through the exterior wall, and openings at different elevations in the side walls.



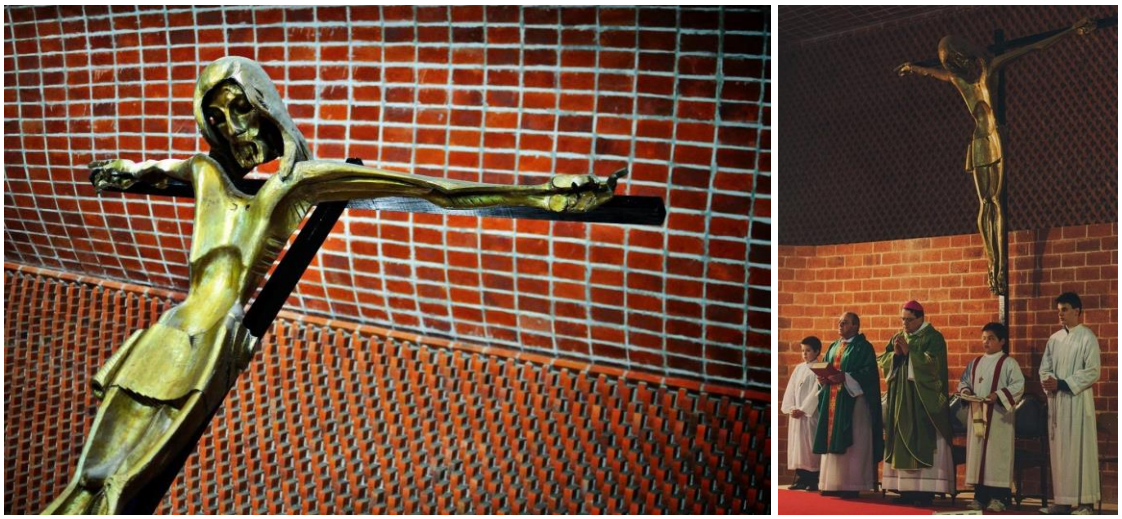
Photos by Julius Shulman, 1967, © J. Paul Getty Trust. Getty Research Institute, Los Angeles (2004.R.10). Cropped by Jesse Elliott.

Figure 4.8 – Left: At a seated height from the back of the nave, the lites above the altar are visible, as is the light raking up the rear wall, and the light coming in from the Corbusian windows in the undulating side walls, in addition to that of the tubular chapel to the at left. Right: in a photo from the chorus above the entry Shulman captures the connected feel of the nave. The lites above the altar shine clearly on the presbytery wall.



https://www.steelconstruction.info/Portal_frames, February 2, 2019 (background color removed by Jesse Elliott).

Figure 4.9. Moment diagram of a portal frame as an example of what the magnitude of bending forces in the walls of Atlántida could have looked like. The increasing magnitude is represented by the horizontal lines outside the vertical posts as the walls rise. The structure represented here is generic portal frame, intended to help with a general understanding of what moment diagram forces can look like.



Left: Javier Villasuso; Right: Ciro Caraballo in *Iglesia de la Parroquia de Cristo Obrero: Plan de Conservación y Manejo*, Getty Foundation Keeping it Modern Report Library, 2017, 14, 340.

Figure 4.10 – Bronze Crucifix by the sculptor Eduardo Yepes.

Left: Photo by Jesse Elliott, August 16, 2018. Right photo by Javier Villasuso, 2017.

Figure 4.11. Left: The main entry alcove with radius corner. Right: close-up of corner.

Left: photo by Jesse Elliott, August 16, 2018; Right photo by Javier Villasuso, 2015.

Figure 4.12. Left: Looking at the statue of the Virgin in her chapel. Right: The chapel protruding from the east wall, capped with its translucent onyx plate.

Left: photo by Julius Shulman, 1967, © J. Paul Getty Trust. Getty Research Institute, Los Angeles (2004.R.10). Right: cover of *Progressive Architecture*, April 1962.

Figure 4.13 – Left: 1967 photo of Campanile and façade by Julius Shulman. Right: Cover of *Progressive Architecture*, April 1962.

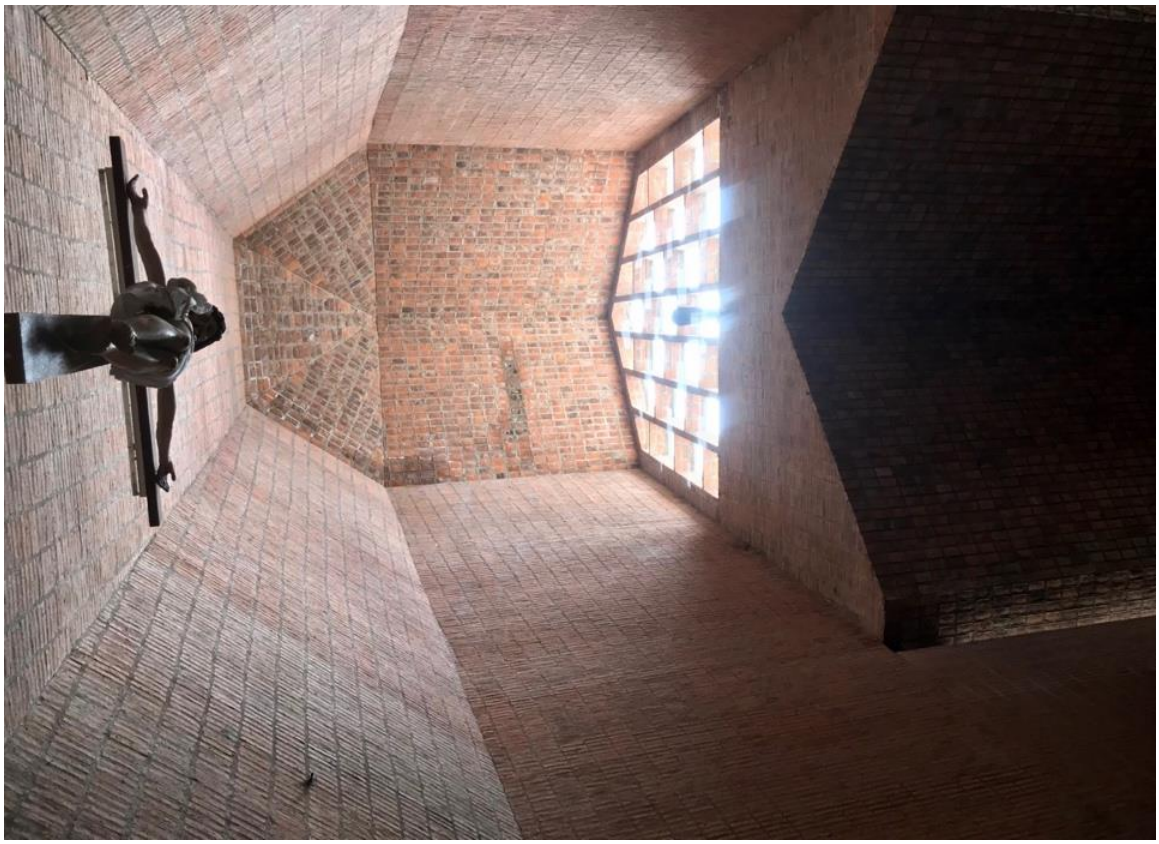


Photo by Jesse Elliott, August 21, 2018.

Figure 4.14 – Looking up the presbytery tower with its north-facing clerestory.

Photo by Javier Villasuso, 2017.

Figure 4.15 – The north-facing presbytery tower clerestory with its structural brick mullions organized in a running bond pattern, symmetrical about the center strip, and with a rising chevron of joints.

Photo of archive print near Eladio Dieste's desk by Jesse Elliott, August 13, 2018.

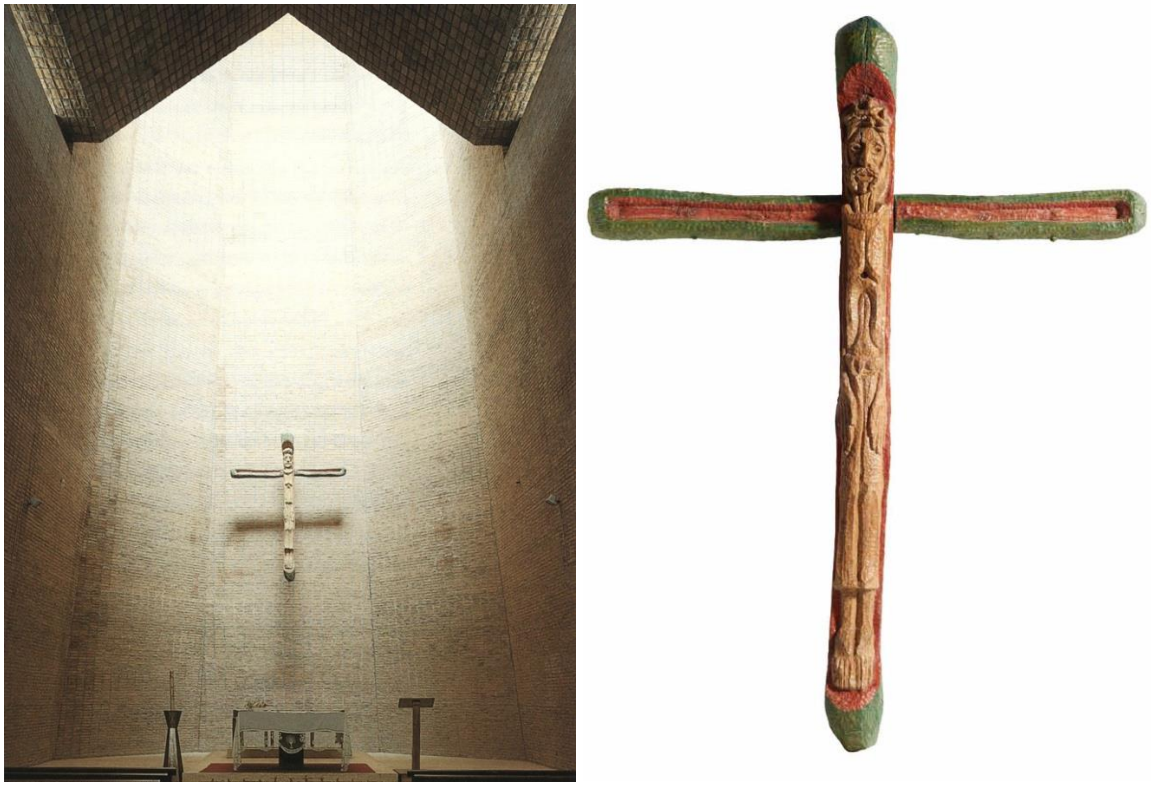
Figure 4.16. San Pedro's rose window is one of a few photos Dieste kept near his desk.

Photo by Jesse Elliott, August 21, 2018.

Figure 4.17 – Looking at the stack-bond brick with flush grout joints at the presbytery walls of San Pedro.

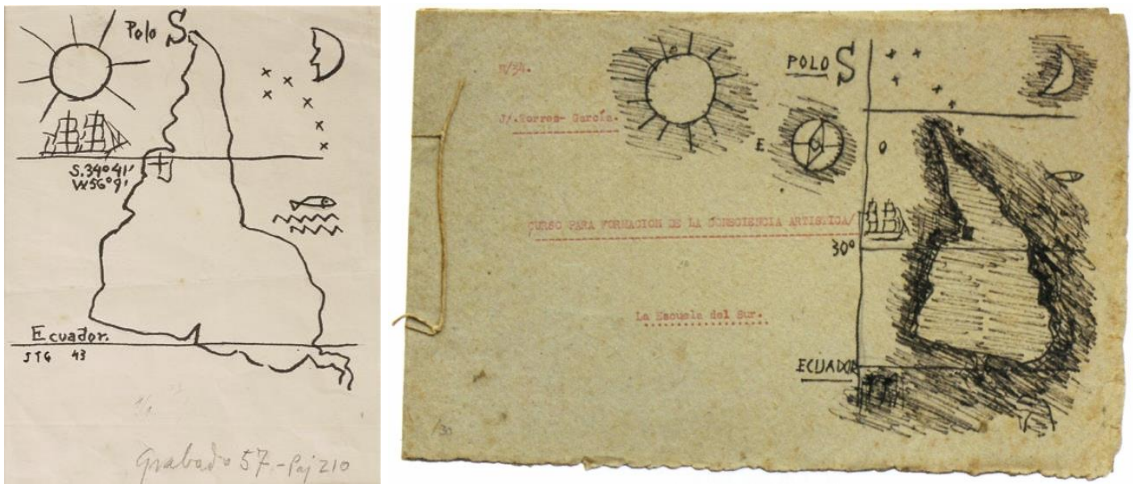
Left image: Jesse Elliott, August 18, 2018, Right image: Javier Villasuso, 2017.

Figure 4.18. The crucifix of San Pedro by Claudio Silveira Silva, removed from the presbytery in 2005, and stored in this back room.



Left: *Eladio Dieste: 1943-1996*. (Sevilla: Consejería De Obras Públicas Y Transportes, 1996), 221. Right: In *Arte de Frontera: Claudio Silveira Silva*. (Montevideo: Museo Nacional de Artes Visuales, 2012). Exhibition Catalog, 67.

Figure 4.19. Claudio Silveira Silva's crucifix as originally installed behind the altar, removed in 2005. Right: A studio image of the crucifix from the 2012 exhibition it was transported for at the National Museum of Visual Arts in Montevideo.



Images from *Joaquín Torres-García: The Arcadian Modern*. Exhibition Catalog. (New York: Museum of Modern Art, 2015), Left: "América Invertida," ink on paper, 19.5 x 15.5 cm (7-11/16 x 6-1/8 in.), 36. Right: "Curso para formación de la consciencia artística. La Escuela del Sur," ink and pencil on paper, 14.7 x 22.8 cm (5-3/4 x 9 in.), 203.

Figure 5.1. Left: Joaquín Torres García's 1943 "America Inverted." Right: A 1934 study for the formation of artistic conscience, The School of the South.

Photo of collage board in Dieste y Montañez office by author, August 13, 2018

Figure 5.2. A collage of Eladio Dieste's favorite images, which he kept in his office. These include Yepes' Christ, Pierre Teilhard du Chardin, a photograph of "Mistress and Maid" by Vermeer, Gaudí twice, G.K. Chesterton, A colonnaded European street scene, and equipment that he designed.

REFERENCES CITED

Primary Texts

Corbusier, Le. “Towards a New Architecture: Guiding Principles,” in *Programs and Manifestoes on 20th-century Architecture*, edited by Ulrich Conrads, 59-62. Cambridge, Mass.: MIT, 1970.

Díaz, Miguel Angel and Miguel Castang. Interview by Ciro Caraballo Perichi. October 2016, Iglesia de Cristo Obrero, Atlántida, Uruguay, video, 12:20, https://www.youtube.com/watch?v=As3oCQlUXaM&list=PLa1wuwT-T1OgE8kY_Yg1c2DmL9x5qmvpQ&index=1.

Dieste, Eduardo. “Reflexiones de Eduardo Dieste sobre la vida de Eladio Dieste y su trayectoria,” (ca. 2010), Microsoft Word file.

Dieste, Eladio, ed., Consejeria de Obras Públicas y Transportes Dirección General de Arquitectura y Vivienda. Andalucía: Junta de Andalucía, 2001. *Eladio Dieste: 1943-1996.* 4th Ed. A primary exhibition catalog volume for the traveling exhibition presented in Montevideo, Uruguay in November of 1996 and Sevilla, Spain in April of 1997.

Dieste, Eladio, ed., Consejeria de Obras Públicas y Transportes Dirección General de Arquitectura y Vivienda. Andalucía: Junta de Andalucía, 2001. *Eladio Dieste: 1943-1996: Métodos de Cálculo.* 4th Ed. An additional exhibition catalog volume for the traveling exhibition presented in Montevideo, Uruguay in November of 1996 and Sevilla, Spain in April of 1997.

Dieste, Eladio, ed., Galaor Carbonell. *Eladio Dieste: La Estructura Ceramica.* Bogota: ESCALA, 1987.

Dieste, Eladio. “Eladio Dieste: en la parte que no se ve.” Interview by Lucio Muniz, Montevideo, 1992. *Uruguayos de memoria*. Montevideo: Ed. Fin de Siglo, 1998, 23-40.

Dieste, Eladio. Interview by Jorge Nudelman, July 20, 1978. *Entrevistas. Edición especial, libro 2*. Montevideo: FADU-UdelaR, 2016, 186-223.

Dieste, Eladio. Interview by Damián Bayón. *The Changing Shape of Latin American Architecture: Conversations with Ten Leading Architects.* Chichester: Wiley, 1979, 190-213.

Dieste, Eladio. "Some Reflections on Architecture and Construction." *Perspecta 27* (1992): 187-203.

Dieste, Eladio. “Torres Garcia y Nuestra Tierra,” in *Testamento Artístico*. Montevideo: Biblioteca De Marcha, 1974.

Dieste, Eladio, and Augustín Dieste. *La Invención Inevitable*. (Montevideo: Cachimba del Piojo, 2009.

Dieste, Eladio, and Graciela Silvestri. *Escritos Sobre Arquitectura*. Montevideo, Uruguay: Irrupciones Grupo Editor, 2011.

Dieste, Esteban. Email to Jesse Elliott, February 24th and March 11th, 2019.

Dieste, Esteban. "Iglesia de Atlántida. Testimonio de su Desprotegida Existencia." In *El Patrimonio moderno en Iberoamérica: protección y coordinación internacional, 1er coloquio internacional*, 41-57. UNESCO Office Mexico, 2015. https://unesdoc.unesco.org/ark:/48223/pf0000244102.

Durazno newspaper, (Durazno, Uruguay), May 26th and June 2nd, 1967.

"Dieste Ex Machina, Mesa Redonda." Universidad de la Republica, Facultad de Arquitectura, Diseño y Urbanismo. Filmed October 20, 2016, Montevideo, Uruguay, video, 1:40:35, https://vimeo.com/189780316.

Museo Casa de Rivera, Durazno, Uruguay. Seen on August 21, 2018.

Museo Torres García, Montevideo, Uruguay. Seen on August 14, 2018.

O'Malley, John W. *What Happened at Vatican II*. Cambridge, Mass.: Belknap Press of Harvard University Press, 2008.

Romero, Raúl. "Memorias de Reconstrucción de la Iglesia de San Pedro" (2018), Microsoft Word file.

Sasson, Marcelo. Interview by Ciro Caraballo Perichi. August 25, 2016, Dieste y Montañez office, Montevideo, Uruguay, video, 46:17, https://www.youtube.com/watch?v=FJ6XKpBsNAc.

Sasson, Marcelo. Interview by the architect Hugo Ferreira Quirós. November, 2017, Uruguay, video, 1:00:58, https://www.youtube.com/watch?v=sMZOkRU8Lqs.

Torres-García, Joaquín. "Las Artes Plastical y Su Relación Con La Arquitectura," in *Testamento Artístico*. Montevideo: Biblioteca De Marcha, 1974.

Vergalito Cirese, Vittorio Giuseppe. Interview by Ciro Caraballo Perichi. September 2014, Dieste y Monteñez Office, Montevideo, Uruguay, video, 17:15, https://youtu.be/SqWiZMLB6ak.

Wright, Frank Lloyd. "Young Architecture (excerpt)," in *Programs and Manifestoes on 20th-century Architecture*, edited by Ulrich Conrads, 124-5. Cambridge, Mass.: MIT, 1970.

Secondary Texts

Anderson, Stanford, and Eladio Dieste. *Eladio Dieste: Innovation in Structural Art*. 1st ed. New York: Princeton Architectural Press, 2004.

Anderson, Stanford. “A Principled Builder.” In *Seven Structural Engineers: The Felix Candela Lectures*, ed. Guy Nordenson, Félix Candela, and Museum of Modern Art, 30-47. New York: Distributed Art Publishers, 2008.

Arana, Marino. “Eladio Dieste: Techniques and Poetics.” In *Latin American architecture: six voices*, ed. Malcolm Quantrill, 21-29. College Station, Texas A & M University Press, 2000.

Arnaldos Montaner, Almudena. "Antonio Bonet Castellana, Le Corbusier Y La Bóveda Catalana: Forma Y Orden." *Dearq*, no. 14 (2014): 122-35.

Bergdoll, Barry, Carlos Eduardo Comas, Jorge Francisco Liernur, Patricio Del Real, and Museum of Modern Art, Host Institution. *Latin America in Construction: Architecture 1955-1980*. New York: Museum of Modern Art, 2015.

Bonta, Juan Pablo. *Eladio Dieste*. Buenos Aires: Facultad de Arquitectura y Urbanismo: Instituto de Arte Americano e Investigaciones, 1963.

“Brick Shell Construction.” *Progressive Architecture*, April 1962.

“Church at Atlantida, Uruguay.” *Architectural Review*, September 1961.

De Canales, Francisco González. "Eladio and the Whale." *AA Files*, no. 75 (2017): 152-61.

De Palma, Martin, A.M. (2000). Eladio Dieste, “el arte de construir en ladrillo, in Tercer Congreso Nacional de Historia de la Construcción (641-649). Sevilla: Instituto Juan de Herrera, CEHOPU, Universidad de Sevilla.

“Distribución de la Población poDepartamentos, 1900-1950” in *Estadísticas Históricas Del Uruguay 1900-1950, Tomo I*. Montevideo: Universidad de la Rebuplica, 2007, http-//cienciassociales.edu.uy/departamentodetrabajosocial/wp-content/uploads/sites/8/2013/archivos/estadisticas%20historicas%201.pdf.

Favre, Oscar Padrón. “Claudio Silveira Silva y Durazno.” In *Arte de Frontera: Claudio Silveira Silva*. Montevideo: Museo Nacional de Artes Visuales, 2012. Exhibition Catalog, 13-21.

Foxe, David M. "Saarinen's Shell Game: Tensions, Structures, and Sounds at MIT." *Nexus Network Journal* 12, no. 2 (2010): 191-211.

Frampton, Kenneth. "Prospects for a Critical Regionalism." *Perspecta* 20 (1983): 147-62.

Grompone, Juan. “Eladio Dieste, Maestro de la Ingeniería,” accessed July 23, 2018, http://www.grompone.org/ineditos/ciencia_y_tecnologia.

Grossman, Luis J. “El ingeniero Eladio Dieste y la noble humildad del ladrillo.” *La Nacion*, August 9, 2000.

Iglesia de la Parroquia de Cristo Obrero: Plan de Conservación y Manejo, Getty Foundation Keeping it Modern Report Library, 2017, http://www.getty.edu/foundation/initiatives/current/keeping_it_modern/report_library/cristo_obrero_church.html.

“Iglesia San Juan Bosco,” Architecture department, University of the Republic, Montevideo, accessed March 5, 2019, http://www.fadu.edu.uy/garcia-pardo/obras/iglesia-san-juan-bosco/.

Iori, Tullia and Pier Luigi Nervi. *Pier Luigi Nervi*. Milano: Motta Architettura, 2009.

Lainez, Jose Maria Cabeza, Juan Ramon Jimenez Verdejo, Benito Sanchez-Montanes Macias, and Jose Ignacio Perez Calero. "The Key-role of Eladio Dieste, Spain and the Americas in the Evolution from Brickwork to Architectural Form." *Journal of Asian Architecture and Building Engineering* 8, no. 2 (2009): 355-62.

Lapuerta, José Maria de. “Casa Dieste, Montevideo” in *AV Monografías, Casa de Maestros*. Madrid: Arquitectura Viva, no. 132 (2008): 106-115.

Liernur, Jorge Francisco. Preface to *Divinas Piedras: Arquitectura Y Catolicismo En Uruguay, 1950-1965*, by Mary Méndez, 11-12. Montevideo, Uruguay: Universidad De La República Uruguay, 2016.

Mas Guindal, Antonio J., and Josep Mª Adell. "Eladio Dieste y La Cerámica Estructural En Uruguay." *Informes De La Construcción* 56, no. 496 (2005): 12-23.

Méndez, Mary. *Divinas Piedras: Arquitectura Y Catolicismo En Uruguay, 1950-1965*. Montevideo, Uruguay: Universidad De La República Uruguay, 2016.

Merkel, Jayne, and Eero Saarinen. *Eero Saarinen*. London: Phaidon, 2005.

Nudelman, Jorge, “’Corbusians’ in Uruguay; a Contradictory Report.” In *Latin American Modern Architectures: Ambiguous Territories*., eds. Del Real, Patricio, and Gyger, Helen, 53-74. New York: Routledge, 2013.

Nudelman, Jorge. *Tres Visitantes En París: Los Colaboradores Uruguayos De Le Corbusier*. Montevideo: Universidad De La República, 2016.

Nudelman, Jorge. "*Tres visitantes en París: los colaboradores uruguayos de Le Corbusier*." Master's Thesis, Madrid: E.T.S. Arquitectura (UPM), 2013, http://oa.upm.es/19877/.

Oxford English Dictionary online, s.v. "modern," adj. and n., accessed June 2018. Oxford University Press. http://www.oed.com.libproxy.uoregon.edu/view/Entry/120618?redirectedFrom=modern.

Remo Pedreschi. *Eladio Dieste: The Engineer's Contribution to Contemporary Architecture*. London: Thomas Telford, 2000.

Pérez Oramas, Luis, Alexander Alberro, Sergio Chejfec, Estrella de Diego, Geaninne Gutiérrez-Guimarães, Joaquín Torres-García, and Museum of Modern Art, Host Institution. *Joaquín Torres-García: the Arcadian modern*. New York: Museum of Modern Art, 2015.

Silva, Mónica. Email to Jesse Elliott, February 14th, 2019.

Silva-Contreras, Mónica. "New experiences with reinforced tile for Eladio Dieste when building the Cristo Obrero Church." In *Building knowledge, constructing histories: proceedings of the sixth International Congress on Construction History (6ICCH), eds.* Wouters, Ine, Stephanie Van de Voorde, and Inge Bertels, 1203-1210. (*Brussels, Belgium, 2018) nVolume 1*. 2018.

Silvestri, Graciela. "Una Biografía Uruguaya." In *Escritos Sobre Arquitectura*, 119-160. Montevideo, Uruguay: Irrupciones Grupo Editor, 2011.

Sociedad de Arquitectos del Uruguay. "Iglesia Cristo Obrero: Gestiones ante UNESCO." Updated December 13, 2018, https://www.sau.org.uy/iglesia-cristo-obrero-gestiones-ante-unesco/.

"'Tradición e Innovación,' un documental sobre el Ingeniero Eladio Dieste." Patrimonio Uruguay, published on January 21, 2016, Uruguay, Video, 22:06, https://youtu.be/NyDUuRZdSu0.

Viermond, Inc. "Empresa," accessed February 4, 2019. www.viermond.com.

Waisman, Marina. Introduction to *Latin American architecture: six voices*, ed. Malcolm QUANTRILL, 3-19. College Station, Texas A & M University Press, 2000.